

State of Wyoming  
Governor’s Task Force  
Video Conferencing and  
IP-Based Communications

Final Report



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July 31, 2009

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M. Adams / T. Waters	David Stein	7/06/09	1.0
M. Adams / T. Waters	David Stein	7/10/09	2.0
M. Adams	Tim Waters	7/14/09	3.0
M. Adams	Tim Waters, Dave Stein	7/31/09	4.0

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## **1 EXECUTIVE SUMMARY**

In the 21<sup>st</sup> Century, the globalization and regionalization of goods and services require constant collaboration of geographically distributed enterprises, communities, and government entities. Wyoming’s large area and low population density make communications technology even more important. Wyoming Governor Dave Freudenthal appointed a Task Force to examine and make recommendations regarding the various efforts taking place in Wyoming concerning distance education, video conferencing and general Internet Protocol based communications. The Task Force engaged PlanNet Consulting to assess the existing videoconferencing network infrastructure and the accompanying hardware systems related to videoconferencing, and make recommendations for a videoconferencing solution that would meet the needs of the various stakeholders.

The work of PlanNet, on behalf of the Governor’s Task Force on Distance Education, Video Conferencing, and IP-Based Communications (Governor’s Task Force), has confirmed that technology-based collaboration tools are essential to making cost-effective business decisions for government, allowing educational institutions to fulfill their mission, and enabling quality of life improvements via new applications such as tele-health. In addition, all Wyomingites can save on travel-related expenses, not only in airfare, hotel, and mileage, but also in time saved improving productivity and efficiency.

While many collaboration solutions are available for use within and across organizations, issues of how information and systems are shared, managed, and governed often present significant organizational challenges. To respond to these challenges, nearly all of the Wyoming organizations surveyed have put policies in place to provide a decision-making framework. These policies address subjects as diverse as system architecture, security, monitoring, change management, procurement and funding. Our findings indicate that these localized frameworks generally suit the needs of the individual organizations. However, in some areas, we have found the frameworks may not be scalable and have conflicts with each other. This has led to interoperability challenges between systems, resulting in diminished user satisfaction and potentially higher costs.

This report is an examination of the data collected by PlanNet via surveys, forms and in-person interviews. Examples of the data collected and analyzed are: network, endpoint and MCU inventories; funding sources, organization charts, telecom map, existing State and agency video policies, existing State and Federal Statutes, laws and regulations, and existing partnerships between agencies.

In order to view the data in a meaningful and relevant manner, we have created use case profiles or Platform Solutions to classify the data. PlanNet has analyzed current and future requirements of Wyoming stakeholders and has identified the following major findings:

- A vast majority of statewide videoconferencing users see the value of videoconferencing and plan to increase use as a viable substitute for business travel as budgets dictate.
- Inter-agency videoconferencing is difficult due to the lack of unified connection standards and common scheduling calendars and methods.
- Many organizations don’t have a strategic plan for videoconferencing roll-outs, maintenance or

equipment refresh.

- Most groups lack formal change management procedures.
- End user support and training for videoconferencing varies widely across the state.

Through our analysis of these findings, comparison of needs with existing conditions, PlanNet provides immediate and future recommendations to ensure seamless and transparent videoconferencing collaboration for all organizations. Our top three immediate recommendations which overarch all others are:

- Set up and fund a federated governance model to empower a central authority to lead, plan, and manage Wyoming’s videoconferencing investment.
- Provide or subsidize funding to provide broadband connectivity to member sites to attain a minimum baseline bandwidth standard in alignment with each stakeholder’s videoconferencing business requirements.
- Determine and deploy a unified, reliable, and flexible videoconferencing infrastructure platform to include equipment components that can be shared yet individually accessed and allocated for all business functions that utilize videoconferencing.

## **2 WYOMING’S STATED GOALS AND OPERATIONAL OBJECTIVES**

Governor Freudenthal has identified the video teleconferencing systems and IP networks in Wyoming are strategic State assets. Their development and the resulting recommendations must support the following goals, operational objectives, and processes to uphold and maintain the State’s strategic vision for video conferencing. These goals were defined by the State and were included in the Request For Proposal for this project.

### **2.1 GOALS:**

- Make state government more efficient and effective through increased access, time savings, cost savings and enhanced communication.
- Provide a robust technological base for delivery of distance education.
- Enhance the business and economic development climate in Wyoming by providing better communications capability between state government and businesses.
- Easily link and integrate all state government agencies as well as external users.
- Increase citizen access to Wyoming state government by providing additional avenues of communication input.

### **2.2 OPERATIONAL OBJECTIVES:**

- The system must be industry standards Internet (IP) based, flexible, scalable and, above all else, easy to use. It should provide connection capability to the state’s current video conferencing end-point locations as well as connection capability to webcams on desktop computing systems. Ideally, the system’s ease-of-use functionality would operate in a manner that mirrors

the simplicity of various web-based video conferencing systems, such as Skype, with a directory based point-and-click capability.

- The system should allow face-to-face meetings without leaving an office and allow for training, presentations, collaboration and telecommuting.
- Hundreds or even thousands of simultaneous users should be able to access the web-based video teleconference component. For instance, the system should allow the Governor to hold a web-based video meeting with all State of Wyoming employees.
- The system should allow for ease of scheduling events, calendaring and tracking of system usage, keeping in mind that some of our end users have special needs.
- On demand, the system should allow seamless integration to other Wyoming and global business’ video teleconferencing systems. Where appropriate Quality of Service (QoS) must be maintained.
- The system should replace, incorporate, or interface to, the current systems in the Department of Education, the University of Wyoming, Wyoming’s Community Colleges, the State and other agency video teleconferencing systems. Proposed solutions should consider security standards/requirements for each stakeholder and existing network designs including firewalls, network address translations and similar potential obstacles. Specific bridging solutions need to be clearly identified.
- Where appropriate, the system should allow integration and linkages into the distance education, telemedicine and other video teleconferencing networks, or replace them.
- Resiliency, robustness and stability are crucial in the design. In particular, distance education and telemedicine cannot afford down time.
- Any network designs should support a converged IP network – supporting voice, video and data.
- The system should support “call in” and “call out” capability.
- Where possible the system would provide for prioritized web-based, on-demand scheduling of endpoint locations. The system should provide statistics regarding usage and system performance.
- The system should provide adequate growth capacity for uses that are increasing, projected and that the state may wish to encourage and accommodate.
- The main system should be capable of supporting IPv6 and High Definition protocols.
- The system should provide the flexibility to adjust to future uses, beyond the current uses, which cannot currently be anticipated and may arise from variables that will impact its future use such as demographic trends, including expectations of a new generation of workers and citizens, and economic factors that may drive its use, growth and potential.

### **3 METHODOLOGY**

PlanNet’s approach to this project was straightforward.

- First, we gathered the current videoconferencing business requirements and inventory data.
- Second, we compared the current videoconferencing environment to the desired state and made

recommendations for technology improvements.

- Third, we performed an analysis of the existing governance methods and provided recommendations for future governance frameworks.
- Finally, we consolidated all findings and recommendations into this report.

Four major methods were used to gather input from stakeholders. These consisted of approximately 27 interviews with over 170 individuals or groups of stakeholders, four targeted online surveys with over 200 respondents, data gathering, and inventories (existing networks, MCUs and endpoints) which were completed by targeted stakeholder groups with technical knowledge of the networks and videoconferencing systems throughout the State.

## **4 MAJOR FINDINGS**

Using the methodology defined above, certain major findings were determined. Major findings are defined for this report as those findings that overarch all other findings documented in the report. PlanNet’s major findings are as follows:

- A vast majority of statewide videoconferencing users see the value of videoconferencing and plan to increase use as a viable substitute for business travel as budgets dictate.
- Inter-agency videoconferencing is difficult due to the lack of unified connection standards and common scheduling calendars and methods.
- Many organizations don’t have a strategic plan for videoconferencing roll-outs, maintenance or equipment refresh.
- Most groups lack formal change management procedures.
- End user support and training for videoconferencing varies widely across the state.

## **5 KEY RECOMMENDATIONS – IMMEDIATE**

PlanNet has defined the following list of key immediate recommendations (estimated time frame of 0 to 3 years) for improvement of videoconferencing throughout the state based on all survey, interview, and communications information analyzed during the course of this project.

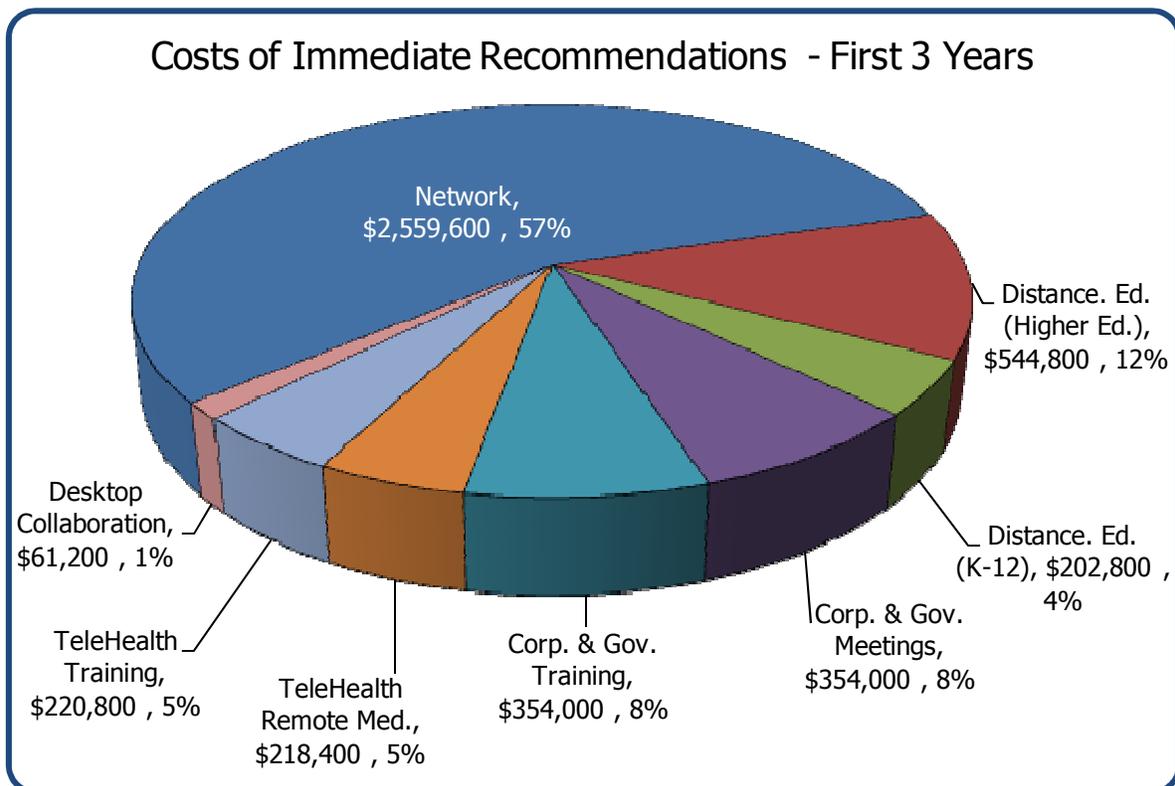
- 1) Set up and fund a federated governance model to empower a central authority to lead, plan, and manage Wyoming’s videoconferencing investment.
  - Reorganize existing, and hire additional, technical staff resources to align roles and responsibilities with the federated governance model.
  - Launch, promote, and monitor Return on Investment (ROI) targets for leveraging videoconferencing to reduce travel costs, increase productivity, and enable quality of life improvements via new applications such as tele-health.

- 2) Provide, or subsidize funding to provide, broadband connectivity to member sites to attain a minimum baseline bandwidth standard in alignment with each stakeholder’s videoconferencing business requirements.
- 3) Determine and deploy a unified, reliable, and flexible videoconferencing infrastructure platform to include equipment components that can be shared, yet individually accessed and allocated for all business functions that utilize videoconferencing.
- 4) Coordinate an automated scheduling plan based on the unified videoconferencing infrastructure platform. This dial plan would be a universal dialing structure that would allow all state-wide participants to easily connect with one another via a single state-wide directory of end users.
- 5) Establish videoconferencing equipment standards with intuitive and easy-to-use controls. Approved equipment should be based on specified features, including ease-of-use and seamless interoperability with the unified videoconferencing infrastructure platform. However, the equipment can be manufacturer agnostic. Purchases of non-approved models should be declined.
- 6) Assemble and market complete training for users and technicians regarding equipment standards deployed throughout the state. Training should include multiple formats such as: demonstration, recording and replay of demonstration, quick reference guides, and owner’s manual documentation.
- 7) Include video endpoint equipment replacement in immediate budget requests for all equipment models that will no longer be supported by the manufacturer by the end of 2010. Update outdated software of all systems that are currently supported and will continue to be supported by manufacturers beyond end of 2010.
- 8) Establish desktop collaboration standards for new PC and laptop based systems based on business requirements from each business function. Equipment standards should include guidelines, performance criteria, specifications for software, and accessories such as cameras, mics, and loudspeakers or headset mics and earphones.
- 9) Following implementation of the governance model, establishment of equipment standards, and implementation of other immediate recommendations, create a central testing lab developing equipment standards for hardware and software. Maintain standard testing criteria suitable for all member organizations; conduct proper testing prior to synchronous deployment of hardware or software upgrades.

### SUMMARY OF COSTS – IMMEDIATE RECOMMENDATIONS (FIRST 3 YEARS)

Cost Graphs	Immediate Recommendations							
	Network	Distance. Ed. (Higher Ed.)	Distance. Ed. (K-12)	Corp. & Gov. Meetings	Corp. & Gov. Training	TeleHealth Remote Med.	TeleHealth Training	Desktop Collaboration
<b>Item</b>								
Endpoints		\$252,000	\$0	\$176,000	\$176,000	\$99,000	\$99,000	\$32,000
AV Accessories		\$127,000	\$131,000	\$81,000	\$81,000	\$45,000	\$47,000	\$0
Training		\$75,000	\$38,000	\$38,000	\$38,000	\$38,000	\$38,000	\$19,000
VTC Infrastructure	\$1,284,000							
Replace End of Life FY 2008	\$185,000							
Equipment Upgrades	\$185,000							
Increased Bandwidth Capacity	\$327,000							
Network Training	\$60,000							
Maintenance Adv Parts Replacement	\$92,000							
Contingency (20%)	\$426,600	\$90,800	\$33,800	\$59,000	\$59,000	\$36,400	\$36,800	\$10,200
<b>Subtotal</b>	<b>\$2,559,600</b>	<b>\$544,800</b>	<b>\$202,800</b>	<b>\$354,000</b>	<b>\$354,000</b>	<b>\$218,400</b>	<b>\$220,800</b>	<b>\$61,200</b>

<b>Total</b>	<b>\$4,515,600</b>
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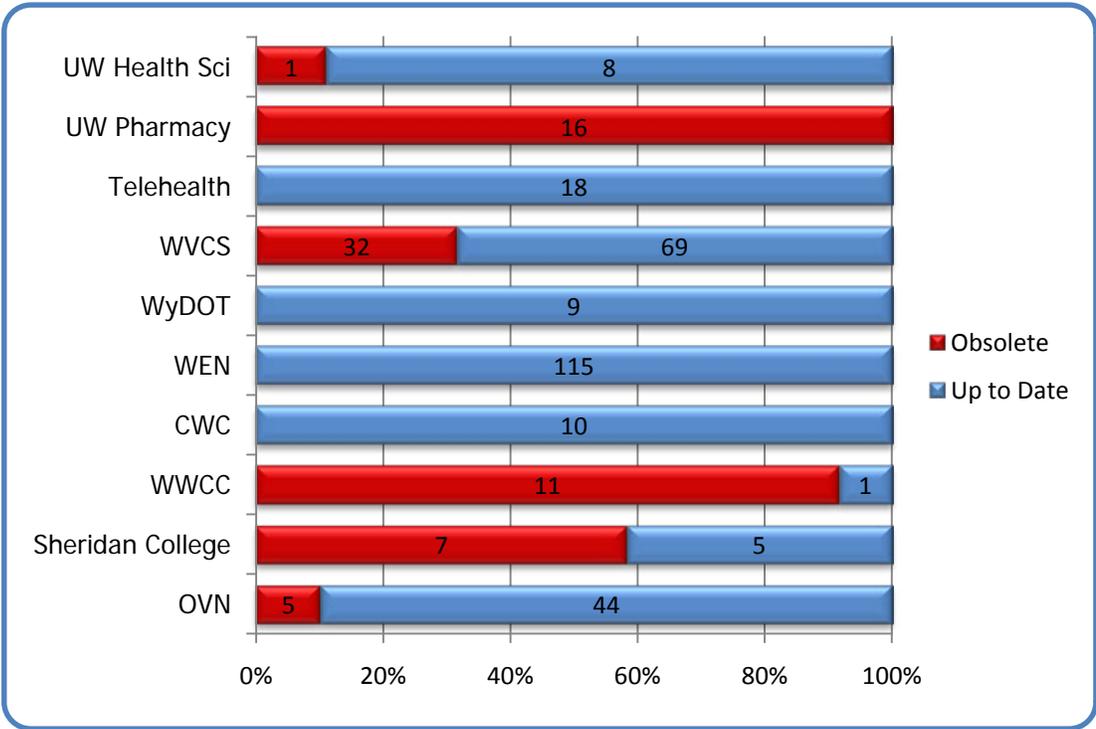


**6 KEY RECOMMENDATIONS – FUTURE**

PlanNet has defined the following list of key future recommendations (estimated time frame of 6 to 7 years) for improvement of videoconferencing throughout the state based on all survey, interview, and communications information analyzed during the course of this project.

- 1) Maintain a central, coordinated, and engaged federated governance authority to continue to manage Wyoming’s videoconferencing investment.
  - Manage the use, support, and architecture of the videoconferencing over IP-based communications systems.
  - Dedicate resources to planning the technology road map expansion of the videoconferencing over IP-based communications systems. Include key research and development needs for advanced requirement business users including tele-health, entry-level systems for single user desktop collaboration, and developing standards for unified communications protocols.
- 2) Include equipment refresh in annual budgets, based on an amortization schedule for each class of equipment. Plan and execute periodic equipment refresh. For videoconference endpoints, the refresh plan should include 100% replacement of inventory every six to seven years. See the chart below of equipment that will reach end-of-service life by the end of 2010.

*Number of Endpoints at End-of-Service by the End of 2010*



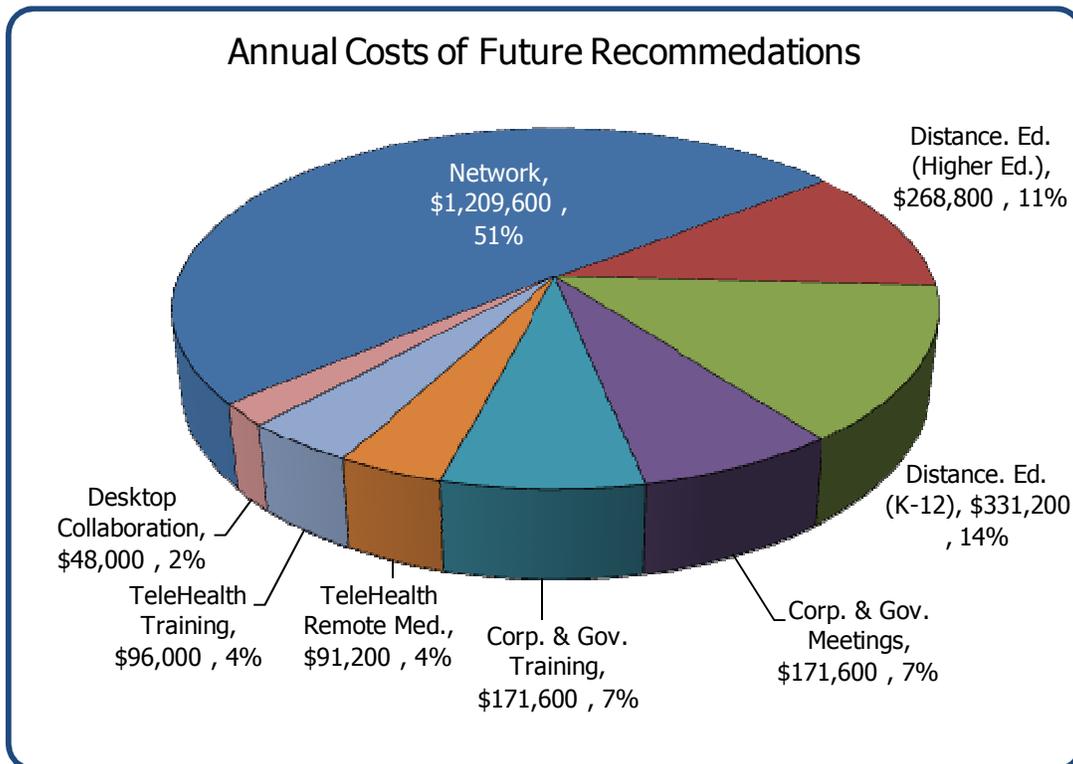
- 3) In order to stimulate economic development, promote public and private business partnerships where videoconference infrastructure, facilities, and endpoints (including PC-based desktop collaboration) should be expanded. Consider development of videoconference specific rooms in publicly accessible locations in additional localities.
- 4) Improve remote help desk technical skills and capabilities, reduce the need for technician visits, and reduce the need for on-site assistance for using videoconferencing equipment.
- 5) Maintain and continue to expand a media content library of training for end users, instructors, and technical support, specifically regarding emerging standards of videoconferencing and desktop collaboration.
- 6) As video becomes increasingly strategic to the State of Wyoming, consider redundancy features of the core videoconference infrastructure and engage backup systems as required.
- 7) Improve videoconferencing room standards for new and renovated construction projects for each similar group of business requirements. Facility standards should include guidelines and performance criteria for room acoustics, display types and sizes, background wall treatments, lighting, network connectivity, and furniture layouts.

### SUMMARY OF ANNUAL COSTS – FUTURE RECOMMENDATIONS (YEARS 4 THRU 6)

Cost Graphs	Future Recommendations							
	Network	Distance. Ed. (Higher Ed.)	Distance. Ed. (K-12)	Corp. & Gov. Meetings	Corp. & Gov. Training	TeleHealth Remote Med.	TeleHealth Training	Desktop Collaboration
<b>Item</b>								
Endpoints		\$130,000	\$180,000	\$87,000	\$87,000	\$33,000	\$35,000	\$32,000
AV Accessories		\$56,000	\$77,000	\$37,000	\$37,000	\$24,000	\$26,000	\$0
Training		\$38,000	\$19,000	\$19,000	\$19,000	\$19,000	\$19,000	\$8,000
VTC Infrastructure	\$102,000							
Replace End of Life 2012	\$298,000							
Equipment Upgrades	*							
Increased Bandwidth Capacity	\$548,000							
Network Training	\$60,000							
Maintenance Adv Parts Replacement	*							
Contingency (20%)	\$201,600	\$44,800	\$55,200	\$28,600	\$28,600	\$15,200	\$16,000	\$8,000
<b>Subtotal</b>	<b>\$1,209,600</b>	<b>\$268,800</b>	<b>\$331,200</b>	<b>\$171,600</b>	<b>\$171,600</b>	<b>\$91,200</b>	<b>\$96,000</b>	<b>\$48,000</b>

\* Note: Complete costs for Network Related Future Recommendations are not available.

<b>Total</b>	<b>\$2,388,000</b>
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## 7 CURRENT CONDITIONS

Upon review of the data contained in this report, a series of patterns emerge about the current status of videoconferencing throughout the State. The following patterns or trends are apparent:

- A vast majority of statewide videoconferencing users see the value of videoconferencing and plan to increase use video conferencing as a viable substitute for business travel as budgets dictate.
- Inter-agency videoconferencing is difficult due to the lack of unified connection standards and unified scheduling calendars and methods.
- Many groups don’t have a strategic plan for videoconferencing roll-outs, maintenance or equipment refresh.
- Most groups lack formal change management procedures.
- End user support and training for videoconferencing varies widely across state agencies.

The above trends are based on observations made with a variety of data collection techniques. These data collection techniques included review of videoconferencing related video and network equipment inventories and focused follow up with technical staff responsible for operating and maintaining performance of these inventories. Surveys and interviews also provided background for our analysis of current conditions.

### 7.1 INVENTORY

Participants:

The following participants provided video equipment, WAN connectivity, and WAN equipment inventories and are included in our observations, except where noted otherwise.

- OVN - University of Wyoming Outreach Video Network
- WEN- Wyoming Department of Education – Wyoming Equality Network
- WVCS – Wyoming Video Conferencing System
- WWCC – Western Wyoming Community College
- NWCCD – Northern Wyoming Community College District
- CWC – Central Wyoming College

Note that although our research shows that all community colleges in the state utilize videoconferencing, three have videoconferencing inventories separate from the Wyoming Equality Network (WEN) and are noted above. Inventories for the remaining four community colleges – Casper College, Eastern Wyoming College, Laramie County Community College, and Northwest College are found in the overall WEN inventory.

### 7.2 VIDEOCONFERENCING EQUIPMENT INVENTORY

Information from the inventory conducted as part of this project indicates the majority of Wyoming’s video conference systems (approximately 50%) are using out-of-date (less than one year) firmware. This may be justifiable for operational or technical reasons that will need to be verified. Out-of-date firmware may be a significant factor in system incompatibility issues.



- Cable 0 Sites
- District Fiber 0 Sites
- District Wireless 0 Sites
- DS3 0 Sites
- DSL 18 Sites
- Fiber 0 Sites
- Frame Relay T1 0 Sites
- LAN 8 Sites
- MetroEthernet 3 Sites
- T1 6 Sites

- Costs and Funding

The survey information provided to PlanNet by UW appeared to be fairly complete. It indicated that since the original OVN video infrastructure was implemented in 2004/2005, new network and video equipment was procured after the separation from the WVCS. Additionally, the purchase of a large Juniper replacement firewall was made to facilitate internetwork video calls. The survey response also indicated a healthy budget for ongoing maintenance and support costs. The recurring circuit costs appear lower than expected. The OVN also appears to have a significant investment in governance resource, reporting over 8 Full Time Employee’s (FTE’s) at a cost of over \$365,000 per year. (Note: FTE calculation involves 36 individuals, including administrators and staff; time devoted to video conferencing duties and responsibilities ranges from 5% to 50% for these individuals).

It is not clear if any funding has been established for equipment refresh (replacement of aging equipment). Typically, network and video infrastructure are assumed to have a useful life of 4-6 years.

#### 7.4.2 Wyoming Department of Education – Wyoming Equality Network (WEN)

- Video

The WEN survey response includes a total of 115 Endpoints.

- 115 Tandberg

We note that no endpoints will be labeled end of life by the manufacturer by June of 2010.

- WAN

The Wyoming Department of Education’s Wyoming Equality Network (WEN) utilizes H.323 (IP) protocols for all videoconferencing sessions. Quality of Service (QoS) is enabled using DifServ at the LAN level. Connectivity for the network is distributed via nine service providers. The following is a list of the connectivity distribution:

- ATM (T1) 71 Sites
- Cable 3 Sites

- District Fiber      12 Sites
- District Wireless    1 Sites
- DS3                    28 Sites
- DSL                    0 Sites
- Fiber                  1 Sites
- Frame Relay T1      0 Sites
- LAN                    6 Sites
- MetroEthernet      0 Sites
- T1                     0 Sites

The WEN has some equipment at or approaching End of Life (EOL). See table below:

Equipment Type	Qty	End of Support
○ Cisco 1601	1	2008
○ ATM Enhanced DS3 Port Card	28	2011

The WEN is heavily reliant upon ATM technology. Stakeholder requests included comments that planning should begin to move away from this technology.

At 11 locations, users have chosen to purchase additional videoconferencing systems that the WEN organization supports. These locations pay a subscription fee to the WEN for support. The majority of the conferences that use this equipment are intra-district calls and do not utilize the WEN backbone.

During the inventory information gathering process, it was discovered that the QoS has not been implemented on all WEN locations. This will be corrected during the summer of 2009.

### **7.4.3 Wyoming Video Conferencing Services (WVCS)**

- Video

The State Wyoming Video Conferencing System (WVCS) includes 101 endpoints:

- 101 Tandberg

We note that 32 endpoints will be labeled end-of-life by the manufacturer by June of 2010.

- WAN

The Wyoming Video Conferencing System (WVCS) is commonly known as the state network. It utilizes H.323 (IP) protocols for all videoconferencing sessions. Quality of Service (QoS) is enabled using DifServ. Connectivity for the network is distributed via five service providers. The following is a list of the connectivity distribution:

- ATM (T1)              11 Sites
- Cable                  3 Sites
- District Fiber        0 Sites
- District Wireless    0 Sites

- DS3                    5 Sites
- DSL                    23 Sites
- Fiber                   0 Sites
- Frame Relay T1      9 Sites
- LAN                    29 Sites
- MetroEthernet      0 Sites
- T1                      6 Sites

The WVCS has some equipment at or approaching end-of-life. Replacement of this equipment represents a significant expenditure as equipment begins to fail. See table below for WVCS end of life information:

○ Equipment Type	Qty	End of Support
○ Cisco 2600	5	2007
○ Cisco 1721	11	2008
○ Cisco 3700	15	2012

- The WVCS currently supports multiple sub-networks.
- In nine locations, the edge routers are supplied and maintained by the service carrier. A&I has no access or visibility into these devices.
- Costs and Funding

ITD operates on a cost recovery approach, basically charging for services it provides. This normal approach was supplemented with \$600,000 from the 2009 Legislature to help defray the higher per unit costs associated with supporting the WVCS after the OVN was formed as an independent network.

It was surprising to see no training costs and only \$20,000 per year allocated to governance for the WVCS network.

#### 7.4.4 Western Wyoming Community College (WWCC)

The Western Wyoming Community College (WWCC) inventory includes 19 endpoints:

- 12 Polycom
- 7 Webcam/Software endpoints were also identified

We note that 2 Webcam/Software Endpoints are beyond end of life and 7 of the Polycom codecs are currently at end-of-life and not eligible for vendor support.

#### 7.4.5 Northern Wyoming Community College District (NWCCD)

The Northern Wyoming Community College District (also referenced as Sheridan College) inventory includes 12 endpoints:

- 12 Polycom

We note that 7 of the Polycom codecs are currently at end-of-life and not eligible for vendor support.

#### **7.4.6 Central Wyoming College (CWC)**

The Central Wyoming College inventory includes 10 endpoints:

- 10 Tandberg (9 HD capable; 1 is part of Wyoming Equality Network)

We note that all codecs are current models and are eligible for vendor support.

## **8 BUSINESS REQUIREMENTS**

To develop a complete understanding of the needs [business requirements] of the state’s videoconferencing networks, PlanNet has taken a stakeholder focused approach to the project and conducted a thorough needs assessment and inventory of the existing environment by meeting with stakeholders to collect and document pros and cons of the existing systems’ performance, user interfaces, and overall experiences. We have actively listened to a wide cross section of the state’s videoconferencing constituents, including end users and experts who use, support, and manage the environment. Discussion topics included desired functionality, key feature sets, and expressed desires for future growth and expansion. In addition, we have validated our understanding of stakeholder input by discussion and follow up documentation in weekly meetings with the Governor’s Task Force.

This section is a result of data collected in targeted surveys, inventory and funding forms completed by key stakeholders, and interviews with statewide participants. It represents our findings of the business requirements as presented by the participants involved.

### **8.1 NEEDS IDENTIFIED IN THE VIDEOCONFERENCING SURVEYS**

In order to meet the Governor’s participation requirement of seeking input from all stakeholders, four targeted surveys were prepared and made available on a specified Internet website. The Task Force attempted to identify all current users of video teleconferencing as well as potential users. A link to the website was sent to these groups to solicit a wide variety of end user and technical personnel responses. These four surveys targeted specific areas of interest, namely, videoconferencing end users, technical network staff, network administrators, and governance administrators. These surveys were developed through a design and review process with the Task Force to elicit a better understanding of Wyoming’s current video conferencing environments. Also contained in the surveys were carefully constructed, open-ended questions seeking suggestions for future desires and enhancements. The following four sections discuss each of the surveys’ responses individually.

### 8.1.1 End Users Survey

The End User Survey covered videoconferencing topics for a wide variety of users across the state and beyond and was intended for a large response. End user participants were invited by the Task Force to participate in the surveys. The following is a summary of the findings:

- 1) Most surveys were 100% complete.
- 2) Two respondents (Wyoming State Geological Survey & Wyoming State Treasurer) stated they do not have access to videoconferencing. WSGS stated they would hold 15+ meetings per year if videoconferencing were made available to them.
- 3) The sample of demographics by organization for the respondents was diverse. Note that 37 responses came from the Wyoming Department of Corrections (WDOC). We note that this is a very high participation rate with respect to current videoconferencing endpoints in use by this organization (which currently has about 11 videoconferencing endpoints) out of the total approximately 340 locations involved in the project.

46.5%	Higher Education
3.5 %	K-12
27%	WDOC
7%	Game & Fish
16%	Other (Government, Corporate, Legal, Healthcare and others)

- 4) The survey results capture a diverse demographic by city in Wyoming:

27%	Cheyenne
16%	Laramie
12%	Riverton
10%	Lusk
7%	Newcastle
28%	Other

- 5) The survey results include a diverse demographic by affiliation:

8%	Student
11%	Faculty
57%	Staff / Admin
9%	Technical
2%	Government
5%	Business
8%	Other

- 6) The majority of respondents (~90%) noted that the videoconference systems they use are permanently installed.
- 7) The majority of respondents stated that they use videoconferencing between 0 and 4 times per month on average but many of the respondents indicated they use videoconferencing more than 12 times per month. A complete percentage breakdown of the responses is provided below by group:

K-12:

4	0-4
2	5-8
0	9-12
1	more

Higher Education:

28	0-4
10	5-8
5	9-12
19	more

Government, Business, Tele-health:

13	0-4
8	5-8
4	9-12
3	more

Department of Corrections:

38	0-4
1	5-8
7	9-12
0	more

- 8) When asked what factors would cause the respondents to use videoconferencing more frequently, we received the following responses:

K-12:

More rooms / systems available	3
Improved call quality	1
Availability of training	0
Larger room size	0
I would not use more frequently	0

Higher Education:

More rooms / systems available	25
Improved call quality	4
Availability of training	7
Larger room size	10
I would not use more frequently	16

Government, Business, Tele-health:

More rooms / systems available	12
Improved call quality	4
Availability of training	4

Larger room size	1
I would not use more frequently	9

Department of Corrections:

More rooms / systems available	12
Improved call quality	17
Availability of training	12
Larger room size	0
I would not use more frequently	9

9) Number of systems available:

K-12:

1	1
2	2
1	3
3	More

Higher Education:

12	1
21	2
15	3
13	More

Government, Business, Tele-health:

16	1
8	2
1	3
5	More

Department of Corrections:

36	1
2	2
1	3
0	More

10) Audio quality during a videoconference:

- 64% claim “Far end audio is natural and clear.”
- 30% claim audio is at least “Cell Phone Quality.”
- When asked to write more specific information on the survey, most complaints are with delay in hearing audio (sound and picture mismatch) and the absence of bi-directional audio.

11) Video quality during a videoconference:

- 33% claim video is “OK – Can usually read facial expressions.”

- 55% claim video is “OK – Some minor pixelation.”
- Most complaints involve multi-point calls. It seems for some sites call quality severely degrades with 3 or more sites involved, or when calling specific sites.
- There were several comments about cameras being too far away.
- Multiple comments were made regarding Torrington sites’ inability to display PowerPoint presentations.

12) Technical support:

Local tech support is available:

K-12:

Yes	6
No	1

Higher Education:

Yes	47
No	14

Government, Business, Tele-health:

Yes	15
No	10

Department of Corrections:

Yes	40
No	1

13) Technical Support is available through a remote Help Desk:

K-12:

Yes	7
No	0

Higher Education:

Yes	59
No	1

Government, Business, Tele-health:

Yes	20
No	4

Department of Corrections:

Yes	14
No	20

14) Type of uses for videoconference calls:

- 54% connect to 4 sites simultaneously occasionally. (Data for more than 4 sites reviewed in inventory section.
- 66% require computer graphics sharing (H.239) occasionally.

15) Training - formal vs. informal:

K -12:

Formal	4
Informal	3

Higher Education:

Formal	24
Informal	31

Government, Business, Tele-health:

Formal	0
Informal	21

Department of Corrections:

Formal	1
Informal	31

16) When respondents were asked about their comfort level with operating videoconference systems, we received the following responses:

K -12:

Expert	3
Intermediate	4
Novice	0

Higher Education:

Expert	13
Intermediate	34
Novice	15

Government, Business, Telemedicine:

Expert	4
Intermediate	18
Novice	7

Department of Corrections:

Expert	4
Intermediate	21
Novice	16

### 8.1.2 Technical Survey

The Technical Survey was specifically targeted at videoconferencing technical support resources. These are the individuals that provide technical support and administer the daily operation of the various statewide video conference systems. The Governor’s Task Force developed an interview list of 27 technical and support staff to be invited to participate in the Technical Survey; 26 of those participated in the survey. One response was found to be invalid as the respondent indicated that he/she was an end user and did not administer a video conference system. The following is a summary of the findings:

- 1) Technical survey responses indicate the existence of video networks not previously identified through the initial data gathering process with the Governor’s Task Force. Further definition of what comprises these networks is required:
  - Example video network responses include: Central Wyoming College Interactive Classroom Network (ICN), Wyoming Department of Corrections (WYDOC), Wyoming Game and Fish (WGF), Wyoming Health Information Organization (WYHIO) Med Comm Video, Sheridan College 3-site system.
- 2) The sample of demographics by organization represents the following respondents:
  - 52% Education (~13 respondents UW / UW Outreach / Higher Ed., 1 Department of Education)
  - 11% Department of Corrections (3 Respondents)
  - 4% Game & Fish (1 Respondent)
  - 33% Other (Government, Healthcare)
- 3) When asked about the call speeds that are most typical, respondents indicated the following:
  - Most calls are performed at 384kbps.
  - One respondent (ICN) states a typical call rate of 768k.
  - The Department of Environmental Quality (DEQ) indicated that videoconferencing is not used by the department due to bandwidth constraints. PC-based video systems only are used.
- 4) Lack of end user training was mentioned as a problem several times in the responses.
- 5) Incompatibility between different networks was mentioned as a problem several times in the responses.
- 6) Accessibility to video network technicians was mentioned as a problem several times. Comments indicated that the end users either do not have a local phone from which to dial, they do not have correct contact information, or there are no technical resources available to answer.

### **8.1.3 WAN Survey**

The WAN Survey was specifically targeted at the network administrators. These are the individuals that are responsible for the maintenance and daily operation of the various statewide networks. Fourteen (14) network administrators participated in the WAN Survey. The following is a summary of the findings:

- All responses indicated that H.323 Internet Protocol (IP) is being used.
- 10 of the 14 surveys indicated that a firewall was implemented. 5 of the respondents indicated that the firewall could not support videoconferencing. This indicates that the root cause of several videoconferencing problems have been traced to firewall implementations. It should be noted that these are normally resolved within three days. This implies that ad hoc conferences or conferences scheduled for the immediate future have a high likelihood of failing or requiring substantial technical support to be successfully conducted.
- 8 respondents have implemented NAT (Network Address Translation).
- Only 1 administrator indicated the WAN was being used exclusively for video conferencing.
- 7 respondents indicated that they aggregate traffic from other locations.
- 5 respondents indicated issues with the WAN circuits or other issues relating to network electronics.
- 9 respondents indicated that user authentication has been implemented.
- Only 1 respondent uses encryption. (Med Comm. Video)
- Many respondents expressed the desire for a universal directory that included all statewide video participants.

### **8.1.4 Governance Survey**

A total of 25 unique survey responses were submitted by personnel ranging from chief operating officers to network administrators. The majority of respondents (21) indicated that they did not have any Service Level Agreements (SLAs) or Operational Level Agreements (OLAs) in place or were not aware of any if they did exist. For the 7 survey participants that responded positively to having SLAs in place, all but 1 indicated that there were equipment vendor codec support agreements that we interpreted as break/fix support; 1 indicated the SLA was with the telecommunications carrier. The respondents indicated a high level overall of achievement in meeting the SLAs.

With respect to trouble ticketing systems, about half of the respondents (13) indicated that such systems were in use.

With the exception of the WEN, the survey responses indicated that strategic plans do not exist for the video networks. In other words, most needs and issues are dealt with on ad hoc basis.

Almost all responses stated that no life-cycle refresh or amortization plans were in use to plan for the replacement of existing video equipment and supporting network infrastructure based on estimates of their useful life. Note: the term “life-cycle” referred to above is defined as the length of time equipment is expected to operate when used under normal conditions as defined by the equipment manufacturers. At the end of a product’s life-cycle, the manufacturers will no longer support the product.

With respect to formal change management policies, ITD responses indicated that such policies were in place. However, many state users that rely on ITD were not aware of such policies and indicated that a formal change management was not being used. The WEN responses stated formal policies were in use, while the ICN and OVN responses indicated no such policies.

## **8.2 NEEDS IDENTIFIED IN INTERVIEWS**

In addition to the surveys discussed above, an extensive interview process was conducted to secure a deeper understanding of the current needs or business requirements of project stakeholders. Most of the interviews were conducted in person during a three-day PlanNet visit to Cheyenne and Laramie. Follow-up interviews via videoconferences were then conducted to capture those unable to attend the initial interviews and ensure as many stakeholders as possible were allowed input into the study. PlanNet’s approach to the interview process was straightforward: to gain as much understanding as possible of current videoconferencing usage and desired future expansion and capabilities. While an agenda was used during the interview process, PlanNet’s main focus was to listen intently to users describing both their frustrations with and accolades for the current video conferencing experience.

The following is a list of the state agencies and focus groups interviewed:

- Governor Dave Freudenthal
- University of Wyoming – Information Technology and Tele-Health
- University of Wyoming – Outreach School (OS), including its Outreach Technology Services Division (OTS)
- Governor’s Policy Advisor on Healthcare
- State Chief Information Officer (CIO)
- Wyoming Game and Fish Department
- Wyoming Department of Workforce Services
- Wyoming Department of Environmental Quality (DEQ)
- Department of Criminal Investigation (DCI)
- State Auditor’s Office
- State Treasurer’s Office
- State Engineer’s Office
- Office of the State Public Defender
- Office of the Attorney General

- Wyoming Department of Revenue
- Wyoming Department of Corrections (WyDOC)
- Wyoming Office of Homeland Security
- Wyoming Department of Employment
- School Facilities Commission
- Office of State Lands
- Public Service Commission
- Wyoming State Library
- Department of Administration and Information (A&I), Information Technology Division (ITD)
- State of Wyoming Supreme Court
- Office of Human Resources (HR)
- Wyoming Department of Health
- Wyoming Healthcare Information Organization (WyHIO)
- Wyoming Department of Education (WDE)
- Legislative Information Office (LSO)
- State Parks and Cultural Resources
- Wyoming Community Colleges (Presidents and CIOs)
- Wyoming Distance Education Consortium (WyDEC)
- State Representative Rose Berger
- Wyoming Department of Transportation (WDOT)
- Wyoming Business Council
- Wyoming Retirement System (WRS)
- Wyoming Telecommunications Association
- Wyoming Association of Municipalities

### **8.2.1 Video conferencing Core Uses and Purposes**

- Videoconferencing Uses

Video conferencing is utilized throughout the state in a variety of different ways by a variety of different uses. Many project stakeholders whom PlanNet interviewed recognize there are at least 3 specific core uses of videoconferencing. They are distance education, corporate and government business communications, and tele-health.

- Distance Education

Distance education as a core use in the State of Wyoming is delivered via several networks for both matriculating and non-matriculating students. These networks include the University of Wyoming’s Outreach Video Network (OVN), the Wyoming Department of Education’s Wyoming Equality Network (WEN), Western Wyoming Community College (WWCC) network, the Central Wyoming Community College (CWCC) Interactive Classroom Network (ICN), Sheridan College’s 3-site system, the State Wyoming Video Conferencing

System (WVCS) network, and the national Transportation Learning Network (TLN). Note: the TLN, formerly Tel8, is a distance learning partnership among organizations in the western United States. TLN links together the transportation departments (DOTs) in Montana, North Dakota, and Wyoming and the Mountain-Plains Consortium universities of Colorado State University, North Dakota State University, South Dakota State University, University of Utah, and University of Wyoming.

At one time, the UW, WDE, WWCC, and CWCC utilized either the State of Wyoming’s video network (WVCS) or the Wyoming Equality Network (WEN) before branching off to the existing configuration.

When asked about the separation from the WVCS and WEN networks, PlanNet received the following reasons:

- Scheduling conflicts based on room availability
- Differing bell schedules
- Long lead times to schedule multipoint conferences
- Network connectivity quality issues
- Some installed codecs do not meet needs

Specific needs were stated consistently among all groups utilizing video conferencing equipment for distance education. PlanNet recognized that interpretations of sufficient quality did differ between stakeholder groups; however, the needs from a high-level perspective were maintained. These needs included:

- Accessibility of educational resources and curriculum to all students within the state who could not or would not travel to the instructor’s location.
- The need for remote students to feel part of the classroom without technology issues inhibiting the learning experience.
- High quality video and audio simulating an in-person classroom environment.
- Ease-of-use, including intuitive, user friendly controls such as one-button press to initiate conferences.
- Centralized, convenient, and expedited scheduling of multipoint and ad hoc calls
- Additional training for instructors and remote technical support where the remote user is less familiar with the technology.
- Improved technical support.
- Better access to the technology (i.e., additional video endpoints in locations convenient to more students).
- Consistent standards for equipment.
- Consistent standards for rooms in a variety of sizes – furniture layout, acoustic environment, lighting.
- Reduced costs to deliver the technology experience.
- Additional funding to continue to improve the technology experience.

PlanNet heard a variety of reasons why each of the distance education networks came into existence; but in general, we heard from each group that their specific organization felt they could deliver a better quality educational experience for their students for less expense than by utilizing a network and associated services delivered by one of the other organizations. Priorities for the quality and cost of services appear to differ among organizations.

- **Corporate and Government Business Communications**

Business communications as a core use of video conferencing in the state of Wyoming is primarily delivered by the WVCS network, the TLN, and by various individual government agencies, which indicated the need for greater network security and increased independence from the WVCS network management and oversight. Departments and agencies where this was stated to be the case during interviews with PlanNet include:

- Department of Health
- Game and Fish
- Department of Employment
- Homeland Security
- Department of Transportation (WyDOT)

The Department of Transportation has a subscription to the TLN for transportation-related content and services specifically for WyDOT employees. WyDOT stated the primary reason for joining the TLN was driven by initial funding from the Federal Highway Administration. Details of on-going funding from the FHA were not disclosed.

In general, several needs for videoconferencing capabilities were indicated by each of the government groups, including

- Reduction of in-state travel costs for employees.
- High-quality video and audio simulating an in-person meeting.
- Ease of use, including intuitive, user friendly controls such as one-button press to initiate conferences.
- Centralized, convenient, and expedited scheduling of multipoint calls and ad hoc calls.
- Additional training for users and remote technical support where the remote user is less familiar with the technology.
- Improved technical support.
- Better access to the technology (i.e., additional video endpoints in locations convenient to more users).
- Desktop video and web-based collaboration tools.
- Consistent standards for equipment.
- Consistent standards for rooms in a variety of sizes – furniture layout, acoustic environment, lighting.
- Remote viewing of all participants.

- Reduced costs to deliver the technology experience.
- Additional funding to continue to improve the technology experience.
- Tele-health

There are several Wyoming stakeholders working toward building a tele-health network, including University of Wyoming, Wyoming Healthcare Information Organization, Department of Health, and Central Wyoming College. 21 out of 28 hospitals opted to be included in a grant-related project for upgrading WAN connectivity to T1 or dual T1 capabilities – which is currently out to bid. Two of the largest hospitals in the state (Cheyenne Medical Center and Casper Medical Center) already have sufficient network connectivity and are not involved; however, PlanNet understands that these entities are interested in providing and participating in statewide tele-health activities to expand their offerings throughout the state. The following uses of video conferencing in tele-health have been described through the interview process:

- Small rural hospital – medical staff or doctor consult expert at larger city.
- Remote diagnosis between medical expert and patient or inmate.
- Professional medical training and continuing education credits.
- Avoid driving to medical expert – snow and ice in winter are extremely problematic.
- Medical professional business communications.

The Governor’s Policy Advisor on Healthcare recently attended the National Rural Health Association Conference and made the following observations:

- None of the others attending were talking about the telemedicine platform anymore. The platforms were already in place for other states.
- Wyoming’s telemedicine infrastructure is trailing other rural states.
- It is believed that people are seeking medical care outside Wyoming for several reasons:
  - Perception of better care in larger cities outside the state.
- Regional draw – e.g. Cheyenne and southern citizens are sometimes drawn to Fort Collins and Denver, Colorado. Western areas are drawn to Salt Lake, Utah, Northern cities to Billings, Montana, and eastern cities are drawn to South Dakota or Nebraska.
  - It is believed that millions of dollars are being spent out of State

- VTC Etiquette

Various constituents PlanNet interviewed have established videoconferencing etiquette appropriate for different events necessary for their organization. These needs differed among the primary uses for the technology listed above: distance education, corporate and government business communications, and tele-health.

The remote distance education participants were expected to mute their microphones when they were not talking, where the room with the instructor rarely did so. This policy has been established to ensure that all remote participants can hear and see the instructor while minimizing distracting noises made at other remote sites.

Corporate and government business stakeholders indicated a policy where video is simply an enhancement to an audio call. During these calls, participants are expected to exchange audio and visual information equally between two or more endpoints. Training applications resembled distance education; however, video calls were more frequently scheduled to join parties requiring an equal level of participation.

Tele-health video conferencing etiquette arose in PlanNet interviews with specific reference to perception of proper operation. For example, many tele-health constituents stated that if the technology doesn’t work twice, a doctor will never use it again. Thus, the etiquette arose to ensure proper operation. Tele-health can involve both extended periods of medical examination where the medical professional is closely examining a patient on a high resolution computer image, but rarely is the patient expected to see the medical professional in extensive detail.

### **8.2.2 Videoconferencing Content and Collaboration Tools**

- Synchronous Audio, Video, and Computer Graphics

Videoconferencing and, in general, all communication can be categorized by the degree upon which two-way interaction is present. Two-way collaboration exists when both sides of the communication stream can interact in real-time and respond to each other’s information. The term synchronous communication refers to this live, two-way oral and/or visual communications between two individuals or groups. Examples of this form of collaboration are live lectures, live demonstrations, and videoconferencing (oral or visual). Sharing computer graphics such as PowerPoint presentations may also be present in synchronous collaboration sessions.

Synchronous sessions are used extensively throughout the state. Many distance learning sessions provided via networks utilize real-time, synchronous video conferencing to communicate with far end participants. Both sides of the video conference connection can freely participate in the collaborative sessions.

- Asynchronous Audio, Video, and Computer Graphics

Communication that does not feature two-way, real-time interaction is known as asynchronous communication. Communication between near and far end participants is not real time and the resulting collaborative exchange must occur at a slower pace than synchronous communication techniques. Examples of this form of interaction used in the state are email, voice mail, fax, and text materials (both printed and electronic). This has

traditionally been the method government, business, and academic institutions use to reach constituents when videoconferencing or telephony is not available or utilized.

- **Web-based Collaboration Tools**

Web-based collaboration tools refer to on-demand, online-based information often stored on a server and accessed across a distributed electronic network. In this model of communication, participant access can be either synchronous or asynchronous. It has proven to be a consistent delivery method to widely dispersed and large audiences using the Internet or WAN/LAN infrastructure. It can provide self-paced video instruction and drill and practice learning for academic environments. An advantage for remote users is that all that is required to participate in a web-based session is a personal computer and connection to the Internet. High-resolution images and video may be limited due to available bandwidth. Live chat can be used in unison with the web-based content to provide more degrees of synchronicity. This method is used by many of the academic and governmental agencies and is growing in popularity depending upon the material being delivered. Current uses include:

- Video on demand
- Ad hoc conferences
- Instant messaging
- Presence (the ability to broadcast a person’s current availability )
- Desktop sharing
- Collaboration
- Video with simultaneous presentations

- **Hybrid teaching pedagogies**

Hybrid teaching pedagogies are being used by both the University and community colleges in Wyoming. These techniques utilize combined synchronous and asynchronous communication strategies. Students meet face-to-face (in person or via video) with instructors at regularly scheduled intervals and use web-based collaborative materials for the time spent learning away from the classroom environment. This is a proven technique that gives students the flexibility to study online materials at their own pace and time and still provides the classroom interaction that traditional teaching pedagogies offer.

### **8.2.3 Videoconferencing Protocol Standards**

- **H.323 and H.320 Requirements**

H.323 is the standard agreed to by the International Telecommunications Union (ITU) for videoconferencing over IP. Many of the constituents interviewed stated that videoconferencing over Internet Protocol (IP) has improved the overall videoconferencing experience. Each of the following entities – UW’s OVN, WDE’s WEN, WWCC, CWCC’s ICN,

and the State’s WVCS networks are now primarily utilizing IP protocol for videoconferencing.

- **H.239 Requirements**

H.239 is the standard agreed to by the International Telecommunications Union (ITU) for delivering graphic content over videoconference networks. The University of Wyoming Outreach School (OS) stated that H.239 is critical to the way it utilizes videoconferencing. Several problems have been encountered with sharing computer graphics via H.239 with the Wyoming Education Network (WEN) and with the State of Wyoming Video Conferencing System (WVCS). Review of inventories and interviews with constituents shows that UW OS depends on H.239 for delivering computer graphics related distance education. OS has encountered multiple issues which may be related to the following:

- WVCS video endpoints do not consistently have current firmware loaded, which may interfere with H.239 capabilities.
- WEN video endpoints currently do not have H.239 capabilities active. The OS has had to make special requests to engage this capability.

The UW Outreach School requires computer graphics sharing between endpoints. Other means of enabling this capability may be explored with stakeholders in our technology recommendations discussions in order to avoid these video codec related issues.

- **H.320 Requirements**

There is the occasional need to use Integrated Services Digital Network (ISDN) connections with a small number of video endpoints that have either not migrated to IP or still depend on ISDN H.320. State of Wyoming constituents often engage an MCU with videoconferencing over ISDN (H.320) for these calls.

- **Multi-point Conferencing Unit (MCU) Capabilities and Endpoint Configurations**

A Multi-point Conferencing Unit (MCU/bridge) is a device that enables more than two endpoints to be connected in the same conference. Each of the following video networks utilizes a substantial MCU:

- OVN
- WEN
- WVCS
- WWCC
- In addition to the entities above, many individual sites possess small MCUs (4-port) for intra-departmental multipoint calls.

## **8.2.4 Videoconferencing Use Standards**

End User and Technical Survey comments, interviews, and observations indicate that significant differences in technical equipment standards between organizations, and occasionally between

sites within the same organization, exist. We have not found evidence of any standards or operational procedures between entities or video networks to maximize interoperability between organizations. Each entity maintains its own separate internal standards for videoconferencing.

Many of the constituents have different priorities to support their organization’s business requirements. These priorities can be categorized by the following profiles:

- Distance Education – Collegiate (degree and certificate programs)
- Distance Education – K through 12
- Corporate and Government Business Meetings and Communications
- Corporate and Government Business Training
- Tele-health – Remote Consultation
- Tele-health – Professional Training
- Desktop Video Communications / Web Collaboration

Consistent with PlanNet’s proposed approach, these profiles can be used to classify all gathered data into definable categories. For example, a Distance Education, K through 12 platform solution may contain similar equipment, communication protocols, bandwidth, management strategies and costs.

## **8.2.5 Network Connectivity Requirements**

- Problem Areas

Some recurring problem area themes regarding network connectivity were identified during our interview sessions:

Many of the smaller telecommunications carriers in the state offer inadequate bandwidth or non-cost effective solutions. This was true even for conferences utilizing speeds of only 384Kbit/second. This was specifically noted in areas such as Lusk, Torrington, Lost Springs, and Newcastle.

The State of Wyoming’s Information Technology Division (ITD) network resources team manages the State backbone circuits and a limited number of other tail circuits. This means that there is no single party responsible for managing end-to-end performance or problem resolution. (See sub-net section for more information).

The WEN’s point of demarcation is typically a border router at each school location. The cabling and Local Area Network is the school’s responsibility. Although most issues seem to have been solved, a potential problem area still exists for quick resolution if the school-furnished portion of the network is inadequate.

Firewall transversal was noted as a significant problem between networks (i.e. OVN to State; individual agencies to WEN, etc.)

Often separate networks exist within the domains of WEN, OVN, ITD, each to support video, voice or data. Use of converged networks is minimal.

- **Current Network Handoffs and Interfaces**

As mentioned in the Problem Area section, the plethora of networks and lack of enforceable standards create the potential for long problem resolution times. PlanNet believes that there are business requirements for:

- Firewall transversal standards.
- LAN standards (for WEN, OVN and WVCS), including cabling, bandwidth, protocols, and Quality of Service (QoS).

- **Engineering Practices – Bandwidth and QoS.**

Quality of Service (QoS) is defined as the measure of performance in a data network communications system. For example, to ensure real-time voice and video are delivered without annoying blips, a traffic contract is negotiated between the customer and network provider that guarantees a minimum bandwidth along with the maximum delay that can be tolerated in milliseconds. PlanNet understands that QoS is being used sparingly or not at all. The OVN backbone was reported by administrators as over-engineered from a bandwidth standpoint and does not use QoS. This was stated as a trade-off of less complexity for potentially higher bandwidth cost. Best practices dictate that end-to-end QoS be used to guarantee the quality of real time applications such as voice and video.

The WEN appears to use Asynchronous Transfer Mode / Unspecified Bit Rate (ATM / UBR) QoS. However, we understand that no service provider SLAs are in place on the WEN backbone. It is not clear if the amount of QoS bandwidth is always sufficient to support video conferences, although interviews with WEN constituents indicate significant improvements since the upgrade from ISDN.

- **Subnets**

On the WEN, individual school sub-netting (IP addressing) schemes were reported to be an issue for moving videoconferencing units between rooms. We were not made aware of subnet issues with OVN or WVCS.

## **8.2.6 Remote Management**

There is no end-to-end performance management tool in place statewide. The WVCS is monitored using EMC/SMARTS for faults and MRTG for circuit utilization. The WEN uses SolarWinds and also outsources management to Qwest for circuits (sub-contractor MAI). The WEN uses the ITD helpdesk to help resolve issues. Subcontracts held by the UW / OVN have not been revealed to us at this time.

Endpoint management systems, bridges, and network accessories used for each organization are as follows:

- UW (OVN)
  - Cisco IPVC
  - RadVision Iview
  - Cisco Unified Videoconferencing Manager
- State of Wyoming (WVCS)
  - Tandberg MPS800
  - Tandberg Management Suite
  - Tandberg Border Controller
  - Tandberg Gatekeeper
- Wyoming Equality Network (WEN)
  - Tandberg MPS800
  - Tandberg Management Suite
  - Tandberg Border Controller (2 – Internal/External)
  - Tandberg Gatekeeper
  - Tandberg Content Server
  - Tandberg See and Share Server
- Western Wyoming Community College (WWCC)
  - Polycom MGC50

Due to the lack of technical expertise in most locations, the need for remote management is essential to support the user experience. This need is exacerbated by the lack of end-user training and ease of use of the remote videoconferencing equipment.

### **8.2.7 Resource Scheduling and Availability Requirements**

- Room Availability, Meeting Hours, and Bell Schedules

Distance education stakeholders including UW, WEN, and the community colleges indicated that schedules could not easily be aligned between organizations because of differing bell schedules, i.e. differing schedules for classes. When distance education class schedules are juxtaposed on business meeting times and the manual process of checking web-based availability schedules, stakeholders agree that extraordinary efforts are required to plan and execute a multipoint conference.

- Unified Scheduling System

Each videoconferencing network group has established its own mechanism for scheduling conferences. These methods range from using software solutions such as Microsoft Outlook to manual methods where the schedule is maintained by a live person. Interviewees expressed the need for a unified (i.e., a single scheduling method and schedule used statewide) and streamlined multipoint scheduling system. Ease of use and automation

regarding scheduling was a consistent request among all stakeholders. Specific frustrations were related to the lead time requirements for scheduling calls and different scheduling methods between organizations.

We recognize lead time requirements are intertwined with SLAs for support personnel. WVCS lead-times indicated that a subcontractor relationship with Adecco requires a minimum of seven days advance notice to provide a technical resource on site, although interviews indicated that the subcontractor has responded more quickly whenever possible.

Based on best practices and PlanNet’s knowledge and experience, unified scheduling is possible when organizations agree on the process of scheduling meetings in a way that follows predetermined standards. Based on the current environment of different makes and models of MCUs, management systems, and scheduling platforms, an investment may be required to achieve unified scheduling.

### **8.2.8 Training and Support Requirements**

- End User Training

Perhaps the most important aspect of videoconferencing that is often overlooked as to its importance is end user training. Without proper training, users will be reluctant to learn the technology and the net result is an underutilized asset. Although every effort should be made to keep the user interface as easy to use and intuitive as humanly possible, user training is essential to gaining the most utility out of videoconferencing systems.

Users should be trained firsthand how to perform the most basic operational techniques such as turning the system on and off, dialing a remote endpoint, mute and un-mute microphones, camera operation, sharing content, and disconnecting a session. Basic instruction should also include basic video conferencing etiquette, such as muting local microphones when the participant is not speaking so unwanted noise does not interfere with the conference. The term “formal” training refers to organized and structured approaches to teach users the basic functional operation of the systems. This is usually done via formal, scheduled classes with groups of people. “Informal” training usually refers to one-on-one instruction given to a user often as they are using the systems for the first time. In the end user surveys, only 21% of participants stated they have had “formal” training while 64% state they have had “informal” training. 15% either have had no training or did not respond to this survey question.

- Technical Staff Training

The majority of video conference related technical staff does not currently have formal certifications from in-house resources, manufacturers, or professional organizations. Meetings with stakeholders indicated limited formal videoconferencing training programs for technical staff are in place. Most funding information received to date indicated no funds are being used to formally train staff for videoconferencing support.

- End User Support

The approach most often used in end user support is a tiered approach, where end users have different levels of assistance available to them, depending upon the severity of the troubleshooting required or what level of system mastery is desired.

Often a single-page printed quick reference help guide is readily available on site to assist the user in performing basic tasks. For example, WEN provides Quick Reference Guides affixed to every system to assist users in basic operating procedures.

In the end user surveys, 64% (85 out of 133) of respondents stated they have quick reference guides or similar materials available to them.

- Local “Tech”

A step above the quick reference help guide in user support comes from a local technician familiar with system operation of the videoconferencing system. This is a local person readily available to assist in the basic operations described above. The local technician is typically not on site solely to assist with videoconferencing, but will have other duties and only assumes the role of videoconferencing facilitator when called upon to do so. Interviews with OVN indicate that the network is supported through part-time staff.

In the end user surveys, a full 80% (107 out of 133) of participants responded that a local technician is available to assist with videoconferencing. Of the 20% that had no such assistance available, 88% (23 out of 26) of those responded that they would use videoconferencing more frequently if local help were made available.

- Help Desk

The highest tier in training and support available to end users is a call-in help desk. This is a manned hot line that users can call any time during operating hours and talk to a live person to get instructions on how to operate or troubleshoot the video conferencing systems. This is usually a full-time position staffed by highly skilled, trained professional technicians. These technicians are typically adept at remotely trouble shooting data networks and telephony in addition to the video conferencing endpoints, since problems addressed here tend to be more complex than in the first two tiers. Simpler problems are usually averted or solved via the first two mechanisms previously described. The help desk is usually the last stop in an end user assistance scheme. If a problem exists that cannot be solved over the phone with help desk personnel, a repair technician is usually sent out to fix the problem.

In the end user surveys, 99 out of 123 or 80% of respondents reported having access to a help desk.

## 8.2.9 Funding Needs

- Funding Models

It appears that there are two primary mechanisms for funding videoconferencing and related networking costs in the state. Section 1 funding is typically based on appropriations from the State’s General Fund (budgeted items). Section 2 funding is revenue based (i.e., soft money) and can be obtained through grant mechanisms or charge-back cost recovery. Both of these models usually are focused on one-time non-recurring costs such as equipment, installation, software, circuits, initial support and positions. Ongoing recurring costs such as maintenance, software upgrades or support personnel are often not included in either approach and are typically left to individual groups to fund.

- Centralized funding

The lack of centralized funding was identified as a significant issue by many of those we interviewed. This was most strongly identified for the WVCS, where individual departments are able to procure their own video conferencing devices and network bandwidth. It was reported to us that inadequate network bandwidth was often provisioned based on individual agency decisions, leading to poor quality conferences. In addition, the cost recovery funding of ITD services may have a negative impact to the overall quality of support for the WVCS. The separation of OVN from the WCVS resulted in a significant revenue decline to ITD and its ability to support the remaining clients.

- Operating Cost (Opex) Funding

In general, at the highest level (OVN, WEN, WVCS), operating funding appears to be at least partially addressed. However, many agencies and other groups appear to have a hit and miss approach for video conferencing and related networking costs seems to be common. We were not able to find any department that we interviewed that had a formal plan for obtaining funding for equipment refresh, maintenance, support staff or vendor support. ITD stated that costs to replace videoconferencing equipment are included in cost recovery charges.

Consistent with best practices, a clear business need exists to fund operating costs on a more formal basis.

- Purchasing standards

It does not appear that a formal statewide purchasing standard is in place. Instead, each major video conferencing entity (WVCS, WEN, OVN) sets its own standards for procuring networking and video conferencing equipment. Sometimes an informal word-of-mouth approach is used at many agencies and groups when an upcoming procurement is approaching; this may result in the State not receiving the best possible price that might be available through the Western States Contracting Alliance (WSCA) or other negotiated contracts. There do not appear to be any common purchasing standards among the

entities, although individual processes within each of the organizations exist. Consistent with the Governor’s message, a clear business need exists to pool purchasing power together for as many of the videoconferencing entities around the state as possible.

## **9 GAP ANALYSIS**

The Task Force engaged PlanNet to assist in the assessment of the existing videoconferencing network infrastructure and the accompanying hardware systems related to videoconferencing, and to make recommendations for a unified videoconferencing solution that would meet the needs of the various stakeholders. PlanNet has also been tasked with analyzing current and future end user requirements to ensure statewide collaboration of all agencies is as seamless and transparent as possible in the future, where deemed appropriate by the Task Force. For the gap analysis, PlanNet performed the following tasks:

- First, we collected the current videoconferencing business requirements and inventories and presented these findings in a Business Requirements and Inventory Report.
- Second, we compared the current videoconferencing environment to the desired state and created recommendations for technology improvements.
- Third, in a parallel effort with the above videoconferencing gap analysis, we performed an analysis of the existing governance models utilized throughout the State and created recommendations for future governance methods.
- Finally, we consolidated all findings from the previous sections into this report.

This Video conferencing Gap Analysis is an examination of the data collected via surveys, forms and in-person interviews. In order to view the data in a meaningful and relevant manner, we have created use case profiles or Platform Solutions to help classify the data by attributes or requirements. We determined each group’s current business requirements developed in the Business Requirements and Inventory Report and define specific recommendations to ensure these requirements are met both today and in the future.

We found many of our recommendations for the project are applicable to all groups. These recommendations are captured below.

### **9.1 GLOBAL VIDEOCONFERENCING FINDINGS**

Please note that the global view may first appear to contain generalizations. This is intentional since under the auspices of this project, PlanNet’s scope is to consider the big picture, recognize trends as a whole, and make recommendations for the greater good of all State of Wyoming videoconferencing participants. Whereas certain generalizations are more applicable for some and less for other organizations, detailed profiles for each use case are provided with specifics relative to stakeholder organizations. Therefore, these initial general statements that overarch specific findings and recommendations for each profile are an introduction to the pervasive issues surrounding videoconferencing in the State of Wyoming.

Our global videoconferencing findings (those findings consistent for all stakeholders from a global view) include the following:

- Inconsistent standards of equipment feature sets
- Unreliable data collaboration capability (i.e., sharing of computer-generated content over videoconference)
- Inadequate controls to support ease of use
- Insufficient training of end users to ensure ease of use
- Issues with equipment that is no longer supported by the manufacturer
- Cumbersome resource scheduling and inconvenient dialing plan
- Limited interoperability between video networks
- Incomplete end to end videoconferencing system management, monitoring, diagnostics, and reporting

The above list of our global videoconferencing findings are consistent with the objectives for the project stated by the Governor’s Task Force in the RFP for this project. Objectives relevant to the above list and to global videoconferencing recommendations are as follows:

- Seamless interoperability between all State of Wyoming businesses, agencies, and institutions, and the globe.
- Support for converged IP based, providing a resilient, and robust voice, video, and data network.
- Easy, web-based scheduling.
- Ease of use for both “call in” and “call out” capability.
- Growth capacity for 100s to 1000s of simultaneous face-to-face users.
- Flexibility to scale and adjust to future uses beyond current uses by a new generation of workers.

## **9.2 GLOBAL VIDEOCONFERENCING RECOMMENDATIONS**

Our recommendations address global requirements contributing to the “big picture” of a statewide solution as set forth by the Governor’s Task Force. Recommendations in this section are applicable to all stakeholders and are detailed below in context with the project engagement objectives. We have also included a tabular view of the business needs, immediate recommendations, and future recommendations by system attribute for further details of our recommendations.

**Seamless interoperability and reliability** requires a rework and restructuring of videoconferencing infrastructure. Our findings indicate that all Task Force stakeholder organizations have departed from ISDN-based videoconferencing infrastructure and have been individually innovative with creating an IP-based videoconferencing infrastructure to suit their own individual needs. (Refer to Global Network Findings and Recommendations.) Each stakeholder organization has invested a great deal of time, money, artistry, and innovation in optimizing videoconferencing for their use;

however, to achieve seamless interoperability, certain consistent infrastructure elements need to be put into place.

Our recommendations include deployment of a unified, reliable, and flexible video conferencing infrastructure platform to facilitate seamless interoperability. Video conferencing infrastructure includes equipment components at the network core that can be shared yet individually accessed and allocated for different types of videoconferencing business requirements. These shared components include the following:

- Multipoint Conference Unit (MCU) - the “heart” of the recommended videoconferencing platform solution (See Glossary).
- Video Gateways, Gatekeepers, Border Controllers, and Auto Attendants – the videoconferencing communication routers and controllers that facilitate video communications over IP-based networks in the recommended videoconferencing platform solution. (See Glossary)
- Video Management Servers and Associated Software – the essential videoconferencing service components that facilitate scheduling, monitor performance, and manage videoconferencing assets through associated software.
- Content and Streaming Servers – the assets which enable recording, storage, and replay of videoconferencing related media.

Our recommendation is to purchase and deploy one consistent videoconferencing infrastructure platform that will include all of the above core video conferencing components. Existing video conferencing infrastructure components would provide additional connections as well as redundant backup support. Findings and recommendations surrounding funding and governing this videoconferencing infrastructure platform appear in section 10 Governance.

**Support for resilient, reliable, and robust voice, video, and data** requires an upgrade of the current multiple MCUs to a carrier-class model MCU. This new device would be configured and scaled to the needs of each organization. The recommended investment would include the latest, best-value technology. This technology enables each endpoint in a call to maintain the highest possible video and audio quality independent of other connections on the call. Other technologies would require additional ports to achieve the same result.

Since an MCU of this nature is a considerable and strategic investment for video conferencing stakeholders throughout the state, we recommend this investment be shared and managed through the governance model. Each organization would be assigned a base quantity of ports which the individual organization would control, monitor, and manage, with some ports held in reserve to be apportioned by the governance plan.

**Easy, web-based scheduling and management** demands a user-friendly interface that integrates with existing electronic calendar tools for convenient, real-time, prioritized, scheduling of videoconferences. The recommended infrastructure includes a central management system with licenses for each endpoint. This would allow each asset’s status to be monitored and scheduled.

Although each organization would manage its own set of endpoints and scheduling priorities through the governance model, all endpoints would be registered with the single management system to enable easy and convenient scheduling and asset management.

**Ease of use for both “call in” and “call out” capability** first and foremost requires a simple and organized dialing plan. As no ITU or similar global dialing plans are predominant for video systems, each major videoconferencing manufacturer has established unique definitions of “ease-of-use.” The recommended videoconferencing dialing solution is based on email-style addresses, is the most widely deployed solution worldwide, and also supports E.164. E.164 (ENUM, E.164 **NUmber Mapping**) is a telephony standard that maps telephone numbers to IP addresses.

**Growth capacity for 100s to 1000s of simultaneous face-to-face users** requires significant expansion capabilities. As currently identified, 351 room-based videoconferencing endpoints exist in the state, each of which is owned by one of the interviewed stakeholder organizations. The recommended MCU, which is the “heart” of the platform solution, is scalable and provides capabilities for both Standard Definition (SD) and High Definition (HD) for simultaneous multipoint video conferencing connections. As more stakeholders, including private and public businesses, learn of the state’s communications infrastructure and demand increases, expansion to additional ports on the MCU can be allocated. For special large events, an outside service provider can temporarily provide additional capacity.

**Flexibility to scale and adjust for future uses** mandates modularity, scalability, and compatibility with current and emerging standards and communication protocols. The recommended solution is designed for expansion and adjustment as needs change. The heart of the recommended solution, the MCU, is a chassis based appliance with blade servers, each of which can be upgraded, replaced, or adjusted as visual communication needs vary over time. The recommended solution is compliant with International Telecommunications Union (ITU) and Internet Engineering Task Force (IETF) standards, which are compatible with all types of videoconferencing endpoints, including group and executive systems, PC-based desktop collaboration tools, and Unified Communications protocols. Should the need arise for fully immersive, life-size telepresence; the recommended initial platform is scalable via upgrades to address the increasing demands. The platform solution is adjustable to meet the needs of a new generation of telecommuting workers and distance education learners. This new generation of workers and learners will continue to leverage the video conferencing investment by improving productivity through superior visual communications and reduced travel costs. It is PlanNet’s professional opinion that these efforts will enhance the future economic climate in Wyoming.

The recommendations are further analyzed by specific attribute in the tabular global gap analysis and recommendations found below.

Global VTC Platform				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>Codecs / Endpoints</b>				Total endpoints considered = 352
Feature Sets And Capabilities	Stakeholders requested consistency between rooms and organizations, high quality video/audio, and content sharing.	Determine standard equipment feature sets for each profile to take advantage of economies of scale purchasing and support costs.  Establish/Revise centralized purchasing agreements so all entities can acquire approved standardized equipment appropriate for each profile.	For profiles not already transitioning to HD-level video, consider upgrades.	Refer to each profile for recommended specifications of codec/endpoint feature sets.
Audio and Microphones	37% (49 out of 133) of those surveyed indicated occasional issues with audio clarity. Microphones are required to be appropriate for the room layout, system usage and number of users.	For stadium or large rooms with seating of more than 50 seats, microphones should not be less than 1 for every 2 seats.  For round table or conference room style seating the number of microphones should not be less than 1 for every 8 seats if omnidirectional or 1 for every 2 seats if directional.	Consider digital quality microphones compatible with the endpoint manufacturer.	
Cameras	Users mentioned cameras are placed too far away in many cases. This could also indicate displays are too small. (See "Displays" section.)	Participants should sit as close to one another as possible/comfortable.  Use the camera's zoom feature to frame all speaking participants as tightly as possible.	As HD becomes utilized, ensure the cameras are HD resolution to match the capabilities of the endpoint.	
Content Sharing (ITU standard H.239)	Sharing of PC presentations is now a universal requirement. WEN just recently upgraded all endpoints and features to enable H.239 content.	PC/Laptop connections should be easy to access.  Sharing of content should begin automatically when a computer is connected.  Endpoints must be H.239 compliant.	Upgrade all systems to be H.239 compliant.	Non-compliant endpoints should be limited to End of Life (EoL) products. See Obsolete Equipment section below.
Display Systems	A significant number of displays/projection systems observed are too small for the rooms in which they reside. Survey data indicates small image sizes are a deterrent to system use.	Establish standard minimum display/projection system sizes for all rooms based on the depth of the room. For video, image height (in inches) should be no more than the distance to the furthest participant (in inches) divided by 8. For displays/projection systems used to show computer graphics (content sharing/H.239), the maximum ratio should be no more than 6. For rooms where high resolution presentations are frequently required a maximum ratio of 4 is appropriate.  Replace displays/projection systems in any room that exceed these values by more than 30% or where image size has been pointed out as a detractor to videoconferencing use.	Replace displays/projection systems in any room that exceed these values by more than 15%.	Linkage between image size, bandwidth capabilities, and call speed should be utilized in determining appropriate upgrade measures.

Global VTC Platform				
System Controls				
Ease of Use	Stakeholders require simple, standardized (as much as possible) controls.	<p>Standardize to a few endpoint model numbers with consistent controls available for all organizations under common purchasing agreements. Purchases of non-approved models should be declined.</p> <p>Create a standard set of controls using a custom remote for control. This device can be pre-programmed to perform all functions in a simple, intuitive way for the users. This same interface can control all approved hardware platforms regardless of manufacturer and still present the same interface to the users. Note: Cost of adding this universal remote is approximately \$410 per endpoint.</p> <p>Use of multiple endpoint manufacturers does not need to be eliminated. Approved models must comply with industry standards.</p> <p>Establish system design standards for all organizations.</p>	Revise purchasing agreements as needed for changing business needs and as new features become available.	<p>Users need to be trained to use system controls. Several modalities of training need to be delivered. They are:</p> <ul style="list-style-type: none"> <li>- Demonstration</li> <li>- Replay of demonstration</li> <li>- Quick reference guides</li> <li>- Owners Manual Documentation</li> </ul>
Local / Ad-hoc Calls	Studies and best practices indicate that users require a uniform interface for operating the videoconferencing equipment.	Local controls (handheld remotes, touch panel layouts) should be standardized throughout all organizations.		
Remote Call Setup	Some users do not have sufficient working knowledge to troubleshoot common issues surrounding a point to point videoconference call.	For troubleshooting and remote assistance purposes, remote technicians should have access to endpoint web interfaces statewide.		Also see Training.
Scheduled Calls	Some users do not have sufficient working knowledge to troubleshoot common issues surrounding a multipoint videoconference call.	<p>Scheduled calls through an infrastructure MCU: Videoconference should be "on line" by the scheduled meeting time without user intervention.</p> <p>End user controls should be limited to system power functions as needed.</p>		Scheduled calls are already done manually within some organizations.

Global VTC Platform				
<p style="text-align: center;">Obsolete Equipment</p>	<p>A few organizations are using equipment beyond End of Life (EoL)</p>	<ul style="list-style-type: none"> <li>• Videoconferencing equipment should not continue to be used beyond the End of Support date provided by the manufacturer. End of Support (EoS) equipment standards for Polycom are five years and for Tandberg are four years after last sale with exceptions. Equipment should not be permitted to reach EoS as any service issues will not be supported by the manufacturer beyond this date. Begin phased replacement of current EoL systems immediately.</li> <li>• Each manufacturer typically continues product support for one to two years following the announcement that the model is discontinued from manufacturing. It is at this time when an End Of Life (EoL) announcement is made and when stakeholders should plan to replace the model prior to the EoS date.</li> <li>• Immediate videoconferencing system costs include the replacement of all endpoints that are listed by the manufacturer as reaching EoS by the end of 2010.</li> </ul>	<p>PlanNet recommends the phased replacement of all EoL equipment prior to the actual end of support date.</p> <p>Establish refresh plan to replace equipment every 6-7 years or as EoL is reached.</p> <p>See governance report for equipment refresh recommendations.</p> <ul style="list-style-type: none"> <li>• Future videoconferencing equipment refresh costs are based on replacement of 100% of the endpoint inventory in a 6-7 year cycle.</li> </ul>	<p>Gap analysis indicates the following statistics for products that have reached end of life, or will no longer be supported by the manufacturer by the end of 2010.</p> <p>OVN: 10% (5 of 49)  Sheridan College: 58% (7 of 12)  WWCC: 92% (11 of 12)  CWC: 0% (0 of 10)  WEN: 0% (0 of 115)  WyDOT: 0% (0 of 9)  WVCS: 32% (32 of 101)  TeleHealth: 0% (0 of 18)  UW Pharmacy 100% (16 of 16)  UW Health Sci. ?% (1+ of 9) Incomplete data.</p> <p>Total EOL = 21% (72 of 351)</p>
<p style="text-align: center;">Scheduling (Point to Point calls or multipoint calls connected through a single endpoint.)</p>	<p>Endpoint/room scheduling is done person to person via phone or email.</p> <p>Requirement is for greater automation (less manpower, fewer steps, less time) and more centralization.</p>	<p>Deploy and utilize infrastructure scheduling tools consistently such as Tandberg TMS with Microsoft Exchange, Novell GroupWise integration.</p>	<ul style="list-style-type: none"> <li>• Future videoconferencing equipment refresh costs are based on replacement of 100% of the endpoint inventory in a six to seven year cycle.</li> </ul>	
<p style="text-align: center;">Endpoint Change Management</p>	<p>Studies indicate that out-of-date endpoint software / firmware is causing interoperability issues throughout the State of Wyoming's videoconference system.</p>	<p>Synchronize upgrades within &amp; between organizations to ensure compatibility and best value. Refer to Governance recommendations.</p> <p>Conduct proper testing prior to deployment.</p> <p>Unify policies for software/hardware upgrades to minimize conflicts between versions.</p> <p>Maintain a central testing lab comprised of typical hardware and software.</p> <p>Centralize testing of endpoints to minimize duplication of effort. Establish endpoint standard testing criteria suitable for all organizations.</p>		

Global VTC Platform				
Training (End User)	Some end users have not received sufficient training.  ~30% of end users consider themselves novice users.  ~75% of end users have only received informal training.	Develop standardized training procedures consistent for all organizations.  End user training must be compulsory for anyone scheduling or hosting videoconferences. (Even one-time users.)  Use e-learning tools and live/remote demonstrations.  Use Recording and Streaming capabilities (described below) to record and playback web-based training content.	Widely deploy and market training content throughout the State.	See also Ease of Use.
Training (Instructors)	Additional training for instructors is required to include the following: Curriculum development and content delivery over the videoconferencing medium	In addition to the standardized training requirements, instructors should receive focused training to highlight interactivity with far end participants.  Use Recording and Streaming capabilities (described below) to record web-based training content.	Widely deploy and market training content throughout the State.	
Training (Technical Support)	Stakeholders asked for improved Technical Support / Remote Support capabilities.	Technical Support Staff (including help desk) should be familiar with endpoints beyond the models directly supported by their organization.	Technician visits for call setup should be eliminated. If call setup is too complex for users: 1) Simplify the equipment 2) Increase training efforts. 3) Improve remote support capabilities.	See Governance Report for recommendations.
Room Attributes / Limitations	General inconsistencies between rooms have been expressed.	Develop room attribute standards for various room types. Enforce standards for any new construction or updates.		For WEN locations, challenges include access and control over local school property.  For existing WVCS locations (at Department of Workforce Services offices), challenges include access and control over local property.
Room Access	Organizations have significantly different operating hours, "bell schedules", etc. Access to shared facilities is a consistent issue across the state - particularly in remote areas.	The State of Wyoming should consider developing a "high priority" list of locations where shared access to videoconference facilities has been problematic.	The State of Wyoming should consider developing a long term vision where shared access to videoconference facilities should be expanded. Develop videoconference specific rooms in "publicly accessible" locations such as libraries, community rooms, and municipal locations.	
Acoustics, HVAC Noise	Background noise is a problem in some videoconference locations. Examples reported in interviews and surveys include OVN sites at high schools and Community Colleges.	Identify videoconference sites with background noise problems and decide how to mitigate issues - current examples of mitigation techniques which could be deployed for problematic sites include: implementing push to talk microphone systems and scheduling rooms during times when background noises will not occur.	Develop and publish videoconference room design and construction standards to include acoustic criteria. General design and construction standards surrounding acoustics and HVAC should include a Noise Criteria target of (NC)25 for high-end videoconference rooms to (NC)30 for mid to low-end videoconference rooms.	See also Audio / Microphones.

Global VTC Platform				
Background Wall Treatments	Background wall treatments are a problem in some videoconference locations. Examples reported include WVCS shared spaces with Workforce Services. For example, backgrounds tend to be dark and busy with furniture.	Identify videoconference sites with background / wall treatment issues. Address situations where camera is capturing inappropriate backgrounds (such as cubicles, etc...).	Develop and publish videoconference room design and construction standards to include background wall treatment specifications. Wall colors should be neutral solid colors with mid-range light reflectance values such as light grays and light blues. Address required acoustic treatment where reverberation is reported to be a problem. Target reverberation time (RT) should be less than .8 seconds.	
Lighting	Lighting is a problem in some videoconference locations. Examples reported include a WEN site where the background room environment and the instructor appear excessively yellow.	Install 45 deg. videoconferencing lighting fixtures. Lighting temperature should be 50 foot-candles @ 3500 deg Kelvin.  Lighting should minimize facial shadows.	Develop and publish videoconference room design and construction standards to include lighting standards indicated in immediate recommendations. Future recommendations are to design and construct videoconference rooms with adequate lighting.	
Furniture Layout	Furniture layout is a problem in some videoconference locations. Examples reported include the Legislature room LSO302.	Where possible, offset or staggered seating arrangements will maximize sight lines for near and far end participants.	Develop and publish videoconference room design and construction standards to include furniture layouts appropriate for viewing by cameras. New rooms designed for videoconferencing meetings for more than 50 participants should be built with stadium seating and should be planned for multiple camera systems to adequately capture participants.	
Room Equipment	User surveys indicated several videoconference rooms without in-room telephones.	Separate telephones (desktop/wall) are needed for technician and end user support in all videoconference rooms. Phone numbers for remote and local technical support resources must be available within the room. Consider deploying VOIP phones with new videoconference equipment installations.	Develop and publish videoconference room design and construction standards to include equipment standards indicated in immediate recommendations.	OVN has deployed VOIP phones for many videoconference endpoints. This is an excellent idea that should be implemented throughout the state, provided availability of a VOIP system, network connectivity and prioritization of real-time voice and video traffic is addressed.
Directory Services and VTC Infrastructure	Organizations expressed the need for a universal video dialing plan.	The direction of the State should be to align the videoconferencing infrastructure equipment with other statewide directory services.	SIP is the current protocol which links unified communications features and allows integration and interoperability among various collaborative communications applications. As video moves toward the desktop, the State should consider incorporating equipment with SIP integration capabilities.	
Directory Access, Updates, Unification	Survey respondents expressed the desire for a universal dial plan that included all statewide video participants.	Deploy unified video communications platform on all endpoints. Endpoint registration should be mandatory.  Multiple address books should be used to subdivide endpoint groups. This is accomplished through endpoint registration with multiple Directory Servers or by implementing a master Directory Server with multiple address books.		

Global VTC Platform				
VTC Infrastructure Change Management	Studies indicate the requirement to establish uniform processes involving updates to videoconference and infrastructure equipment.	<p>Synchronize upgrades within &amp; between organizations. Conduct proper testing prior to deployment. Employ unification of policies for software/hardware upgrades to minimize conflicts between versions.</p> <p>Share change status and testing results centrally so endpoints can be recertified as necessary.</p> <p>Establish standard testing criteria. Maintain a testing lab of typical hardware / software.</p>		
Recording and Streaming	All organizations have needs for recording and streaming. These may vary depending on use case as defined in the individual profiles.	<p>Videoconferences, including content can be recorded directly to network devices provided by both major system manufacturers. Third-party solutions are also available. The recording devices are treated as another endpoint on an MCU.</p> <p>Device options include Video on Demand (VOD) and live streaming for participants that can't connect in other ways.</p> <p>Record training sessions and make available on-demand.</p>		
MCU	Interview feedback and MCU reporting data (where available) indicated needs for specified MCU capabilities. Interviews dicte issues surrounding interoperability of the OVN Cisco / RadVision MCU with other systems deployed throughout the state. OVN is already in the process of investigating replacement. See Higher Ed Profile.	<p>The State should attempt to align the infrastructure equipment with one manufacturer. (Note: this is for infrastructure only. Endpoints should be manufacturer agnostic. This will increase competitive pricing and support trends.</p> <p>The least expensive solution would be to use Tandberg infrastructure equipment due to existing inventory.</p>	Migration to one consistent videoconference infrastructure platform / manufacturer is a significant investment and will involve a phased deployment approach.	Whereas videoconference endpoints do not all need to be manufacturer specific, issues with interoperability between systems and protocols across different video networks are exacerbated when multiple video network infrastructure platforms are involved. This can be mitigated by the adoption of a standard remote control programmed to control any endpoint while providing the users to consistent user interfaces no matter what manufactured equipment is used.
MCU Feature Sets and Capabilities	<p>Support ITU compliant standards including H.264, H.323, H.235, H.239, H.460</p> <p>Migration to SIP for integration of desktop collaboration and directory ease of use was requested.</p>	<p>Replace OVN Cisco MCU with an MCU that is reliable, has sufficient capacity, and is more easily made interoperable with systems already in use within the State of Wyoming. Recommendation of specification is: Tandberg MSE8000 or equal.</p> <p>Consider Repurposing both Tandberg MPS800's currently owned by WDE WEN and A&amp;I ITD WVCS for redundancy or for use by Community Colleges.</p> <p>Refer to Governance report for recommendations.</p>	Plan and implement the migration of video communications to SIP (Session Initiation Protocol) as Unified Communications becomes more pervasive throughout the State.	Any new MCU videoconference infrastructure equipment deployed in the state must be designed for mission-critical and fault-tolerant applications. The MCUs should transcode multiple call speeds without reducing the available port count to best leverage the investment.
Call Management	Many organizations lack detailed call reporting capabilities.	Implement call reporting standards throughout all organizations using a standard reporting platform compatible with existing MCUs.		

Global VTC Platform				
Interoperability	Stakeholders stated that existing MCUs have limited cascade capabilities.  Cross-agency interoperability is a challenge due to firewall restrictions and policies. (See Firewalls in Global Network profile.	Implement improved equipment interoperability through standardized products and procedures. Include provisions for H.323, H.239 and refer to the Global Network Profile regarding H.235 and H.460 implementation standards.		See MCU recommendations.
Redundancy	Studies of existing inventory indicate that existing MCU redundancy is minimal.	Small-scale multipoint calls can be made from MCU capable endpoints, to the limit of available bandwidth.	As video becomes increasingly mission critical to the State of Wyoming, redundancy features of the MCUs should be considered and should meet requirements with available hot-swappable cards/components.  Additional redundancy could be achieved with two MCUs. One for WEN & WVCS and one for OVN. If necessary calls from one system can be handled by the other in the event of a failure.	
Scheduling	MCU scheduling is done via phone, email and setup request forms. Users require greater automation (less manpower, fewer steps, less time) and more centralization.	Network management / scheduling tools should be implemented. See Endpoint Scheduling recommendations.		
Utilization Reporting	Increased and consistent reporting capabilities are needed. Technical users could not provide summarized reports of utilization statistics regarding number of ports used.	Detailed reporting tools are available from all of the major MCU manufacturers.		

Refer to each VTC Profile for cost estimates associated with recommendations.

### 9.3 GLOBAL NETWORK PROFILE FINDINGS AND RECOMMENDATIONS

During the course of the project, some consistent themes developed as they relate to networking support of videoconferencing. These included both technical as well as policy related issues:

- Firewall traversal
- Bandwidth availability, provisioning, and quality of service
- Equipment refresh

**The Firewall traversal** issue was one noted by almost every group that we interviewed. Various organizations in the state, including government and education entities, have set up firewalls as a best practices network security mechanism. This helps protect the networks from malicious activity, but has a byproduct of hampering desirable activity between networks such as video conferencing. Our findings show a high level of user frustration in successfully completing ad hoc calls or scheduling short-term conferences where the firewall issues have not been previously addressed.

Solving this challenge involves both the technical and governance disciplines. The technical area is addressed in the table below and our recommendation is to adopt the standard H.460 protocol. In addition, the governance section of this report recommends a specific operating function dedicated to inter-domain security.

**Bandwidth** issues were also a significant source of user unhappiness. There are three primary sub-areas that are represented in our findings. The first is that adequate bandwidth to support video conferencing is often not available in many parts of the state or, if it is available, the cost is prohibitive. Qwest dominates the Wyoming telecommunications market, but offers advanced services in only a few areas such as Cheyenne and Laramie. Smaller carriers serve other parts of the state and provide limited services. The second area of concern is that even when services are available, they are often cost prohibitive. The third bandwidth issue is the lack of carrier-based quality of service (QoS) guarantees. These QoS guarantees are required to ensure end-to-end delivery for video and voice services over Internet Protocol (IP).

We believe the future landscape will change due to President Obama’s rural broadband stimulus initiative. In the short term we have recommended that the State provide or subsidize the cost of adequate telecommunications services.

**Equipment Refresh** involves the planned replacement of critical network infrastructure. The many video conferencing networks are built on top of this infrastructure foundation. Our findings indicate that no formal plans exist in most Wyoming organizations to provide for a systematic technology replacement (refresh). Our findings show that 32 routers currently in use are no longer supported by the manufacturer. While they may be providing adequate services today, software issues, security vulnerabilities, and hardware replacement parts will be either unavailable or increasingly difficult to obtain. An additional 15 routers have received end-of-life notices from the manufacturer with support being withdrawn in the next two to three years.

Global Network Profile				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
IP Based Video Communications (H.323)	Wyoming has already standardized on H.323 and still provides support limited for H.320 (Non-State Entities)	Continue to support H.323 and begin support for SIP and desktop communication platforms.	Implement support for SIP	See following sections for related protocol standards
Firewall Traversal & Network Address Translation (NAT) Support <IP Comm. Standard H.460>	Compile all existing configurations of H.460. MCU stakeholders indicated current status of implementation was unknown.	Standardize on single common implementation of H.460 or a proxy device as much as possible.  Each vendor's implementation of this protocol will be different and each should be tested prior to deployment.	All future purchases of video network infrastructure equipment should adhere to the implemented standard.	This protocol provides a secure means to traverse enterprise firewalls and Internet security systems. Our research has indicated that several incompatible implementations currently exist in the State.  Equipment may have to be replaced provided or upgraded to meet this requirement.
Content Encryption (Voice, Video, Data) <H.235>	Specific state government agencies indicated the need to encrypt conferences to meet State and Federal Regulations. Examples include: Homeland Security and Office of Employment	Implement homogeneous encryption software in codec and bridges where required.	All future purchases of video network infrastructure equip. must adhere to the implemented standard where required.	This protocol provides three features: 1) Secure authentication to a central log-on server using encrypted passwords. 2) The ability to place and receive calls based upon per user policies established by system administrators 3) Encrypted data between video end points.
Bandwidth Profiles	See specific sections below for bandwidth recommendations for each use case profile.		Implement the following: 1) HD Video 1Mbps Bidirectional 2) Support for SIP  Refer to Metro Ethernet & MPLS for connectivity options.	Users have expressed concerns regarding available Bandwidth. Some funding models account for the number of students & video units but do not consider the increase in bandwidth required by data usage. (Web based content)  Please refer to the VTC Profiles for video bandwidth recommendations.
Distance Education Higher Ed	512 Kbps bi-directional	Implement either dedicated T1s, MPLS or Metro-Ethernet if available/cost-effective	Migrate to advanced services such as MPLS or Metro Ethernet as they become available to support HD video.	
Distance Education - K-12	384 Kbps bi-directional	Implement QoS configurations at sites where it was omitted.	Migrate to advanced services such as MPLS or Metro Ethernet as they become available and cost effective to support HD video.	While compiling the data for the WAN Inventory it was discovered that QoS configurations were omitted at select locations. These omissions will be rectified during the summer of FY09.
Corporate / Government Meetings	384 Kbps bi-directional		Migrate to advanced services such as MPLS or Metro Ethernet as they become available and cost effective to support HD video.	
Corporate / Government Training	512 Kbps bi-directional	Implement either dedicated T1s, MPLS or Metro-Ethernet if available	Migrate to advanced services such as MPLS or Metro Ethernet as they become available and cost effective to support HD video.	
TeleHealth Remote Medicine (HD)	1 Mbps bi-directional	Implement either dedicated T1s, MPLS or Metro-Ethernet if available	Migrate to advanced services such as MPLS or Metro Ethernet as they become available and cost effective to support HD video.	
TeleHealth Training (HD)	1 Mbps bi-directional	Implement either dedicated T1s or Metro-Ethernet if available	Migrate to advanced services such as MPLS or Metro Ethernet as they become available and cost effective to support HD video.	
Desktop Collaboration	384 Kbps bi-directional		Migrate to advanced services such as MPLS or Metro Ethernet as they become available and cost effective to support HD video.	
Network Topology				All video networks should be able to purchase connectivity via a master purchase agreement.  See Governance Report for recommendations.  Backbone technology and bandwidth requirements will ultimately be determined by the revised network requirements.

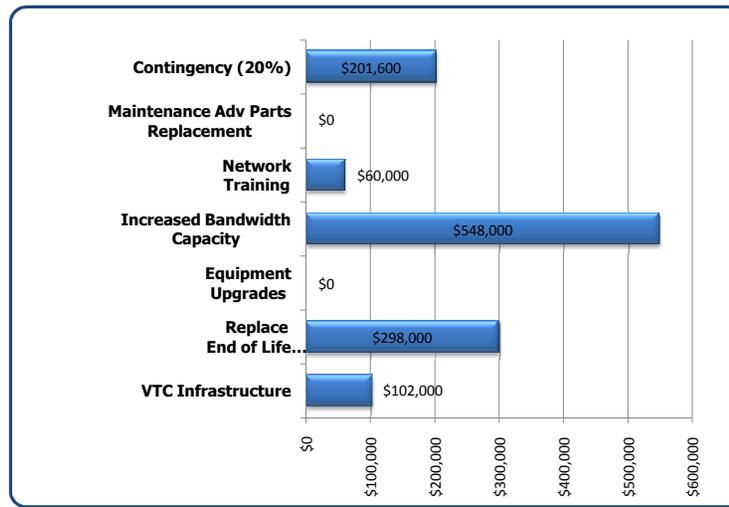
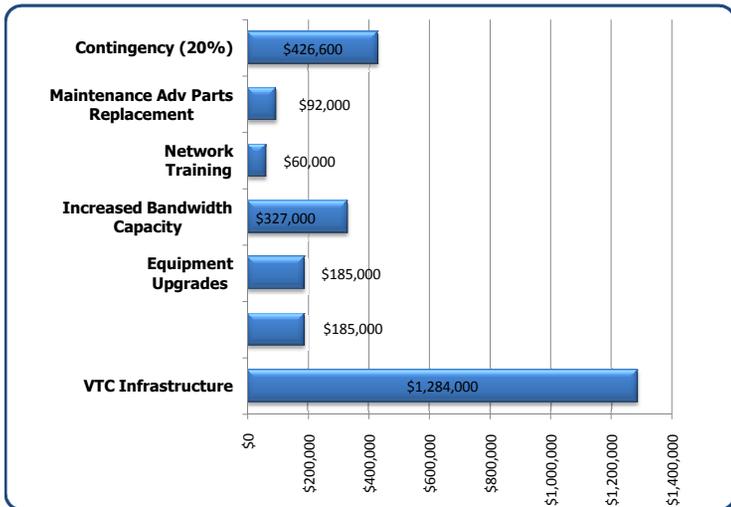
Global Network Profile		Business Requirements / Inventory			Immediate Recommendations	Future Recommendations	Comments
DSL (Digital Subscriber Line)	Currently deployed as a cost effective WAN access method (\$60 to \$100 per link/month)	<p>Although DSL will provide sufficient bandwidth for some video profiles it cannot guarantee the prioritization of video traffic.</p> <p>Additionally, it is asynchronous in many areas, meaning that the available transmit and receive bandwidths are not equal.</p> <p>Therefore it should not be considered a reliable medium.</p>	PlanNet recommends these DSL connections should be replaced by T1 service at a minimum.	<p>Locations that have deployed DSL have actually implemented two circuits, the first dedicated to video and the second to data. Since video is not continually used, the bandwidth is left unused. This represents a monthly cost of \$120 per month.</p> <p>For additional fees, DSL sites could implement a T1 which add the following:</p> <ol style="list-style-type: none"> <li>1) Allow video bandwidth to be used for data when a video conference is not taking place.</li> <li>2) Provides a significant increase in bandwidth.</li> <li>3) Supports the implementation of QoS.</li> </ol> <p>These items would be considered by a central governance body. Please refer to the Governance Report.</p>			
T1 Inverse Multiplexing for ATM (IMA)	Currently deployed (\$600 to \$2,500 per link/month).	This is an option for some locations when the aggregated bandwidth for data, video and potentially voice is greater than a single T1.		The Local Loop of a T1 is the portion of the circuit between the customer's premise and the local telephone company's nearest Central Office. Qwest currently charges \$200 for the Local Loop of each T1 per month. The fees in areas not serviced by Qwest range from \$1,100 to \$2,500 for each T1 per month. There are additional charges that are determined by the distance between the two ends of the T1. These charges vary by carrier and distance covered.			
Metro-Ethernet	Currently deployed in Cheyenne and Laramie.	This is an option for some locations when the aggregated bandwidth for data, video and potentially voice is greater than a single T1.		<p>This is a viable alternative to MPLS.</p> <p>Pricing is pending the Qwest report.</p>			
Multiprotocol Label Switching (MPLS)	Utilized when there are high bandwidth and Service Level Agreement (SLA) requirements.	The State of Wyoming should continue to encourage network infrastructure and services improvements. MPLS is a networking best practice for optimum videoconferencing performance. See long term recommendations.	This is the long term preferred method for connectivity. Qwest and other telecommunications providers throughout the state are expected to provide additional recommendations.	<p>Available in Cheyenne only.</p> <p>Can be used instead of Metro-Ethernet</p> <p>Qwest's estimated fees are \$650 per link/month.</p> <p>Non-Qwest service area fees range from \$1,000 to \$1,600 per link/month.</p> <p>Additional fees may be applied based upon required SLA.</p> <p>It is PlanNet's understanding that Qwest is currently developing a report outlining future high speed deployments and associated costs.</p>			

Global Network Profile		Business Requirements / Inventory			Immediate Recommendations	Future Recommendations	Comments
Quality of Service (QoS)		Quality of Service (QoS) is currently deployed sparingly or not at all throughout the State of Wyoming.	Complete the implementation of QoS statewide.  Establish state wide standards for video and audio quality over IP based communications.  These include: 1) Latency < 150 milliseconds 2) Packet Loss < 0.5% 3) Jitter < 50 milliseconds 4) Prioritize video traffic over all other types.	All future purchases of video network infrastructure equip. must adhere to the implemented standard.	As a part of Statewide standardization the following Best Practices should be implemented:  1) An additional overhead of 20% percent should be added to the required video bandwidth (384Kbps video call + 77Kbps overhead= 461Kbps required bandwidth) 2) The aggregate of all data, video and voice applications should not consumer more than 70% of the available bandwidth on any link. 3) Queing mechanisms must be implemented on the Local and Wide Area Networks to give video the highest priority. 4) A common classification method must be established throughout the state. This is also known as Quality of Service (QoS). Diffserv has already been implemented on selected networks.  Since the current environment does not support SLAs, delivery of the video streams across the WAN is strictly best effort.		
Service Level Agreement (SLA)		Implement SLAs that to adhere to the following parameters:  1) Latency < 150 milliseconds 2) Packet Loss < 0.5% 3) Jitter < 50 milliseconds 4) Prioritize video traffic over all other types.	As bandwidth demands increase, the WAN needs to support/maintain QoS established on the LANs.	Implement technologies such as MPLS with the ability to apply established LAN QoS parameters to WAN SLAs.  The State should negotiate purchasing agreement with the Service Providers that any State entity could use.  This agreement should establish contract pricing for bandwidth and SLAs.	SLAs allow a service provider to maintain QoS parameters set by a client across their networks.		
<b>Network Management</b>							
Monitoring		Interview respondents indicate the need to proactively monitor network performance addressing bandwidth requirements and network failures.	All networks must be managed up to the border router or firewall. Management into the local LANs should be determined on a case by case basis and is recommended.	Determine monitoring requirements dependent upon future network architectures.	The following network monitoring solutions are currently deployed:  A&I - EMC SMARTS CWC - Outsources to MAI Dept. Health - CiscoWorks, Nagios OVN - Orion NCM UW - Orion NCM WEN - Solar Winds & Contract w/Qwest WWCC - Solar Winds  Refer to VTC profiles for video management recommendations.		
Image Standards (Operating System) for Network Electronics		Industry Best Practices recommend the establishment of uniform network equipment operating systems.	Develop consensus among stakeholders regarding approved software releases.  Future releases should be tested in a non-production environment prior to deployment.  Refer to Governance Report for recommendations.	Establish an interoperability testing lab in order to check out equipment and its function and interoperability prior to real-time deployment on live networks.  Refer to Governance Report	As these networks become more heterogeneous, it will become increasingly important to establish these functional standards.		

Global Network Profile	Business Requirements / Inventory				Immediate Recommendations	Future Recommendations	Comments
Change Management	Best Practices dictate the need for a published maintenance/upgrade schedule and Knowledgebase.	Implement a centralized statewide schedule for maintenance and upgrades.		Review and update policies.			<p>Policies should be reviewed every 18 to 24 months.</p> <p>Software Images should be reviewed annually with the goal of completion by the end of the summer.</p> <p>Refer to VTC profiles for Change Management recommendations associated with VTC equipment.</p>
Cost Estimates							
Replace End of Life Equipment (EoL)	<p>Cisco will terminate support for selected EoL network hardware &amp; software.</p> <p>Should a router fail it will have to be completely replaced potentially increasing downtime.</p>	<p>End of Support Dates/Qty./Replacement Costs:</p> <p>FY2008 / 32 (2811s)/ \$185,000</p>		<p>End of Support Dates/Qty./Replacement Costs:</p> <p>FY2012 / 15 (3825s)/ \$298,000*</p>			<p>PlanNet recommends the phased replacement of all EoL equipment prior to the actual end of support date.</p> <p>Cisco has announced the EoL for 47 of 329 Cisco routers currently deployed. This cost estimate uses the Cisco 2811 &amp; 3825 as the replacement model and includes an estimated discount (35% of List \$) and professional services (15% of List \$) for installation.</p> <p>* Note: Complete costs for Future Recommendations are not available.</p>
Equipment Upgrades			\$185,000		*		<p>Cost estimate assumes an additional 10% of the routers, 32, will need to be upgraded in conjunction with the increased video conferencing requirements. This cost estimate uses a 2811 as the replacement model and includes an estimated discount (35% of List \$) and professional services (15% of List \$) for installation.</p> <p>* Note: Complete costs for Future Recommendations are not available.</p>
Increased Bandwidth Capacity			\$327,000		\$548,000		<p>Cost estimate assumes 10% of the sites will require an additional T1 to support video and data applications.</p> <p>Estimated cost is annual.</p> <p>Estimate assume 50% of the sites are within Qwest's franchised area.</p>
Training			\$60,000		\$60,000		<p>20 man weeks @ \$3,000 per week.</p> <p>Excludes travel &amp; per diem.</p>
Maintenance and Advance Parts Replacement			\$92,000		*		<p>This reflects the cost incurred for only the routers replaced or upgraded.</p> <p>53 Cisco 2811 @ \$1,000 annually 26 Cisco 3852 @ \$1,500 annually</p>

Global Network Profile		Business Requirements / Inventory			Immediate Recommendations	Future Recommendations	Comments
Videoconferencing Infrastructure				\$1,284,000	\$102,000	<p>Cost estimates for infrastructure items include training for technical staff.</p> <p>Cost estimates are based on the following VTC infrastructure upgrades:</p> <ul style="list-style-type: none"> <li>- Addition of a Carrier-class MCU to unify the State's video networks and eliminate current interoperability issues.</li> <li>- Upgrade of video network control to support integration of SIP devices as well as users that require communication between H.323 and SIP endpoints.</li> <li>- Addition of H.323 and SIP compliant firewall traversal devices.</li> <li>- Addition of a Content Server to existing inventory to provide additional recording and streaming capability.</li> <li>- Addition of TMS endpoint licenses to incorporate all endpoints under a single MCU scheduling and reporting resource.</li> </ul> <p>Separation of organizations can be maintained within individual organization folders.</p> <p>Future cost estimates include:</p> <ul style="list-style-type: none"> <li>- Licensing and support costs for the upgraded equipment described herein.</li> <li>- Infrastructure refresh cost assuming minor expansion of the upgraded equipment described herein, including additional HD videoconferencing capability.</li> </ul> <p>Estimated cost is annual.</p>	
Contingency (20%)				\$426,600	\$201,600		
<b>*Total Costs</b>				<b>\$2,560,000</b>	<b>\$1,210,000</b>		

\* Note: Complete costs for Future Recommendations are not available.



Our analysis of survey, interview, and communications data and the associated recommendations have been organized into a tabular format sorted by each business function profile – termed “Platform Solution” hereafter. The discussion of each solution is broken down into attributes as presented in the Global Findings and Recommendations section and shown in the first column of each table. The second column lists current business requirements and inventory. Recommendations for each attribute are made for immediate and future timeframes. The third column recommends items to be addressed immediately (0-3 years), and the fourth column lists long term suggestions (4 -7 years). The last column contains pertinent comments to help further explain the recommendations. The data discussed in this report is grouped into the following Platform Solutions:

- 1) Distance Education – Collegiate and Professional Learning
- 2) Distance Education – Grades K through 12
- 3) Corporate and Government Business Meetings and Communications
- 4) Corporate and Government Business Training
- 5) Tele-health – Remote Consultation
- 6) Tele-health – Professional Training
- 7) Desktop Video Communications / Web Collaboration

#### **9.4 DISTANCE EDUCATION – HIGHER EDUCATION**

In addition to the attributes contained in the global videoconferencing profile, the distance education and, more specifically, higher education stakeholders have a unique set of requirements that sets them apart from other groups.

Recommendations in this section are detailed below in context with the stated project goals and objectives. We have also included a tabular view of the business needs, immediate recommendations, and future recommendations by system attribute for further details of our recommendations. (See pages 62 to 67)

Higher education users include UW and the community colleges. All have requested high-quality video and audio simulating an in-person classroom environment whenever possible. In addition, the higher education business requirements must address the need for remote students to feel part of the classroom without hindrances of technology.

**The system should be capable of supporting IPv6 and High Definition protocols.** To provide this remote learning environment, the minimum video quality for Standard Definition (SD) video has a bandwidth of 512KB or greater. For future growth, High Definition video resolutions will greatly improve the remote learning experience. The bandwidth required for HD (720P) videoconferencing is 1Mb or greater.

In addition, to meet these immersive requirements, we recommend upgrading the hardware endpoints and physical room environments to optimize the learning experience over video conferencing. Student immersion and participation should be partially addressed by the use of

higher quality audio and video and larger displays for both video images and content. Classrooms that are specifically designed for videoconferencing should provide uncluttered, familiar visual backgrounds when being viewed remotely. Simple backgrounds without busy distractions will enable more concentrated attention on the lecture content. Lighting in these rooms should follow best practices and provide ample light to allow far-end participants to easily see the instructor’s face clearly.

The use of portable, cart-based systems should not be used to address rooms with more than 30 participants unless the cart interfaces with AV equipment installed in that room that properly addresses sightlines, appropriate display size, and audio requirements.

Implement desktop collaboration tools to bring presentations to the student's desktop (possibly eliminating the need for large high-resolution displays) and allow bi-directional communication using annotation, chat, quizzes, and Q&A.

**The system must be easy to use.** Higher education users indicated the need for remote students to feel part of the classroom without hindrances of technology. One of these reported hindrances was the difficulty of using the video conference equipment. Our research indicates that hindrances of technology often referred to ease-of-use issues involving students or instructors. Training of both students and instructors can partially address specific ease-of-use issues. Where the capabilities of the equipment are either insufficient or too sophisticated, adjustments must be made to simplify operation. With videoconferencing equipment, much of the equipment can be controlled remotely if access is set up. PlanNet recommends for the higher education profile that all controls be standardized across the platform. A custom, programmed remote control would standardize the use of any system no matter what endpoint manufacturer. A standard remote control with an intuitive, easy to use user interface would allow instructors and students to operate videoconferencing systems from any location without the need to relearn new systems in different locations.

The system should allow for ease of scheduling events, calendaring, and tracking of system usage, keeping in mind that some end users have special needs. PlanNet recommends that agreements between higher education organizations be formally created to share rooms when students need to attend a video conference on a campus or at another approved location. Policies are already in existence at each organization and dictate the needs of each organization. These policies should form the basis of the agreements between organizations. If agreements are not made between organizations, conflicts regarding access are only resolvable by the addition of endpoints. The creation of a universal schedule should be developed as depicted in the Governance section of this report. While individual campuses and programs would still retain their own control of their class schedules, more flexible uses of non-classroom availability should be made more accessible. Sharing of existing assets can offset new purchases and new systems whenever possible.

Wherever possible the use of desktop collaboration capabilities, including video to the desktop, can offset the need for conventional room systems.

**Resiliency, robustness, and stability are crucial in the final system design.** These goals are particularly important to all distance education stakeholders and even more so for higher education participants. These videoconferencing system users are paying tuitions and associated video conference-related costs as part of the classes they are taking. Higher education stakeholders indicated the need for redundancy to ensure that the classes would be uninhibited by technology failure. Back up processes for all equipment configurations and directories should be implemented immediately. Ideally, directories could be accessed in multiple locations in the event of a single component failure. All directories need to be synchronized with a master directory. The use of a master directory would also assist schedulers in determining alternate room availability immediately, should an event occur that would demand flexibility.

The recommendations are further analyzed by specific attribute in the tabular gap analysis and recommendations below.

Distance Education (Higher Ed.)				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>Codecs / Endpoints</b>				
Feature Sets and Capabilities	Higher Education users including the University of Wyoming (UW) and the Community Colleges all requested high-quality video and audio simulating an in-person classroom environment whenever possible. In addition, the Higher Ed business requirements must address the need for remote students to feel part of the classroom without hindrances of technology.	<p>Student immersion/participation should be partially addressed by the use of higher quality audio/video and/or larger displays for both video images and content.</p> <p>Higher quality audio/video should also be addressed via increased bandwidth for existing systems or upgraded systems capable of HD.</p> <p>The use of portable "cart-based" systems should not be used to address rooms with more than 30 participants unless the cart interfaces with AV equipment installed in that room that properly addresses sightlines, appropriate image size, and audio requirements.</p> <p>Implement desktop collaboration tools to bring presentations to the student's desktop (possibly eliminating the need for large high-resolution displays) and allow bi-directional communication using annotation, chat, quizzes and Q&amp;A.</p>		<p>Minimum: Standard Def @ 512KB or greater, H.239, 2Mb capable.</p> <p>Enhanced: HD (720p) @ 1Mb or greater, H.239, 2Mb capable.</p> <p>"Hindrances of Technology" also discussed under "Ease of use" topic.</p>
Audio and Microphones	Users indicated that remote participants could not always be clearly heard.	For stadium or classroom seating scenarios, the number of microphones should not be less than 1 for every 2 seats.		Refer to Global VTC profile for recommendations.
Cameras	Users indicated that remote participants could not always be clearly seen.	For stadium or classroom seating scenarios involving 50 or more seats, a minimum of 2 cameras is recommended per best practices (one of the instructor and the other for the audience).		
Displays	Higher Ed users indicated the need to view all remote sites simultaneously (until a dominant talker could be established) -- at which time, the site of the dominant talker is displayed to the far sites.	Display size must be taken into consideration regarding resolution and image size of each of the "windows" to be viewed on screen. If the display is not properly sized for this feature, the smaller windows will not be viewable.		

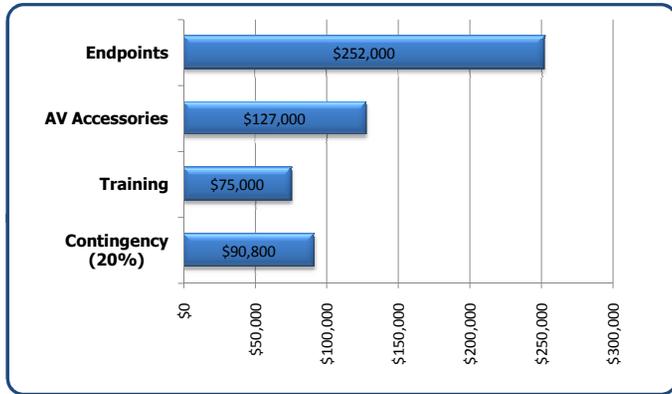
Distance Education (Higher Ed.)				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>System Controls</b>				
Ease of Use	Higher Education users indicated the need for remote students to feel part of the classroom without hindrances of technology. One of these reported hindrances was the difficulty of using the videoconference equipment.	Our research indicated that hindrances of Technology often referred to ease of use issues involving students or instructors.  Training of both students and instructors can partially address specific ease of use issues. See also Training.  Where the capabilities of the equipment are either insufficient or too sophisticated, adjustments must be made to simplify operation. With videoconferencing equipment, much of the equipment can be controlled remotely if access is set up. PlanNet recommends for the Higher Ed profile that all controls be standardized across the platform.		Refer to Global VTC profile for recommendations.
Obsolete Equipment	Higher Ed users including UW and each of the Community Colleges each have obsolete equipment that must be addressed.  Gap analysis indicates the following statistics for products that have reached end of life, or will no longer be supported by the manufacturer by the end of 2010.  UW/OVN: 10% (5 of 49) Sheridan College: 58% (7 of 12) WWCC: 92% (11 of 12)	Establish/Revise purchasing agreements so all entities can acquire approved equipment as replacement needs dictate so that all equipment can be supported by the respective manufacturers.		Note: UW locations at the School of Pharmacy and Health Sciences are categorized in the TeleHealth Training Profile.

Distance Education (Higher Ed.)				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
Room attributes / Limitations				
Room Access	Higher Education users including UW and the Community Colleges requested better access to the technology (i.e. additional video endpoints in locations convenient to more students).	<p>Form agreements between Higher Education organizations to share rooms when students need to attend a videoconference on a campus or at another approved location. Policies are already in existence at each organization and dictate the needs of each organization. These policies should form the basis of the agreements between organizations.</p> <p>If agreements are not made between organizations, conflicts regarding access are only resolvable by the addition of endpoints.</p> <p>Wherever possible, desktop collaboration capabilities, including video to the desktop can offset the need for conventional room systems.</p>		See Desktop Collaboration profile for additional recommendations.
Acoustics, HVAC Noise	Interviews indicated acoustics and HVAC noise was mentioned as a problem for some rooms.	Identify rooms where acoustics or noise within the rooms has been pointed out as a detractor to videoconferencing use. Adhere to and implement comments specified in the Global VTC Profile.		
Furniture Layout	Interviews indicated furniture layout as a problem for some rooms (where not all participants could be heard or seen clearly).	Establish standard seating layouts based on room arrangement and seat count.	Implement best practice standards regarding furniture layout. Best practice for videoconferencing in education includes the following standard layouts: 1. 2 to 8 seat conference table 2. 8 to 30 seat classroom (flat floor construction) 3. 30 to 100 seat classroom (tiered / staggered seating)	
Room equipment			The use of portable "cart-based" systems should be minimized to avoid issues with performance and expectations.	
Directory Services				
Redundancy	Higher Education videoconferencing system users are paying tuitions and associated videoconference-related costs as part of the classes they are taking. Higher Ed stakeholders indicated the need for redundancy to ensure that the classes would be uninhibited by technology failure.	Back up processes for all equipment configurations and directories should be implemented immediately. Ideally, directories could be accessed in multiple locations in the event of single component failure. All directories need to be synchronized with a master directory.		
Recording and Streaming	Provide accessibility of educational resources and curriculum for all students.	See Global VTC Profile for recommendations.		

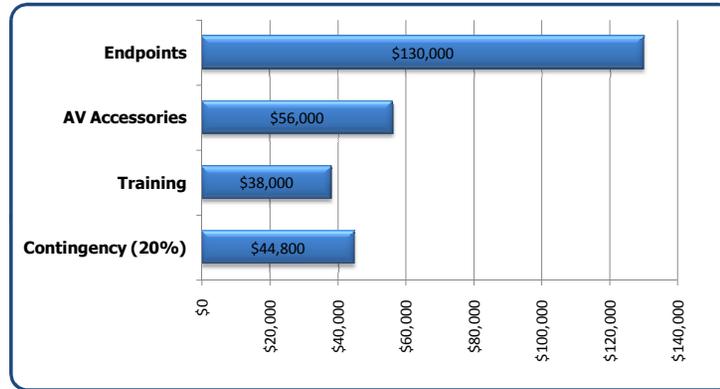
Distance Education (Higher Ed.)				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>MCU</b>				
Feature Sets and Capabilities	<p>Higher Education stakeholders indicated the need for specific MCU feature sets and capabilities.</p> <p>OVN stakeholders indicated that the existing Cisco / RadVision MCU was not dependable, and requirements were beginning to exceed port capacity.</p>	<p>Overarching recommendations regarding MCU videoconferencing infrastructure recommendations include:</p> <p>Replace OVN Cisco / RadVision MCU with an MCU with similar features and additional port capacity.</p>		<p>Interoperability concerns and requests for greater reliability by MCU operators during an MCU specific workshop drive our recommendations.</p>
Call Management	<p>Higher Education MCU stakeholders indicated the need to track and manage point-to-point and multipoint videoconference calls such as utilization statistics.</p> <p>The OVN and Community Colleges could not produce this type of documentation based on existing equipment capabilities. All call management information was tracked separately and estimated for PlanNet's use based on curriculum and basic "total use minutes per year".</p>	<p>Call management should be instituted throughout Higher Education as this information is essential for business and technology planning and operations purposes. Each of the primary MCUs used in the state offer call management reporting features if software to perform this function is utilized; however, the OVN does not have access to this information due to the Cisco / RadVision implementation. WWCC either do not have access to the MCU software or are not trained on using this information.</p>		<p>The UW OVN MCU is a 60 port Cisco IPVC - 3545 v. 5.6 with Radvision Iview Suite v.5.6. The current RadVision software does not provide reporting information of the Cisco / RadVision MCU in a way useable for UW. Studies have indicated that Cisco Unified Video Conference Manager (CUVCM), Call Manager, and associated gateways and software are required to implement a call management platform for this organization. This solution has not been thoroughly pursued based on the information that UW is investigating the replacement of the Cisco / RadVision MCU.</p>
Configuration / Programming Capabilities	<p>Higher Education stakeholders indicated the need for specific MCU configuration / programming set up controls.</p> <p>Higher Education users indicated the need to view all remote sites simultaneously (until a dominant talker could be established) - at which time, the site of the dominant talker is displayed to the far sites.</p>	<p>Video layouts showing all participants can be configured through the MCU or at the endpoint. Multipoint conferences for distance education should generally be scheduled and driven from the MCU.</p> <p>Various layouts are available that can show multiple sites simultaneously. Video from the active speaker can be automatically highlighted or enlarged on screen. See also Displays section above.</p> <p>This MCU programming / configuration for simultaneous remote site viewing is currently in use by OVN for dual-display rooms and is recommended as a best practice for the Higher Education profile.</p>		
Interoperability	<p>Studies with Higher Education stakeholders indicated significant interoperability concerns at the MCU and multi-network bridging level.</p>	<p>Refer to Global VTC Profile regarding H.323, H.239 and the Global Network Profile regarding H.235 and H.460 implementation standards.</p>		

Distance Education (Higher Ed.)				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
Costs				
Endpoints		\$252,000	\$130,000	<p>PlanNet recommends the phased replacement of all EoL equipment prior to the actual end of support date.</p> <p>Standard Definition endpoint pricing is based on a Tandberg 990 MXP w/ Natural Presenter Package or a Polycom HDX 7002 w/ People + Content.</p> <p>The cost estimate assumes replacement of EoL endpoints only and does not include upgrades.</p> <p>Future cost estimate is based on refreshing 10% of existing endpoints annually.</p>
AV Accessories		\$127,000	\$56,000	<p>Cost estimate assumes 16% of AV Accessories will need to be upgraded for this profile.</p> <p>Percentages calculated for replacement of AV Accessories are based on the age of the endpoints, data from interviews, observations during site visits and conference calls, and research via online resources such as the OVN website.</p> <p>Items assumed for upgrades are Displays, Microphones and Cameras.</p> <p>Future cost estimate is based on refreshing 10% of described equipment annually.</p>

Distance Education (Higher Ed.)				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
Training		\$75,000	\$38,000	<p>Cost estimate is based on initial training efforts for end users to become familiarized with existing systems.</p> <p>Immediate training costs based on 1000 hours @ \$75 / hr.</p> <p>Future training costs based on 500 hours @ \$75/hr.</p> <p>Future cost estimate is based on shorter duration refresher training for all end users and standard training for new users. Future training is expected to be approximately half of the initial investment.</p>
Contingency (20%)		\$90,800	\$44,800	
<b>Total Costs</b>		<b>\$544,800</b>	<b>\$268,800</b>	



Higher Education Immediate Recommendations Cost Estimate



Higher Education Future Recommendations Cost Estimate

## 9.5 DISTANCE EDUCATION – K-12

The Distance education K-12 stakeholders are provided endpoints on the WEN network. Most users are very happy with the current operation of the network. WEN’s stated goal of serving remote students in all regions of the state has been predominantly successful.

K-12 users interviewed from the WEN requested high-quality video and audio systems simulating an in-person classroom environment whenever possible. This is similar to the higher education profile except that, according to the WEN, the 2006 upgrade RFP from ISDN to IP-based videoconferencing communications has already filled the gap with respect to audio and video quality required by K-12 users. This June, content sharing was enabled throughout the organization. This should prove to be a valuable tool for instruction in the future. PlanNet recommends that training on this technology begin as soon as possible to complete the successful rollout of content sharing to all endpoints.

Lighting is a problem in at least one specific WDE WEN room. This example included a background room environment and the instructor appeared excessively yellow. It is recommended that the WEN identify all rooms where lighting within the rooms has been pointed out or observed as a distraction and work to upgrade the lighting required for clear video conferencing imaging. Backgrounds should be made as simple and non-cluttered as possible. See Global Recommendations (See pages 70 to 72).

Some K-12 users and community colleges that choose to use WEN for video conferencing specific distance education indicated the need to expand into higher resolutions in the future. It is recommended that all future new or renovated classrooms be configured with HD capable systems.

There are some community colleges that utilize the WEN network to provide classes to their remote students. Requests from WWCC and CWC for the WEN to alter manufacturer-specific codec requirements and policies pervaded interviews. The WEN has been successful by relying on the Tandberg platform for all endpoints. This has greatly streamlined training and support efforts, but has also excluded some users from participating in the network. This has been a problem for some of the community colleges as they prefer equipment from other manufacturers. For community colleges that choose to utilize the K-12 profile for video conferencing-specific distance education versus the higher education profile, considerations regarding manufacturer agnostic policies should be considered as possible subscription services. Approving and utilizing products from several of the large video conferencing manufacturers will introduce competition for products and services. This will help keep support costs lower and pricing competitive.

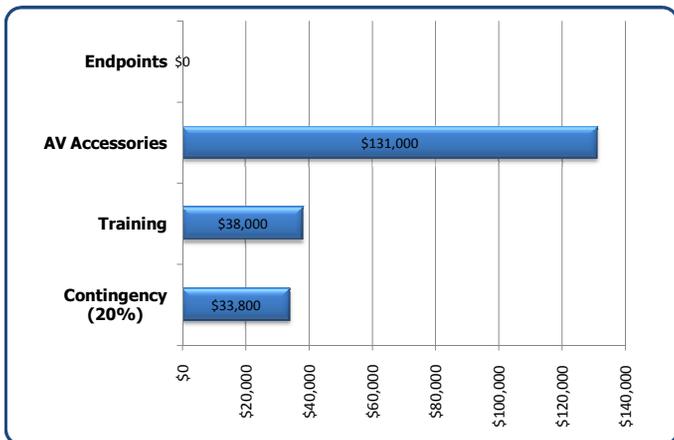
In addition, the control systems and ease-of-use recommendations listed in the Global Videoconferencing Profile (see page 47) should be put in place to enable simple control and interoperability of any system, no matter which manufacturer, as the systems must all be standards-based and facilitate interoperability.

The recommendations are further analyzed by specific attribute in the tabular gap analysis and recommendations below.

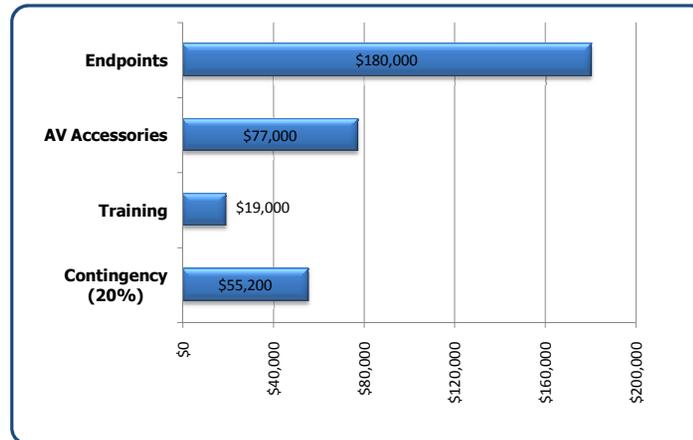
Distance Education (K-12)				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>Codecs / Endpoints</b>				
<b>Feature Sets and Capabilities</b>	<p>K-12 users interviewed from the WEN requested high-quality video and audio simulating an in-person classroom environment whenever possible. This is similar to the Higher Ed profile except that according to WEN, the 2006 upgrade RFP from ISDN to IP-based videoconferencing communications has already filled the gap with respect to audio and video quality required by K-12 users.</p> <p>Requests from Community Colleges (WWCC and CWC) for WEN to alter manufacturer-specific codec requirements and policies pervaded interviews .</p> <p>K-12 users and Community Colleges who choose to use WEN for videoconferencing specific distance education indicated the need to expand into higher-resolutions in the future.</p>	<p>There are relatively few gaps between needs and inventory regarding codec / endpoint recommendations for WEN to apply this profile.</p> <p>For Community Colleges that choose to utilize the K-12 profile for videoconferencing-specific distance education versus the Higher Ed profile, considerations regarding manufacturer agnostic policies should be considered as possible "subscription services".</p>	<p>New or upgraded rooms should be configured with HD capable systems.</p>	<p>Minimum: Standard Def @ 384KB or greater, H.239, 2Mb capable Enhanced: HD (720p) @ 1Mb or greater, H.239, 2Mb capable.</p> <p>It is not clear which Community Colleges will join which of the 2 profiles for distance education at this time. Agreement surrounding policies and platforms could alter decisions of the Community Colleges. For purposes of this profile, we have largely commented on the existing condition as follows:</p> <p>CC, EWC, LCCC, NC, and NWCC would join the K-12 videoconferencing-specific distance education profile.</p>
<b>Content Sharing (ITU standard H.239)</b>	<p>Content Sharing was not enabled throughout the organization until mid June 2009 (during the summer refresh period).</p>	<p>Provide training as required to complete the successful rollout of content sharing to all endpoints.</p>		
<b>Room attributes / Limitations</b>				<p>For WEN locations, challenges include access and control over local school property.</p> <p>See Global VTC Profile for recommendations.</p>
<b>Lighting</b>	<p>Lighting is a problem in at least one specific WDE WEN room. This example included a background room environment and the instructor appeared excessively yellow.</p>	<p>Identify all rooms where lighting within the rooms has been pointed out or observed as a detractor to videoconferencing use. Adhere to and implement comments specified in the Global VTC Profile.</p>		
<b>Room Equipment</b>			<p>The use of portable "cart-based" systems should be minimized to avoid issues with performance and expectations.</p>	

Distance Education (K-12)				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>Costs</b>				
Endpoints		\$0	\$180,000	<p>PlanNet recommends the phased replacement of all EoL equipment prior to the actual end of support date.</p> <p>Standard Definition endpoint pricing is based on a Tandberg 990 MXP w/ Natural Presenter Package or a Polycom HDX 7002 w/ People + Content.</p> <p>The cost estimate assumes replacement of EoL endpoints only and does not include upgrades.</p> <p>Future cost estimate is based on refreshing 10% of existing endpoints annually.</p>
AV Accessories		\$131,000	\$77,000	<p>Cost estimate assumes 10% of AV Accessories will need to be upgraded for this profile.</p> <p>Percentages calculated for replacement of AV Accessories are based on the age of the endpoints, data from interviews, observations during site visits and conference calls, and research via online resources such as the WEN website.</p> <p>Items assumed for upgrades are Displays, Microphones and Cameras.</p> <p>Future cost estimate is based on refreshing 10% of described equipment annually.</p>

Distance Education (K-12)				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
Training		\$38,000	\$19,000	<p>Cost estimate is based on initial training efforts for end users to become familiarized with existing systems.</p> <p>Immediate cost estimate is for 500 hours @ \$75/hr. Future training costs are for 250 hours @ \$75/ hr.</p> <p>Wyoming may wish to participate in a formal training program conducted by a Manufacturer such as Tandberg's T4 program. This is a program the instructs teachers how to prepare educational curriculum aimed at videoconferencing students.</p> <p>Future cost estimate is based on shorter duration refresher training for all end users and standard training for new users. Future training is expected to be approximately half the initial investment.</p>
Contingency (20%)		\$33,800	\$55,200	
<b>Total Costs</b>		<b>\$202,800</b>	<b>\$331,200</b>	



Grades K-12 Immediate Recommendations Cost Estimate



Grades K-12 Future Recommendations Cost Estimate

## 9.6 CORPORATE AND GOVERNMENT MEETINGS

In addition to the attributes contained in the global video conferencing profile, the corporate and government meetings profile addresses the concerns found during interviews with key legislators and end users. Every person interviewed in these groups voiced an appreciation for the need to save money and time on business travel and how video conferencing can be used to offset these costs. In many cases, legislators are currently traveling across the state for several days to attend a single meeting or conference. The use of videoconferencing can offset the expense of travel, such as time spent away from the office, lodging and fuel, but also eliminate the risk of traveling long distances in inclement weather conditions.

While most government and corporate stakeholders value face-to-face contact with constituents as most important, the most often heard request from corporate and government stakeholders is the need for frequent ad hoc video conferences. Users want systems that are available to them at any time for access to constituents and colleagues. Most of the legislators interviewed didn’t object to traveling to local colleges or facilities where the existing hardware endpoints are located, but would prefer to have their own desktop solutions that are as easy to use as Skype or similar solutions. Several of those interviewed expressed the difficulty they have experienced trying to schedule a call through the existing networks in competition with class schedules. A few legislators also suggested adding video conferencing capabilities to more rooms in Cheyenne similar to Room 302. The addition of more video conferencing equipped facilities would alleviate the need to schedule ad hoc calls through the existing networks used primarily for education. Rooms dedicated to legislators and corporate use would facilitate greater access to system availability when required. New or upgraded rooms should be configured with HD capable systems.

The second most requested attribute for a video conferencing system is for all systems to be very easy to use. Busy legislators and corporate stakeholders do not have the time or inclination to learn how to use complex video conferencing systems. Final solutions must be as simple to use as Skype or other similar platforms. The State should consider creating and delivering organized and structured training approaches to teach users the basic functions operation of the systems. This is usually done via formal, scheduled classes to groups of people. An additional option is on-line (on demand) training programs.

It is recommended that the State develop a long term training plan for technical support as well as for the end users. The plan needs to create recorded video sessions that technical support personnel can view at their leisure. Also include a long term plan to keep training up to date.

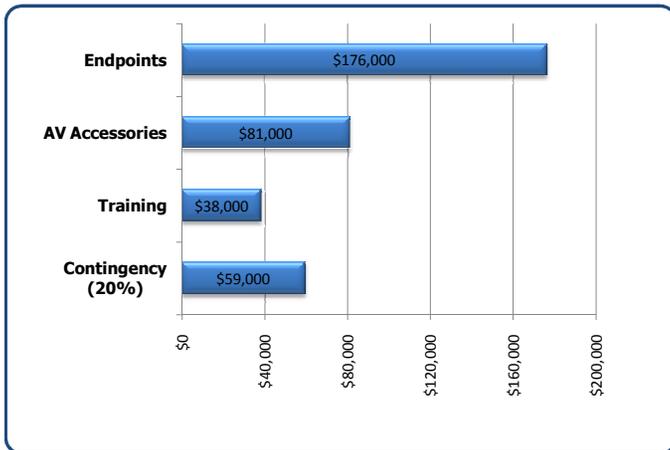
Refer to scheduling and ease-of-use recommendations on the global videoconferencing profile. (See pages 46 to 52)

The recommendations are further analyzed by specific attribute in the tabular gap analysis and recommendations below.

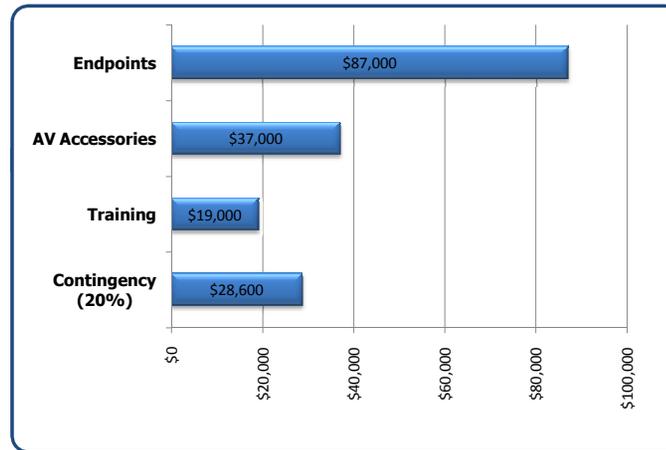
Corporate & Government Meetings				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>Codecs / Endpoints</b>				
Feature sets and Capabilities		Improved immersion/participation can be partially addressed by the use of higher quality audio/video and/or larger displays for both video and content.  Higher quality audio/video will be achieved via increased bandwidth for existing systems or upgraded systems capable of HD.	New or upgraded rooms should be configured with HD capable systems.	Minimum: Standard Def @ 384KB or greater, H.239, 2Mb capable Enhanced: HD (720p) @ 1Mb or greater, H.239, 2Mb capable.
Scheduling (Point to Point calls or multipoint calls connected through a single endpoint.)	Corporate and Government stakeholders stated the need for frequent ad-hoc video conferences.	Refer to Scheduling and Ease of Use recommendations on the Global VTC profile.	Add videoconferencing capabilities to existing and future conference facilities within the Cheyenne and surrounding buildings to facilitate ad hoc videoconferencing.	
Training (End User)	Stakeholders interviewed indicated concerns regarding technical support proficiency within ITD A&I's help desk.	Deliver "Formal" training i.e. organized and structured approaches to teach users the basic functions operation of the systems. This is usually done via formal, scheduled classes to groups of people.	Develop a long-term training plan for end users. The plan should create recorded video sessions that users can view at their leisure. Also include a long-term plan to keep training up to date.  See also Global VTC Profile recommendations.	
Training (Technical Support)	Stakeholders interviewed indicated concerns regarding technical support proficiency within A&I's help desk.	Obtain formal certifications from either in-house resources, manufacturers, or professional organizations for technical support staff.	Develop a long term training plan for Technical Support. The plan should create recorded video sessions that technical support personnel can view at their leisure. Also include a long-term plan to keep training up to date.  See also Global VTC Profile recommendations.	

Corporate & Government Meetings				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>Costs</b>				
Endpoints		\$176,000	\$87,000	<p>PlanNet recommends the phased replacement of all EoL equipment prior to the actual end of support date.</p> <p>Standard Definition endpoint pricing is based on a Tandberg 990 MXP w/ Natural Presenter Package or a Polycom HDX 7002 w/ People + Content.</p> <p>The cost estimate assumes replacement of EoL endpoints only and does not include upgrades.</p> <p>Future cost estimate is based on refreshing 10% of existing endpoints annually.</p>
AV Accessories		\$81,000	\$37,000	<p>Cost estimate assumes 15% of AV Accessories will need to be upgraded for this profile.</p> <p>Percentages calculated for replacement of AV Accessories are based on the age of the endpoints, data from interviews, observations during site visits and conference calls, and research via online resources such as the WVCS website.</p> <p>Items assumed for upgrades are Displays, Microphones and Cameras.</p> <p>Future cost estimate is based on refreshing 10% of described equipment annually.</p>

Corporate & Government Meetings				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
Training		\$38,000	\$19,000	<p>Cost estimate is based on initial training efforts for end users to become familiarized with existing systems.</p> <p>Immediate Training cost estimates are based on 500 hours of instruction @ \$75/hr.</p> <p>Future training costs are based on 250 hours of instruction @ \$75/hr.</p> <p>Future cost estimate is based on shorter duration refresher training for all end users and standard training for new users. Future training is expected to be approximately half the initial investment.</p>
Contingency (20%)		\$59,000	\$28,600	
<b>Total Costs</b>		<b>\$354,000</b>	<b>\$171,600</b>	



Corporate & Government Meetings  
Immediate Recommendations Cost Estimate



Corporate & Government Meetings Future  
Recommendations Cost Estimate

## 9.7 CORPORATE AND GOVERNMENT TRAINING

Aside from the recommendations found in the global video conferencing profile, corporate and government stakeholders have specific requirements unique to them regarding training. Users in this group expressed a desire to use videoconferencing systems for training themselves and constituents to keep up to date in their specific areas of expertise. Many of those interviewed expressed the difficulty and high expense of periodically gathering their constituents and employees in one location for training or the expense of sending teams of trainers throughout the state to keep constituents and employees current. Several stakeholders requested high-quality video and audio simulating an in-person meeting environment whenever possible.

In addition to live video conferences, it is recommended that the State implement desktop collaboration tools to bring presentations to the learner's desktop (possibly eliminating the need for large high-resolution displays) and allow bi-directional communication using annotation, chat, quizzes, and Q&A.

In order to create and implement a training program, additional training for instructors is required to include curriculum development and content delivery over the videoconferencing medium. In addition to the standardized training requirements, instructors should receive focused training to highlight interactivity with far end participants. These instructors are often referred to as “mega instructional designers”. It is also recommended that the State use recording and streaming capabilities (described below) to record web-based training content.

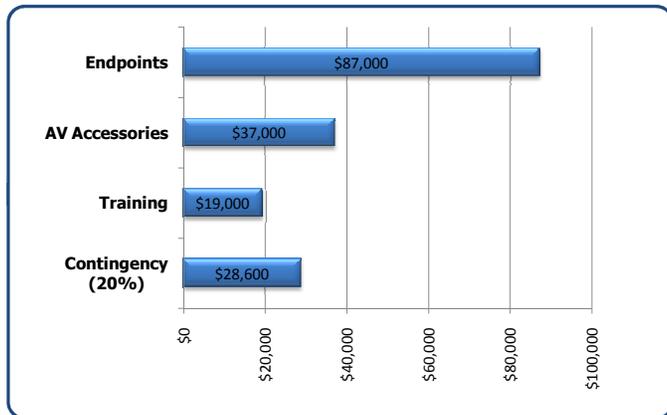
In order to facilitate successful corporate and governmental training regimes, the previously discussed requirements must also be implemented. These are the requirements for systems that are easy to use with ample training programs in place to ensure users are familiar with system use and functionality.

The recommendations are further analyzed by specific attribute in the tabular gap analysis and recommendations below.

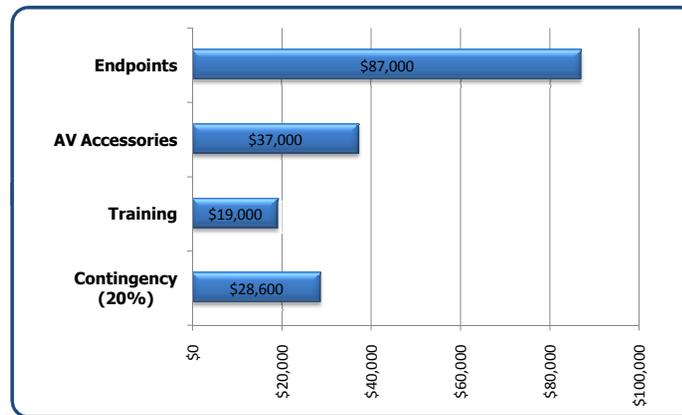
Corporate & Government Training				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>Codecs / Endpoints</b>				
Feature Sets and Capabilities	Corporate and Government users included remote training as a requested use for videoconferencing endpoints. Several stakeholders requested high-quality video and audio simulating an in-person meeting environment whenever possible.	Implement desktop collaboration tools to bring presentations to the learner's desktop (possibly eliminating the need for large high-resolution displays) and allow bi-directional communication using annotation, chat, quizzes and Q&A.		Minimum: Standard Def @ 512KB or greater, H.239, 2Mb capable. Enhanced: HD (720p) @ 1Mb or greater, H.239, 2Mb capable.  "Hindrances of Technology" also discussed under "Ease of use" topic.
Scheduling (Point to Point calls or multipoint calls connected through a single endpoint.)	Corporate and Government stakeholders stated the need for frequent ad-hoc video conferences.	Refer to Scheduling and Ease of Use recommendations on the Global VTC profile.		
Training (End User)	Stakeholders interviewed indicated concerns regarding technical support proficiency within ITD A&I's help desk.	Deliver "Formal" training i.e. organized and structured approaches to teach users the basic functions operation of the systems. This is usually done via formal, scheduled classes to groups of people.	Develop a long term training plan for end users. The plan should create recorded video sessions that users can view at their leisure. Also include a long term plan to keep training up to date.  See also Global VTC Profile recommendations.	
Training (Instructors)	Additional training for instructors is required to include the following: Curriculum development and content delivery over the videoconferencing medium	In addition to the standardized training requirements, instructors should receive focused training to highlight interactivity with far end participants.  Use Recording and Streaming capabilities (described below) to record web-based training content.	Widely deploy and market training content throughout the State. PlanNet suggests investigation of formal instruction programs offered by endpoint manufacturers such as Tandberg's T4 program.	
Training (Technical Support)	Stakeholders interviewed indicated concerns regarding technical support proficiency within A&I's help desk.	Obtain formal certifications from either in-house resources, manufacturers, or professional organizations for technical support staff.	Develop a long-term training plan for Technical Support. The plan needs to create recorded video sessions that technical support personnel can view at their leisure. Also include a long term plan to keep training up to date.  See also Global VTC Profile recommendations.	
Recording & Streaming	Provide accessibility of educational resources and curriculum for all students.	See Global VTC Profile for recommendations.		

Corporate & Government Training				
Costs	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
Endpoints		\$176,000	\$87,000	<p>PlanNet recommends the phased replacement of all EoL equipment prior to the actual end of support date.</p> <p>Standard Definition endpoint pricing is based on a Tandberg 990 MXP w/ Natural Presenter Package or a Polycom HDX 7002 w/ People + Content.</p> <p>The cost estimate assumes replacement of EoL endpoints only and does not include upgrades.</p> <p>Future cost estimate is based on refreshing 10% of existing endpoints annually.</p>
AV Accessories		\$81,000	\$37,000	<p>Cost estimate assumes 15% of AV Accessories will need to be upgraded for this profile.</p> <p>Percentages calculated for replacement of AV Accessories are based on the age of the endpoints, data from interviews, observations during site visits and conference calls, and research via online resources such as the WVCS website.</p> <p>Items assumed for upgrades are Displays, Microphones and Cameras.</p> <p>Future cost estimate is based on refreshing 10% of described equipment annually.</p>

Corporate & Government Training				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
Training		\$38,000	\$19,000	<p>Cost estimate is based on initial training efforts for end users to become familiarized with existing systems.</p> <p>Immediate costs are based on 500 hours @ \$75/hr. Future costs are based on 250 hours @ \$75/hr.</p> <p>Future cost estimate is based on shorter duration refresher training for all end users and standard training for new users. Future training is expected to be approximately half the initial investment.</p>
Contingency (20%)		\$59,000	\$28,600	
Total Costs		\$354,000	\$171,600	



Corp. & Gov. Training Immediate Rec. Cost Estimate



Corp. & Gov. Training Future Rec. Cost Estimate

## 9.8 TELE-HEALTH – REMOTE MEDICINE

In addition to the requirements found in the global videoconferencing profile, tele-health professionals have unique requirements for video conferencing systems that set them apart from other corporate, governmental, or educational groups. The use of video conferencing in modern tele-health applications is one of the most cutting-edge applications of video conferencing in use today. It enables physicians and other health care professionals to consult, diagnose, and treat remote patients without the need for time-consuming and expensive travel.

**Remote medicine requires much higher bandwidth, resolution,** and secure content between the doctor and patient. We have recommended minimum bandwidth requirements of 1Mbps for all tele-health applications. Systems need to be High Definition (HD) systems and should be H.239 (content sharing) capable. Cameras used in the physicians’ offices do not necessarily need to be High Definition, because the patient end of the call does not usually need to see the doctor in high definition, but the remote patient side requires high definition cameras so the doctor can view the patient as clearly as possible. Although this is true, it is generally recommended that all cameras be HD regardless of their location.

Tele-health remote medicine requires extremely high resolution capabilities of shared content so H.239 is essential. Sharing of content should begin automatically when a computer is connected and require a minimum of effort to enable. Items such as digital charts and X-rays can be shared so high definition cameras and displays are essential.

By the very nature of medical treatment requirements of remote patients, tele-health systems must make ad hoc calls. Medical requirements occur randomly and in all areas of the state. Experts who are located in medical centers should be leveraged to support remote sites that may not have experts in all medical fields or 24/7 support. In order for these systems to be effective, they need to be readily available to the physicians and the remote locations and be easy to use.

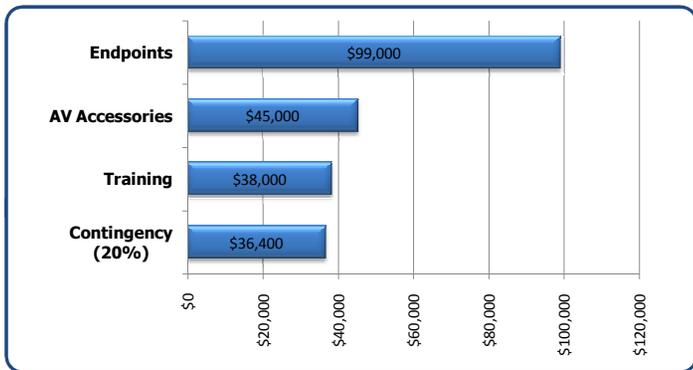
**Ease-of-use** is extremely important for busy physicians. Many tele-health constituents stated that if the technology doesn’t work twice, a doctor will never use it again. PC or laptop connections should be easy to access. Consider system controls that are scalable for medical professionals. Connection to far end sites needs to be as seamless as possible. It is recommended that the stakeholders establish system design standards for all organizations.

The recommendations are further analyzed by specific attribute in the tabular gap analysis and recommendations below.

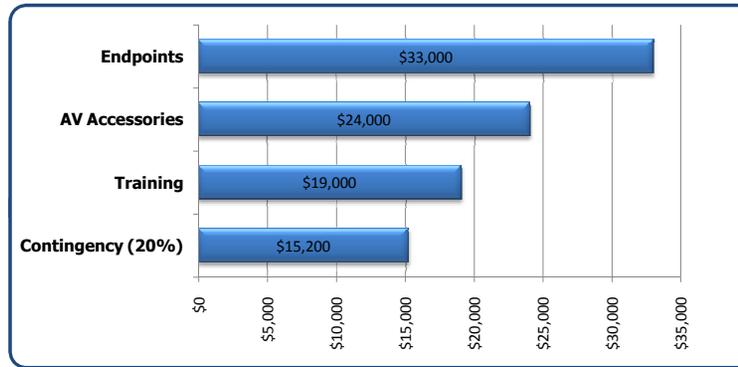
TeleHealth Remote Medicine				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>Codecs / Endpoints</b>				
Feature Sets and Capabilities	Requirement for high resolution, secure video and content between the doctor and patient.  The doctor does not need to be seen at high resolution.			Minimum: HD (720p) @ 1Mbps or greater, H.239, 2Mb capable.
Cameras	Telehealth remote medicine requires extremely high resolution capabilities. Cameras must be HD capable.	Ensure the cameras are HD resolution to match the capabilities of the endpoint.		
Content Sharing (ITU standard H.239)	Telehealth remote medicine requires extremely high resolution capabilities of shared content. H.239 is essential.	PC/Laptop call connections should be easy to access ("one-click" connections)  Sharing of content should begin automatically when a computer is connected.  <del>Endpoints must be H.239 compliant</del>		
Displays	Telehealth remote medicine requires extremely high resolution capabilities of shared content. Displays must be HD capable.	Ensure the displays are HD resolution to match the capabilities of the endpoint.		
<b>System Controls</b>				
Ease of Use	Ease-of-use is extremely important for busy physicians. Many telehealth constituents stated that if the technology doesn't work twice, a doctor will never use it again.	Establish system design standards for all organizations. Consider system controls that are scalable for medical professionals.		
Scheduling (Point to Point calls or multipoint calls connected through a single endpoint.)	Medical requirements occur randomly and in all areas of the State. Experts who are located in medical centers should be leveraged to support remote sites who may not have experts in all medical fields or 24/7 support.	See Global VTC profile for recommendations regarding consistent controls.		

TeleHealth Remote Medicine				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
Costs				
Endpoints		\$99,000	\$33,000	<p>PlanNet recommends the phased replacement of all EoL equipment prior to the actual end of support date.</p> <p>Standard Definition endpoint pricing is based on a Tandberg 990 MXP w/ Natural Presenter Package or a Polycom HDX 7002 w/ People + Content.</p> <p>The cost estimate assumes replacement of EoL endpoints only and does not include upgrades.</p> <p>Future cost estimate is based on refreshing 10% of existing endpoints annually.</p>
AV Accessories		\$45,000	\$24,000	<p>Cost estimate assumes 14% of AV Accessories will need to be upgraded for this profile.</p> <p>Percentages calculated for replacement of AV Accessories are based on the age of the endpoints, data from interviews, observations during site visits and conference calls, and research via online resources such as the WyHIO website.</p> <p>Items assumed for upgrades are Displays, Microphones and Cameras.</p> <p>Future cost estimate is based on refreshing 10% of described equipment annually.</p>

TeleHealth Remote Medicine				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
Training		\$38,000	\$19,000	<p>Cost estimate is based on initial training efforts for end users to become familiarized with existing systems.</p> <p>Immediate costs based on 500 hours @ \$75/hr. Future costs based on 250 hours @ \$75/hr.</p> <p>Future cost estimate is based on shorter duration refresher training for all end users and standard training for new users. Future training is expected to be approximately half the initial investment.</p>
Contingency (20%)		\$36,400	\$15,200	
<b>Total Costs</b>		<b>\$218,400</b>	<b>\$91,200</b>	



Telehealth Remote Medicine Immediate Recommendations Cost Estimate



Telehealth Remote Medicine Future Recommendations Cost Estimate

## 9.9 TELEHEALTH – TRAINING

Healthcare professionals are constantly training and updating their skills and education to keep continuing education credits current as well as being informed on the latest medical technologies. Rather than being forced to travel to onsite training seminars and lectures in remote locations, health care professionals can use video conferencing as a means to get instruction.

**Remote training requires much higher bandwidth and resolution than normal business meetings**, with secure video and content between the instructor and student. We have recommended minimum bandwidth requirements of 1Mbps for all tele-health training applications. Systems need to be High Definition (HD) systems and should be H.239 (content sharing) capable. Cameras and displays should all be high definition to enable students to view material and the instructor clearly during long training sessions.

Tele-health training requires extremely high resolution capabilities of shared content so H.239 is essential. Sharing of content should begin automatically when a computer is connected and require a minimum of effort to enable.

Although medical training can be scheduled with appropriate lead times, some ad hoc training sessions may be necessary.

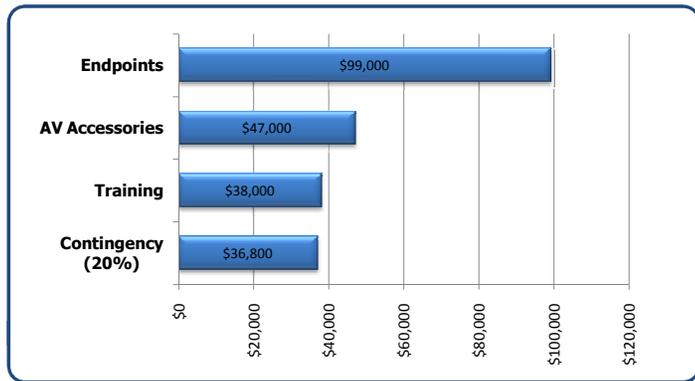
**Ease of use** is extremely important for busy physicians. Many tele-health constituents stated that if the technology doesn’t work twice, a doctor will never use it again. PC and laptop connections should be easy to access. Consider system controls that are scalable for medical professionals. Connection to far end sites needs to be as seamless as possible. It is recommended that the stakeholders establish system design standards for all organizations.

The recommendations are further analyzed by specific attribute in the tabular gap analysis and recommendations below.

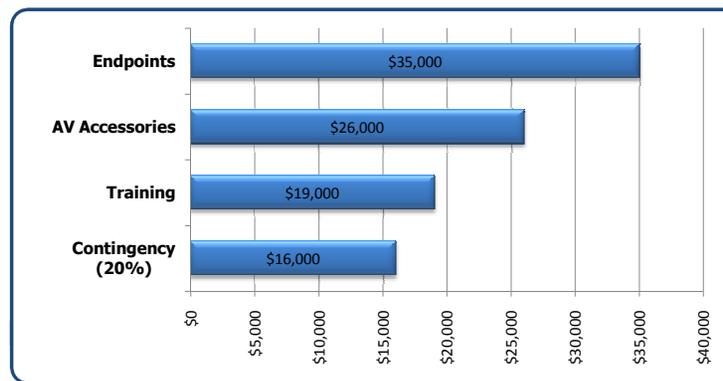
TeleHealth Training				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>Codecs / Endpoints</b>				
Feature Sets and Capabilities	Requirement for high resolution, secure video and content between the doctor and patient.  The doctor does not need to be seen at highest resolution.			Minimum: HD (720p) @ 1Mbps or greater, H.239, 2Mb capable.
Cameras	Telehealth remote medicine requires extremely high resolution capabilities. Cameras must be HD capable.	Ensure the cameras are HD resolution to match the capabilities of the endpoint.		
Content Sharing (ITU standard H.239)	Telehealth remote medicine requires extremely high resolution shared content. H.239 is essential.	PC/Laptop connections should be easy to access.  Sharing of content should begin automatically when a computer is connected.  Endpoints must be H.239 compliant.		
Displays	Telehealth remote medicine requires extremely high resolution shared content. Displays must be HD capable.	Ensure the displays are HD resolution to match the capabilities of the endpoint.		
<b>System Controls</b>				
Ease of Use	Ease of use is extremely important for busy physicians. Many telehealth constituents stated that if the technology doesn't work twice, a doctor will never use it again.	Establish system design standards for all organizations. Consider system controls that are scalable for medical professionals.		
Obsolete equipment	Gap analysis indicates the following statistics for products that have reached end of life, or will no longer be supported by the manufacturer by the end of 2010.  - UW Pharmacy 100% (16 of 16) - UW Health Sci. ?% (1+ of 9) Incomplete data.	Establish/Revise purchasing agreements so all entities can acquire approved equipment as replacement needs dictate so that all equipment can be supported by the respective manufacturers.		UW locations at the School of Pharmacy and Health Sciences are categorized in the TeleHealth Training Profile.

TeleHealth Training				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
Scheduling (Point to Point calls or multipoint calls connected through a single endpoint.)	Medical requirements occur randomly and in all areas of the State. Experts who are located in medical centers should be leveraged to support remote sites who may not have experts in all medical fields or 24/7 support.	See Global VTC profile for recommendations regarding consistent controls.		
<b>Costs</b>				
Endpoints		\$99,000	\$35,000	<p>PlanNet recommends the phased replacement of all EoL equipment prior to the actual end of support date.</p> <p>Standard Definition endpoint pricing is based on a Tandberg 990 MXP w/ Natural Presenter Package or a Polycom HDX 7002 w/ People + Content.</p> <p>The cost estimate assumes replacement of EoL endpoints only and does not include upgrades.</p> <p>Future cost estimate is based on refreshing 10% of existing endpoints annually.</p>
AV Accessories		\$47,000	\$26,000	<p>Cost estimate assumes 14% of AV Accessories will need to be upgraded for this profile.</p> <p>Percentages calculated for replacement of AV Accessories are based on the age of the endpoints, data from interviews, observations during site visits and conference calls, and research via online resources such as the WyHIO website.</p> <p>Items assumed for upgrades are Displays, Microphones and Cameras.</p> <p>Future cost estimate is based on refreshing 10% of described equipment annually.</p>

TeleHealth Training				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
Training		\$38,000	\$19,000	Cost estimate is based on initial training efforts for end users to become familiarized with existing systems.  Future cost estimate is based on shorter duration refresher training for all end users and standard training for new users. Future training is expected to be approximately half the initial investment.
Contingency (20%)		\$36,800	\$16,000	
<b>Total Costs</b>		<b>\$220,800</b>	<b>\$96,000</b>	



Telehealth Training Immediate Recommendations Cost Estimate



Telehealth Training Future Recommendations Cost Estimate

## 9.10 DESKTOP COLLABORATION

Desktop collaboration, also known commonly as unified communications (UC) promises to change the way people work, increase productivity, and foster greater collaboration. However, there are challenges to finding and deploying a single communications solution that suits all constituents and fits how they work. Unified communications refers to many different communication methodologies which are all found in one large application on a person’s desktop (or mobile laptop) computer. These applications are typically instant messaging, presence (such as Microsoft Live, Yahoo Instant Messenger), email, desktop sharing or collaboration software (such as Microsoft SharedView, Adobe Connect, WebEx, Eluminate), or social networking software such as Facebook or MySpace.

In all our stakeholder interviews, almost every person told us they believe the future of video conferencing is heading toward desktop collaboration. They are all anxious to have this collaborative ability on their desktop or laptop computer.

One of the primary Wyoming government organizations using a form of desktop collaboration software is the Department of Health, which is using Microsoft Office Communications Server (OCS).

There are many desktop collaboration software packages (platforms) available with feature sets that differ slightly but still perform very similarly. PlanNet recommends that a standard platform is selected for the entire state and future computers are purchased with minimum standard configurations that will support this platform. The requirements for audio and video quality are minimal due to the proximity of the users to the camera, microphone, and display as well as inherent or expected limitations of a PC versus dedicated videoconferencing endpoint hardware and software.

There are several available platforms to select from, each of which has its own particular strengths and weaknesses. PlanNet has investigated Microsoft OCS, Eluminate, WebEx, Adobe Acrobat Connect Pro, Polycom’s PVX, and Tandberg’s MOVI platforms. PlanNet recommends that a list of desired functionalities be developed and compared to the above platforms to determine the final platform that will be supported throughout the State. The following is a list of features to consider:

- Cross platform support - (Windows, Mac, Linux, etc).
- Streaming video and audio support.
- High Definition (HD) support – requires HD camera.
- Recording capability for both network and client sides.
- Control of desktop from either end of the call.
- Simple to use, one-click connections.
- SIP (Session Initiation Protocol) compatible. SIP supports features such as mobility and presence, and gives users access to familiar tools such as call forward, transfer, and hold. As

video continues to move towards the desktop, SIP enables organizations to leverage these technologies and delivers an increased level of personalization to video communications.

- “Presence” – the ability for network users to see your availability. Usually this refers to a small icon or banner listing your presence as available or in a meeting, etc.
- Interfaces with standard scheduling software, such as Microsoft Exchange.
- Standard Controls – standard mouse and keyboard used as input devices.
- Must operate at State set bandwidth limits – Recommended Minimum: Standard Def @ 384KB or greater, H.239, 2Mb capable.

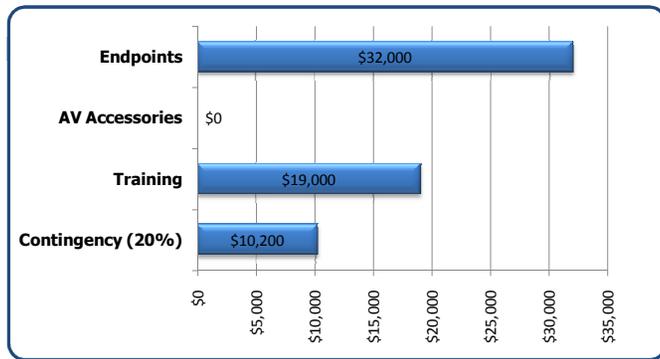
Once a suitable platform has been selected, a set of compatible computer hardware requirements can be determined. All future purchases of State computers should contain the approved hardware components to enable them to be connected to a network and participate in desktop collaboration sessions.

Desktop collaboration software costs are usually on a per-user software license fee. In order for some software to provide scheduling and call management functions, a hardware device is required such as a call management server. Firewall traversal is usually performed by outside devices such as a communication server.

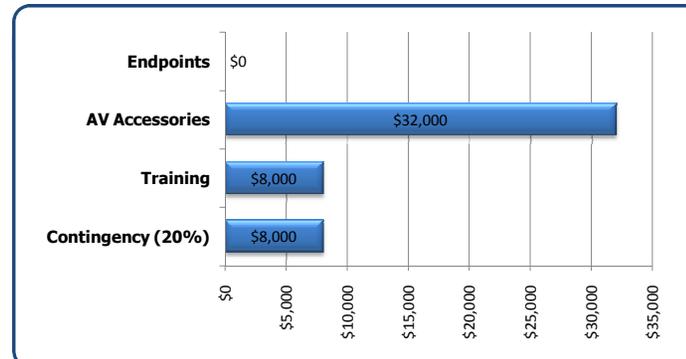
The recommendations are further analyzed by specific attribute in the tabular gap analysis and recommendations below.

Desktop Collaboration				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>Codecs / Endpoints</b>				
Feature Sets and Capabilities	Requirements for audio and video quality are minimal due to the proximity of the users to the camera, microphone, and display as well as inherent / expected limitations of a PC versus dedicated videoconferencing endpoint hardware / software.	Standardize on a universal desktop video / collaboration platform throughout the State. Consider platforms that provide common features such as: <ul style="list-style-type: none"> <li>- Cross platform support - (Windows, Mac, Linux, etc)</li> <li>- Streaming video and audio support</li> <li>- displays "Presence" - visual message to others when you are available or not</li> <li>- SIP (Session Initiation Protocol) compatible</li> <li>- recording capability for both network and client sides</li> <li>- provides control from either end of the call</li> <li>- simple to use - one-click connections</li> <li>- desktop sharing</li> <li>- interfaces with standard scheduling software, such as Microsoft Exchange</li> <li>- Simplified attendee views - attendees can remain anonymous if desired.</li> </ul>	Purchase computers with built-in cameras and microphones to leverage desktop video capabilities.  SIP is the current protocol which links unified communications features and allows integration and interoperability among various collaborative communications applications. As video moves toward the desktop, the State should consider incorporating equipment with SIP integration capabilities.	Minimum: Standard Def @ 384KB or greater, H.239, 2Mb capable
System Controls	Must provide standard controls specific to Desktop Collaboration. System controls are a desktop or laptop PC. Standard keyboard and mouse.	Standardize on a platform (discussed in feature sets). This directly relates to standardizing controls for this profile, as the software interface is the control.		
Ease of Use		Connecting to desktop videoconferencing needs to be as simple as point and click on a contact to initiate a call.	Future purchases need to be standardized.	
Local / Ad-hoc Calls	Must enable convenient, easy to use, portable visual communications.			Primary application for desktop collaboration is most likely to be adhoc calls.
Training (End User)		Unique systems dedicated training required		
Training (Instructors)		Unique systems dedicated training required		
Technical Support		Central help desk possible outsource		

Desktop Collaboration				
	Business Requirements / Inventory	Immediate Recommendations	Future Recommendations	Comments
<b>Costs</b>				
Endpoints		\$32,000	\$32,000	Cost estimate is based on 1000 new licenses for competitive online desktop collaboration software. Note: 1000 licenses was determined at random. This numbers gives easy scalability estimates for larger or smaller implementations. Future cost estimate is based on annual license renewal. Costs estimated using Elluminate. MOVI costs are much higher.
AV Accessories		\$0	\$0	
Training		\$19,000	\$8,000	Cost estimate is based on one time training for all new licenses. Training is assumed to be online. Immediate cost estimate is based on 250 hours of instruction @ \$75 per hour. Future cost estimate is based on 125 hours @ \$75 per hour.
Contingency (20%)		\$10,200	\$8,000	
<b>Total Costs</b>		<b>\$61,200</b>	<b>\$48,000</b>	



Desktop Collaboration Immediate Recommendations Cost Estimate

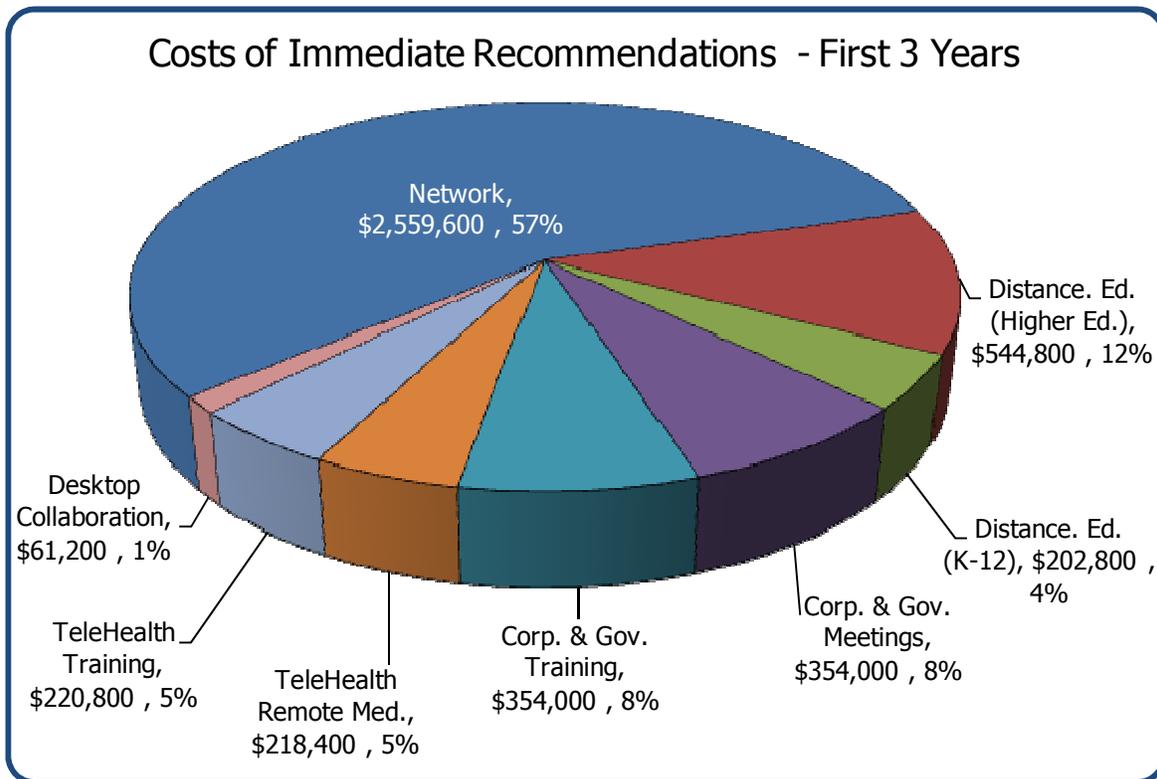


Desktop Collaboration Future Recommendations Cost Estimate

### 9.11 COSTS TO IMPLEMENT IMMEDIATE RECOMMENDATIONS (3-YEARS)

Cost Graphs	Immediate Recommendations							
	Network	Distance. Ed. (Higher Ed.)	Distance. Ed. (K-12)	Corp. & Gov. Meetings	Corp. & Gov. Training	TeleHealth Remote Med.	TeleHealth Training	Desktop Collaboration
<b>Item</b>								
Endpoints		\$252,000	\$0	\$176,000	\$176,000	\$99,000	\$99,000	\$32,000
AV Accessories		\$127,000	\$131,000	\$81,000	\$81,000	\$45,000	\$47,000	\$0
Training		\$75,000	\$38,000	\$38,000	\$38,000	\$38,000	\$38,000	\$19,000
VTC Infrastructure	\$1,284,000							
Replace End of Life FY 2008	\$185,000							
Equipment Upgrades	\$185,000							
Increased Bandwidth Capacity	\$327,000							
Network Training	\$60,000							
Maintenance Adv Parts Replacement	\$92,000							
Contingency (20%)	\$426,600	\$90,800	\$33,800	\$59,000	\$59,000	\$36,400	\$36,800	\$10,200
<b>Subtotal</b>	<b>\$2,559,600</b>	<b>\$544,800</b>	<b>\$202,800</b>	<b>\$354,000</b>	<b>\$354,000</b>	<b>\$218,400</b>	<b>\$220,800</b>	<b>\$61,200</b>

<b>Total</b>	<b>\$4,515,600</b>
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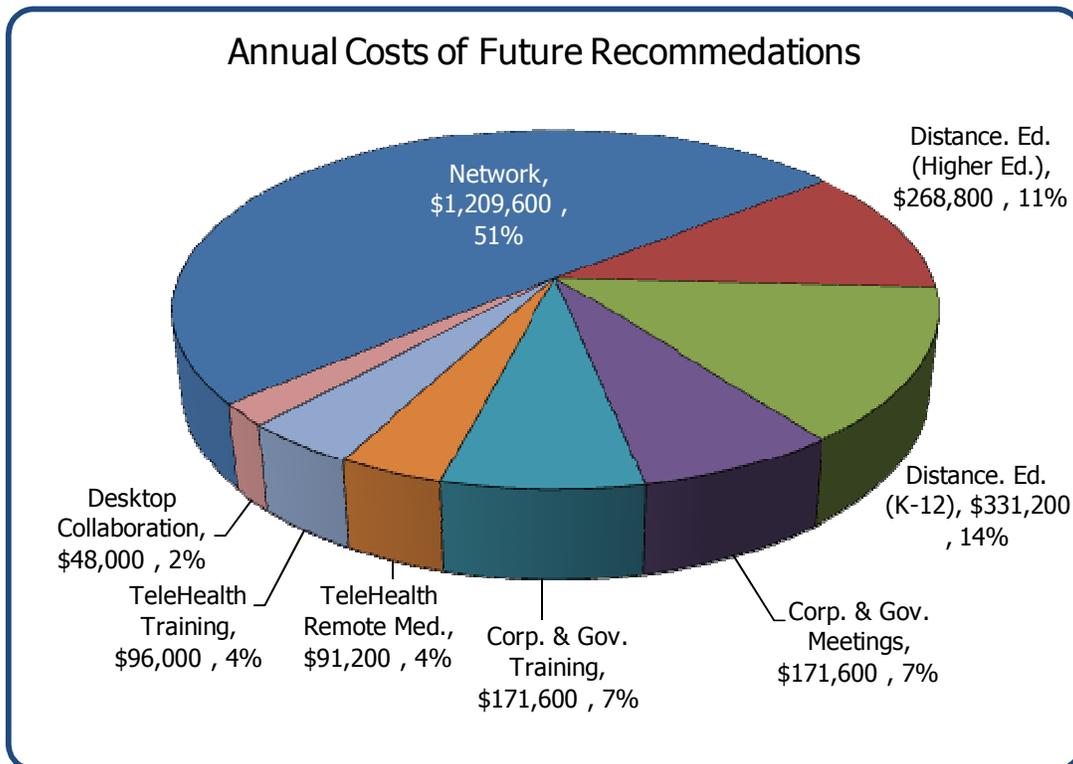


### 9.12 COSTS TO IMPLEMENT FUTURE RECOMMENDATIONS (4-6 YEARS)

Cost Graphs	Future Recommendations							
	Network	Distance. Ed. (Higher Ed.)	Distance. Ed. (K-12)	Corp. & Gov. Meetings	Corp. & Gov. Training	TeleHealth Remote Med.	TeleHealth Training	Desktop Collaboration
<b>Item</b>								
Endpoints		\$130,000	\$180,000	\$87,000	\$87,000	\$33,000	\$35,000	\$32,000
AV Accessories		\$56,000	\$77,000	\$37,000	\$37,000	\$24,000	\$26,000	\$0
Training		\$38,000	\$19,000	\$19,000	\$19,000	\$19,000	\$19,000	\$8,000
VTC Infrastructure	\$102,000							
Replace End of Life 2012	\$298,000							
Equipment Upgrades	*							
Increased Bandwidth Capacity	\$548,000							
Network Training	\$60,000							
Maintenance Adv Parts Replacement	*							
Contingency (20%)	\$201,600	\$44,800	\$55,200	\$28,600	\$28,600	\$15,200	\$16,000	\$8,000
<b>Subtotal</b>	<b>\$1,209,600</b>	<b>\$268,800</b>	<b>\$331,200</b>	<b>\$171,600</b>	<b>\$171,600</b>	<b>\$91,200</b>	<b>\$96,000</b>	<b>\$48,000</b>

\* Note: Complete costs for Network Related Future Recommendations are not available.

<b>Total</b>	<b>\$2,388,000</b>
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## 10 GOVERNANCE

Businesses and government agencies today are faced with great challenges, such as tight budgets and reduced or distributed work forces. With these challenges, workers need to stay continually connected to colleagues to ensure the success and continued growth of their organizations. Modern business culture has addressed communication needs in part by embracing smart phones, instant messaging, social and networking sites, and videoconferencing. As the understanding and value of these communication tools become more widely accepted throughout the State of Wyoming, centralized deployment and management become even more important.

While many collaboration solutions are available for use within and across organizations, issues as to how information and systems are shared, managed, and governed often present significant organizational challenges. To respond to these challenges, nearly all of the Wyoming organizations surveyed have put policies in place to provide a decision-making framework. These policies address subjects as diverse as system architecture, security, monitoring, change management, procurement, and funding. Our findings indicate that these localized frameworks generally suit the needs of the individual organizations. In some areas, we have found the frameworks may not be scalable and have conflicts with each other. This has led to interoperability challenges between systems, resulting in diminished user satisfaction and potentially higher costs.

The methodology used to evaluate the governance of each individual organization’s video conferencing system and potential future governance models started with asking the following questions:

- What is the charter of the governance team?
- What makes sense for the common good?
- What is best left to individual organizations to handle?
- How will governance be funded?
- How will governance be staffed?

We surveyed the key individuals from the various organizations participating in this project. We then followed up with workshops with focus groups that explored the possible governance models appropriate to the program. Our high level recommendations are:

- The State of Wyoming should establish a federated (shared responsibility) governance model that includes all of the State of Wyoming video operators. This organization should provide stability and longevity beyond any individual’s term in office, providing long term direction for videoconferencing in the state.
- The federated governance model should empower a central authority to:
  - Create and enforce minimum baseline standards
  - Fund or subsidize broadband connectivity to member sites

- Fund or subsidize periodic equipment refresh
- Operate utility functions
- Facilitate knowledge transfer among all members
- The federated governance model should allow individual constituent members to:
  - Create and enforce ‘above-baseline’ standards and policies to meet their specific needs
  - Develop and support custom service levels to their constituents
  - Participate with the Central Authority in an advisory capacity

The organizations that provided key input for this report included:

- The Department of Education’s Wyoming Equality Network (WEN)
- The University of Wyoming’s Outreach Video Network (OVN)
- The State of Wyoming Office of the CIO and Wyoming Video Conferencing Services (WCVS)
- The Wyoming Community Colleges
- Wyoming Health Information Organization (WyHIO)
- Wyoming Department of Transportation’s Transportation Learning Network (TLN)
- Representatives of the Wyoming Legislature
- Wyoming Governor Dave Freudenthal

Detail for each of these recommendations is contained in the report body, section 10.4

## **10.1 DEFINITIONS**

To ensure that the readers of this report have a common framework for their review, PlanNet offers the following definitions of a few key terms used in this report:

- Information Technology (IT) Governance – The leadership and management functions for providing essential IT services by planning, architecting, controlling, policing, and enforcing functions of the IT organization within its jurisdictional boundaries.
- Federated IT Governance – Coordinated decision-making involving a central IT authority and the various IT organizations (and tiers within their organizations) that it commonly interacts with. In other words – leadership by sharing IT ownership, management, and responsibility.

## **10.2 KEY PROPERTIES OF FEDERATED IT GOVERNANCE**

- Mandatory Participation – individual organizations can’t secede at will. Long term commitment is required.
- Established Distribution of Power – the central IT organization is vested with a limited set of authority documented in a binding agreement (i.e. a constitution).
- Independence – each member of the federation is self governing (to the limits established in the constitution).

- Resourcing – the central authority acts as the funnel for videoconferencing related funding by the state and videoconferencing related funding requests. It is also able to “tax” federation members for their participation within the agreed upon limits documented in the constitution.

### **10.3 CURRENT WYOMING VTC GOVERNANCE CONCEPTS AND ISSUES**

#### **10.3.1 The State has many different organizations with diverse needs and missions**

The various Wyoming video networks currently support a wide range of users, needs, and missions,. Examples of the diversity of use in the state includes requirements such as those mandated by the State for the Wyoming Equality Network (WEN) for K-12 education, pro-active video-based government meetings to reduce travel costs, University and community college course outreach and informal ad hoc government agency meetings. In addition, emerging requirements for new applications such as tele-health, remote court depositions/ arraignments and web-based collaboration tools will introduce new user constituencies with new requirements. All of these uses are extremely important to each of their own communities.

PlanNet has developed a series of seven (7) model platform solutions that profile different types of Wyoming video uses. Aside from the different room or desktop video conferencing codecs and related bandwidth requirements described in each model platform, each organization also has different support requirements for its constituents, ranging from convenience to mission critical.

For example, all of the Governor’s Task Force member organizations offer video conferencing services. These services may be described in a service catalog that provides a list of IT services that an organization provides to its employees and customers. Each service within the catalog typically would include the elements required for video conferencing such as the video end points (codecs), video infrastructure (i.e. MCUs, gatekeepers, scheduling software) and network infrastructure (i.e. routers, firewalls, carrier services). However, PlanNet found that the Task Force member organizations have not consistently or fully documented their service catalogs according to best practice, communicated to one another or to State of Wyoming videoconferencing users. We provide guidelines below for Service Catalog guidelines.

In addition, Governor’s Task Force member organizations may have timeframes or service level agreements (SLAs) for fulfilling their service, which may include parameters for deploying the service and uptime/reliability and/or time to respond to or resolve issues. Service levels may be ‘best effort’ or may include penalties for failure to meet the specified metrics.

- **Service Catalogs**

Service Catalogs - as defined in Information Technology Infrastructure Library Information Technology Infrastructure Library (ITIL) Service Design, is a list of IT services that an organization provides, often to its employees or customers. Each service within the catalog typically includes:

- A description of the service

In the context of this report, the service offerings would include the elements required for video conferencing such as the video end points (CODEC’s), video infrastructure (i.e. MCU’s, gatekeepers, scheduling software) and network infrastructure (i.e. routers, firewalls, carrier services).

All of the Video Task Force member organizations offer video conferencing services. The seven platform solutions represent a classification for the different categories of service offerings.

- Timeframes or service level agreement (SLA) for fulfilling the service

This may include parameters for deploying the service and uptime/reliability and/or time to respond to or resolve issues. Service levels may be ‘best effort’ or may include penalties for failure to meet the specified metrics.

Our findings indicate that most Video Task Force member organizations offer informal SLA’s or none at all. The term informal SLA is meant to convey the fact that no penalty is incurred if the SLA is not met. With that said, each organization highly values customer service and attempts best effort to resolve problems when they occur. In most cases, this appears to be accomplished through informal arrangements between video and IT organizations within a Video Task Force member organization. In some cases, there are formal SLA’s and support contracts with third party vendors. Examples of formal support arrangements include:

- OVN carrier SLA’s
- WEN support from Qwest (video), Tandberg (Codec’s) and ITD (helpdesk)
- ITD support for various State agencies

Examples of informal support arrangements are:

- OVN interaction with UW IT support
- WEN interaction with ad-hoc advisory groups
- Community College interaction with WEN for one-time conferences

- Costs for providing the service

This may include capital and operating costs.

### **10.3.2 The State has two primary funding methods**

Each Governor’s Task Force member organization utilizes these basic funding approaches for their individual needs:

- Section 1 funding is typically based on appropriations from the State’s General Fund (budgeted items). Section 2 funding is revenue based (i.e. soft money) and can be obtained through grant mechanisms or charge-back cost recovery. Both of these models usually are

focused on one-time non-recurring costs such as equipment, installation, software, carrier circuits, initial support positions, etc. Ongoing recurring costs such as maintenance, software upgrades or support personnel may not be included in either approach and are often left to individual groups to fund.

- It should be noted that the lack of funding for equipment refresh is considered a significant deviation from best practices. The inability to plan and budget for the replacement of the various components of the video conferencing infrastructure may impact the delivery of video services. It is PlanNet’s understanding that funding for equipment replacement is typically requested as a Section 1 (or sometimes as a Section 2 grant) request. Should the request not be funded in the requested fiscal year, the equipment is not replaced. The only exception to this approach was identified in discussions with the state’s Information Technology Division (ITD), where certain charge-back fees include amortization for replacement costs.

Different platform models require different funding models (see gap analysis section)

The platform models described within this report indicate a variety of equipment and services required to fulfill the wide range of user needs. To reiterate in the context of funding, a high level description of the platform models are:

- Distance Education – Collegiate and Professional Learning
- Distance Education – K through 12 Learning
- Corporate and Government Business Meetings and Communications
- Corporate and Government Business Training
- Tele-health – Remote Consultation
- Tele-health – Professional Training
- Desktop Video Communications / Web Collaboration

Some of these platform choices will be tied to desktop computing while some will be high definition uses. Each of these will have their specific amortization schedules as well as software and hardware support requirements.

### **10.3.3 Existing Governance Functions Common to Video Task Force Member Organizations**

Our findings indicate that many of the same governance and management functions are performed by each of the Governor’s Task Force member organizations today. These include:

- 1) Purchasing – The purchasing function is accomplished through different methods at the member organizations. When advantageous to a member’s use, a pre-negotiated contract is utilized (i.e. State contract for Cisco equipment). At other times, an RFP is used to obtain competitive bids (i.e. WEN Qwest contract, tele-health Qwest contract).

- 2) User support / Help Desk – All of the Task Force members provide their video users with a traditional help desk that includes tiered support. Each organization provides for this in a different way:
  - OVN employs staff that function as Tier 1 support to be on the premises (or nearby) codec locations in use. Tier 2 support is provided by the bridge (or MCU) operations staff. If Tier 2 can’t resolve the issue, they determine the functional area of the problem and escalate to Tier 3 (i.e., UW network, Polycom, etc.)
  - WEN contracts to ITD for Tier1 helpdesk support. Similar to the way OVN operates, Tier 2 support is provided by the bridge operations staff. If Tier 2 can’t resolve the issue, they determine the functional area of the problem and escalate to Tier 3 (i.e., Qwest, Tandberg)
- 3) WAN (Wide Area Network) – All of the Task Force members provide broadband support. The delivery of the WAN varies depending on the organization:
  - WEN provides broadband services to a school district or individual school through the contract with Qwest.
  - OVN locations typically ride on the University of Wyoming’s network.
  - WVCS locations typically use the state network.
  - Various departments within the state appear to contract for their own broadband connections.
- 4) Policy Making – Once again, all of the Task Force members provide this governance function. Most organizations use a combination of formal or structured and informal ad hoc policy making bodies:
  - ITD utilizes a very structured hierarchical approach, with the State CIO approving official policies. This overall governance model is detailed at [http://cio.state.wy.us/gov\\_model.pdf](http://cio.state.wy.us/gov_model.pdf). Specific video policies have not yet been published.
  - WEN also has a hierarchical structured approach, with the State Superintendent of Public Instruction approving official policies. In addition, the WEN utilizes ad hoc groups to assist with infrequent or specialized events (i.e., 2006 upgrade RFP).
  - OVN has specified policies that are determined by the Consortium of Outreach representatives. Informal interactions with the University of Wyoming IT department are also in place.
- 5) Videoconferencing Technology Standards - MCU Equipment, codecs and related scheduling software, governance and related polices or management of the bridges are also provided by each organization. Use of specific facilities is dictated by the organization’s mission or by local use:
  - WEN – Use for K-12 Education per the state mandate.
  - OVN – Outreach Credit Programs have priority, all others provided on a first come,

first served basis (on a fee basis).

- WVCS – State agency use first (on a fee basis) , all others (on a fee basis)
- Community Colleges – Education has priority, community service on a first come, first served basis.

### **10.3.4 Elements of Federated Governance Exercised Within Task Force Member Organizations**

The previous section described elements of IT governance that are in use today by each Task Force member Organization. This section further describes examples of federated IT governance that are currently in use within each Task Force member organization:

- 1) WEN – Shared IT responsibility with individual school sites/districts (i.e., last 1000 feet). WEN also shares responsibility for managing the broadband services with Qwest and its subcontractors and utilizes ITD for Tier 1 helpdesk.
- 2) WVCS – Shares IT responsibility with various departments in the State, outsources remote TA assistance to contractors, and provides help desk services to WEN and various agencies within the state.
- 3) OVN - shares IT responsibility with UW IT, shared facilities with community colleges.
- 4) Community Colleges – Cooperation on Wyoming Community College Commission, interaction with WEN and OVN.

In addition, all of the Task Force member organizations have stated that they interact with the other Task Force members at the policy, administrative, and problem solving levels of their organizations. Relationships between organizations have been described by most as “cordial” and “very good”. Examples of these interactions include:

- 5) Cooperation in hosting large multi-system conferences (i.e., recent Real Estate Commission conference).
- 6) Firewall traversal problem -solving for specific or ad hoc conferences.
- 7) Common use of negotiated contracts.
- 8) Strategic planning for long-term video conferencing within the state (our work with the Task Force itself is evidence of this inter-system cooperation).

Despite these existing examples of cooperation and informal federated governance, this study found examples of difficulties caused by a lack of federated governance and cooperation.

- 9) As is common in the organizational dynamics of multiple groups within a system, the goals of each group are not always aligned, sometimes leading to conflicts between groups. We have observed the following as potential areas of conflict:
- 10) There is an existing requirement for ITD to recover actual costs, which may conflict with the need for each client organization to obtain the best service at the lowest price. Whereas ITD might actually be the “low cost leader” when actual cost is fully explored, client organizations do not appear to fully understand the elements of the ITD cost structure:

- It was reported to us that the cost recovery method employed by ITD for the WEN support may have contributed to a negative customer satisfaction rating. Two specific points raised by the WEN were lack of detail on invoices showing actual time worked for each trouble ticket as well as a general lack of training and expertise on the ITD helpdesk for WEN calls. It was speculated that the cost recovery approach did not incentivize ITD to provide better professional development to the help desk or provide accurate time records. PlanNet does not have information to determine actual from perceived service delivery. This specific circumstance may be a misalignment between the service requested by WEN, the WEN’s perceived costs of acquiring the service, and the actual cost of delivering the after-hours service by ITD.
  - It appears that the partial separation of the UW OVN from WVCS was in part based on concerns about support detail costs and is at least in part attributable to current cost recovery methods.
- 11) Specific technical requirements support the mission of each individual organization. Although each individual organization exercises the prerogative to set their own technical requirements, differences between organization technical requirements abound. These differences are captured in the seven platform solutions. It should be noted that some problems that have been attributed to being technical in nature may also contain significant policy components. PlanNet includes firewall traversal and H.239 vendor interoperability in this category.
- 12) Resource Scheduling has been identified as a significant issue. The actual use of rooms in schools (WEN) is an example of limited use of video resources for other organizations. WVCS has room access constraints with Department of Workforce Services’ conference rooms.
- 13) Change Management Processes, including release updates, vary between organizations, leading to some potential feature set differences or incompatibilities.

Change Management is a formal process that many organizations have adopted from the Information Technology Infrastructure Library (ITIL) framework, which is an IT service and support approach that has gained significant world-wide acceptance. All IT support stakeholders that might be impacted by a change (e.g., new software releases and new equipment) are consulted prior to the change, evaluate the change (sometimes through simulation or regression testing), and document a formal change plan including communication, implementation and potentially rollback to previous stable versions. As previously stated, these processes vary between organizations in Wyoming leading to a variety of problems such as connectivity issues between agencies.

## 10.4 POTENTIAL GOVERNANCE MODELS

There are several governance models that are viable candidates for the overall State of Wyoming video conferencing environment. These range from keeping things the way they are now (distributed model) at one end of the spectrum to moving to a completely centralized model at the other end of the spectrum. In between these two points are different approaches for federated or shared governance.

The viable options are discussed in this section:

### 10.4.1 Distributed Model: Keep current system with no changes:

	Supporting Statements	Opposing Statements
A	Each of the major networks has unique requirements.	Highest cost of operations to the State of any governance model (duplication of effort and resources).
B	Each of the major networks has maximum flexibility and control.	Interoperability between existing video networks is sub-optimal.
C	WEN has judicial mandate that requires specific Department of Education governance.	Emerging requirements such as tele-health struggle to obtain funding, especially for operating expenses.
D		Lack of coordinated effort to improve broadband access in the state, especially for non-Qwest territories.
E		End user support uneven due to differing capabilities.

### 10.4.2 Appoint an existing or create a new organization as a central governance authority:

	Supporting Statements	Opposing Statements
A	Will greatly improve interoperability among existing video networks by codifying standards (i.e. governance policies, firewall traversal, protocols).	Each of the major networks has unique requirements that are best met by local governance.
B	In theory, will provide the lowest cost of operations to the State by optimizing use and eliminating duplication of resources.	Centralized authority will reduce flexibility for local decision-making, possibly resulting in lower user satisfaction.
C	“New” organization would eliminate perception of “winners” and “losers.”	A central authority created from an existing organization could create perception of “winners” and “losers.”
D	Centralized funding with equipment replacement schedules resulting in predictable annual budgeting.	Unique member organization requirements may not be adequately addressed.

**10.4.3 Determine appropriate federated model:**

	<b>Supporting Statements</b>	<b>Opposing Statements</b>
A	Should greatly improve Interoperability between existing video networks by codifying standards (i.e. governance policies, firewall traversal, protocols)	Each of the major networks has unique requirements that requires absolute member organization governance
B	Will improve the cost of operations to the State by optimizing use, gaining economy of scale and eliminating duplication	User satisfaction will decrease because federated decisions don’t align with user needs
C	Federated Authority will balance local requirements with areas that benefit from centralized standards. This is likely to result in efficiencies and improved operations	Could create perception of ‘winners’ and ‘losers’

**10.4.4 Discussion of Governance Options for the State of Wyoming’s Video Networks**

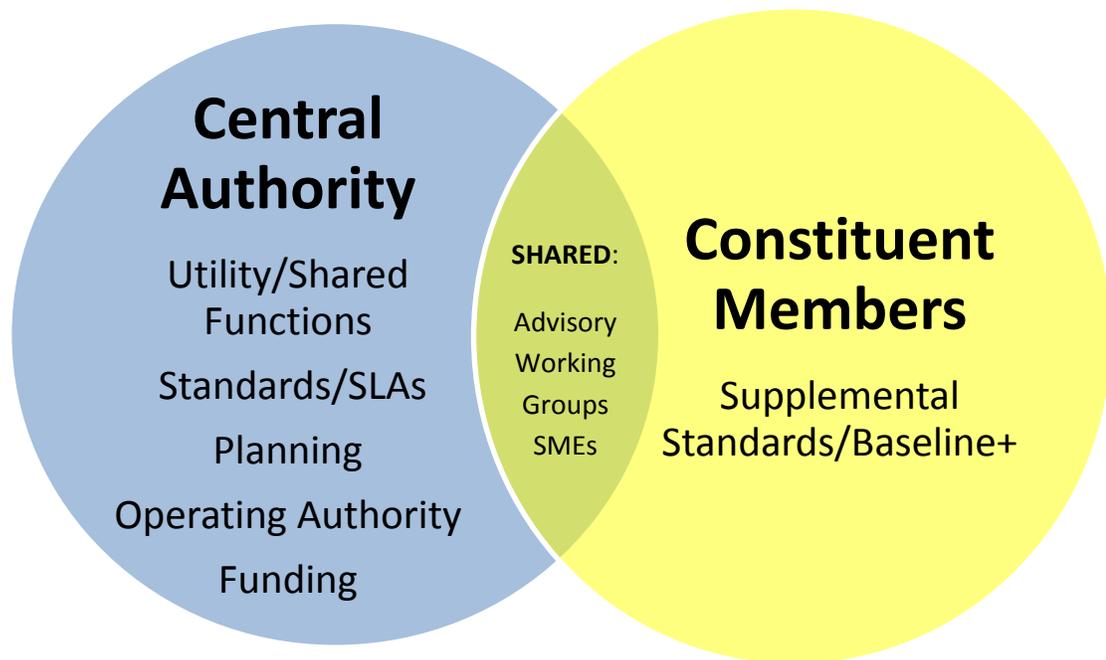
Each of the three major governance approaches described above has significant advantages and disadvantages associated with them.

- 1) Our findings indicate that the current approach appears to provide acceptable service levels and user satisfaction within each individual organization’s domain. Interoperability between each organization’s video network is sub-optimal and the duplication of effort and resources inherent in this model results in the highest overall cost to the State.
- 2) Although the centralized model has significant theoretical cost advantages, experience has shown that the inflexibilities imposed on member organizations and users leads to great dissatisfaction. It is likely the cost of user dissatisfaction would greatly outweigh any potential hard dollar cost savings. Projected costs savings rarely materialize to the level projected. This model is not recommended as a long term solution.
- 3) We believe that a federated governance model will combine the best elements of the aforementioned approaches. In basic terms, this would centralize the appropriate functions while leaving local decision making in the hands of member organizations where it makes sense. Many of the functions would be shared.

The basic questions discussed earlier apply here:

- What is the charter of the governance team?
- What makes sense for the common good?
- What is best left to individual organizations to handle?
- How will governance be funded?
- How will governance be staffed?

The following describes our specific recommendations for the federated model most applicable to the State of Wyoming’s video networks:



- 4) Charter of the Central Authority -- The following elements should be defined for an appropriate federated model for Wyoming’s video networks:
- Policy Making (and its limits) – this should be limited to high-level standards for the “utility and shared functions” needed for video conferencing, including architecture, interoperability and support. The phrase “utility and shared functions” refers to the core IP transport and the system architecture, interoperability, and support functions associated with it.
  - Standards may include a wide range of items. Some of the key elements that apply to videoconferencing in Wyoming include:
    - Manufacturer (i.e., Cisco, Polycom, Tandberg)
    - Models of?
    - Protocols (i.e., H.323, H.329, H.320, TCP/IP)
    - Configurations (i.e., IOS commands)
    - Authentication, directories, and trust relationships
    - Firewall transversal
    - Scheduling of resources
    - In individual networks (i.e., within the WEN), standards exist for most of the elements described in the bullets above. However, it was reported that the lack of standards between the networks has led to a loss in productivity and

higher support costs.

- Operating ability – this should define the “utility and shared functions” to be operated by the central authority. The actual operations activities may be contracted out to members or third parties.
  - Funding and Taxing ability – this should detail how the “utility and shared functions” are funded on an ongoing basis by the member organizations. This includes the cost of governance itself. The funding requirements can be calculated in a number of ways. For example, fees may be levied based on a per site, per organization size, or per member organization per platform model.
  - Constituent members – this defines who the voting and non-voting members are and weighting (if any of the members’ votes. Members of the Governor’s Task Force that operate video networks are obvious choices. Additional members such as tele-health constituents should be considered.
- 5) General Functions of the Centralized Authority – The following describes detailed elements of what the centralized governance authority should be responsible for:
- Purchasing standards for common elements
    - Broadband (bandwidth)
    - codecs and endpoint devices
    - Desktop video platform
    - Infrastructure
    - Gateways
    - MCUs
    - Scheduling software
  - Planning
    - Architecture
      - Current
      - Future
    - Infrastructure Refresh
    - Functionality
  - Operating Authority (See Technology Recommendations and Gap Analysis)
    - Inter-domain security policy
    - Scheduling and MCU
    - Base level SLAs
    - Tiered help desk
    - Video network management
    - Customer satisfaction assurance

6) General functions of the member organizations – Aside from the duties described above, each individual member organization will be responsible for all other operations. Some examples of these duties are:

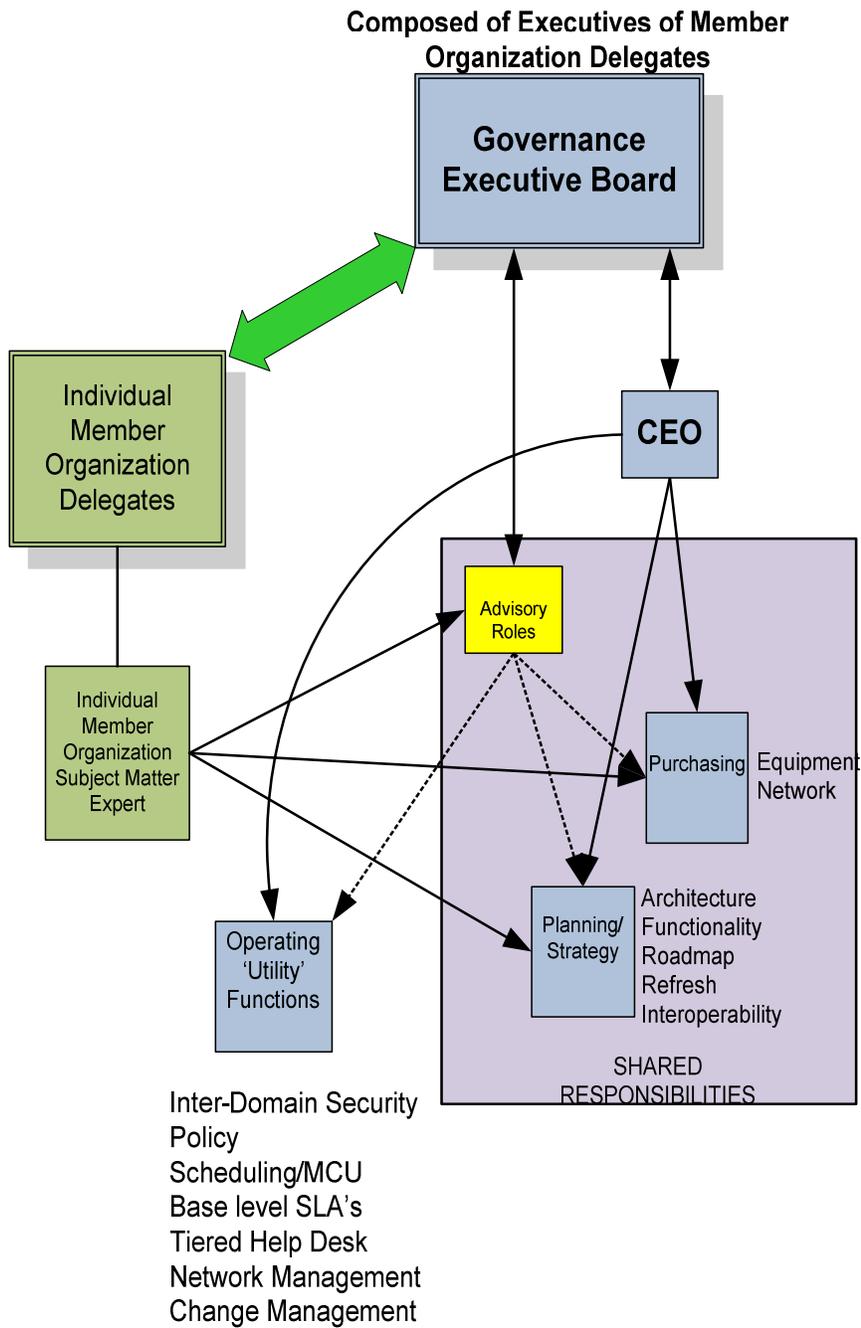
- Supplemental SLAs, for example, 7x24 hour support.
  - Equipment required by member organizations above the baseline equipment provided by the central authority. These may include capability beyond standard definition equipment, such as High Definition (HD).
- Serve in an advisory role to ? and provide subject matter experts to staff working groups for technical and operating expertise.
- Shared Responsibilities

Although many responsibilities are listed as part of the centralized function of the federated governance model, PlanNet recommends that many of the positions be staffed by personnel that are part of individual member organizations. This is specifically recommended for the non-operating advisory positions such as planning and strategy.

## **10.5 GOVERNANCE RECOMMENDATIONS**

PlanNet recommends that a federated governance model be put in place for the State of Wyoming’s video networks. The following list and diagram illustrate the high level functions necessary for an effective federated governance model:

- An Executive Board comprised of senior representatives of member organizations should function as a Board of Trustees and provide oversight to the CEO.
- The ultimate authority of the CEO will be determined by the charter and the executive board. The CEO’s key function is to ensure the federated governance model is functioning correctly and meeting the needs of the members.
- Representatives of member organizations (managers and subject matter experts) would collaborate in advisory roles for planning functions.
- Representatives of member organizations (managers and subject matter experts) may be appointed or funded for certain utility functions (i.e. scheduling, network management). Alternatively, the central authority may choose to use non-member personnel for these functions.



## 11 APPENDICES:

### 11.1 GLOSSARY

The following technical terms are used throughout this report. When appropriate, these terms are explained in context with additional information provided here. Definitions here are nearly verbatim references from [www.protocolbase.net](http://www.protocolbase.net) and [www.wikipedia.org](http://www.wikipedia.org).

#### **ATM**

Asynchronous Transfer Mode (ATM) is an electronic digital data transmission technology. ATM is implemented as a network protocol and was first developed in the mid 1980s. The goal was to design a single networking strategy that could transport real-time video conference and audio as well as image files, text and email. Two groups, the International Telecommunications Union and the ATM Forum were involved in the creation of the standards.

#### **Codec**

Codec is a portmanteau of either "Compressor-Decompressor" or "Coder-Decoder," which describes a device or program capable of performing transformations on a data stream or signal. codecs can both put the stream or signal into an encoded form (often for transmission, storage or encryption) and retrieve, or decode that form for viewing or manipulation in a format more appropriate for these operations.

#### **DNS**

DNS (Domain Name System or Service or Server), an Internet service that translates domain names into IP addresses. Because domain names are alphabetic, they're easier to remember. The Internet however, is really based on IP addresses. Every time you use a domain name, therefore, a DNS service must translate the name into the corresponding IP address. For example, the domain name [www.example.com](http://www.example.com) might translate to 198.105.232.4.

The DNS system is, in fact, its own network. If one DNS server doesn't know how to translate a particular domain name, it asks another one, and so on, until the correct IP address is returned.

#### **EoL**

End-of-life (EoL) is a term used with respect to a retailed product, indicating that the product is in the end of its product lifetime and a vendor will no longer be marketing, selling, or promoting a particular product and may also be limiting or ending support for the product. In the specific case of product sales, the term end-of-sale (EOS) has also been used. The term lifetime, after the last production date, depends on the product and is related to a customer's expected product lifetime. Different lifetime examples include toys from fast food chains (weeks or months), cars (10 years), and mobile phones (3 years).

Product support during EOL varies by product. For hardware with an expected lifetime of 10 years after production ends, the support includes spare parts, technical support and service. Spare part

lifetimes are price-driven due to increasing production costs: when the parts no longer can be supplied through a high volume production site (often closed when series production ends), the cost increases.

**Gatekeeper**

An H.323 Gatekeeper is an entity that manages an H.323 zone, providing address information/translation and other services to the terminals within the zone, and for Gatekeepers managing other zones.

**Gateway**

A network device used to translate between two different protocols. Used to interconnect two networks that use incompatible protocols. It is a node on a network that serves as an entrance to another network. In enterprises, the gateway is the computer that routes the traffic from a workstation to the outside network that is serving the Web pages. In homes, the gateway is the ISP that connects the user to the internet.

In enterprises, the gateway node often acts as a proxy server and a firewall. The gateway is also associated with both a router, which use headers and forwarding tables to determine where packets are sent, and a switch, which provides the actual path for the packet in and out of the gateway.

It is also a computer system located on earth that switches data signals and voice signals between satellites and terrestrial networks and an earlier term for router, though now obsolete in this sense as router is commonly used.

**H.235**

H.235 provides enhancements within the framework of the H.3xx-Series Recommendations to incorporate security services such as Authentication and Privacy (data encryption). H.235 should work with other H series protocols that utilize H.245 as their control protocol.

**H.239**

H.239 describes dual stream use in videoconferencing, usually one for live video, the other for presentation.

**H.323**

H.323 is an umbrella recommendation from the ITU-T, which defines the protocols to provide audio-visual communication sessions on any packet network. It is currently implemented by various Internet real-time applications such as Live Meeting. It is a part of the H.32x series of protocols which also address communications over ISDN, PSTN or SS7. H.323 is commonly used in Voice over IP (VoIP) and IP-based videoconferencing.

#### **H.450**

H.450 refers to a set of standards created by the International Telecommunications Union (ITU) to define several Supplementary Services of the packet based telecommunication protocol known as H.323. It parallels another set of standards known as QSIG which define similar services for ISDN based networks.

#### **H.460**

H.460 series defines optional extensions that might be implemented by an endpoint or a Gatekeeper, including ITU-T Recommendations H.460.17, H.460.18, and H.460.19 for Network address translation (NAT) / Firewall (FW) traversal.

#### **ISDN**

ISDN (Integrated Services Digital Network), an international communications standard for sending voice, video, and data over digital telephone lines or normal telephone wires. ISDN supports data transfer rates of 64 Kbps (64,000 bits per second).

#### **ITU**

The International Telecommunication Union (ITU) is an international organization established to standardize and regulate international radio and telecommunications. It was founded as the International Telegraph Union in Paris in May 17, 1865, and is today the world's oldest international organization. Its main tasks include standardization, allocation of the radio spectrum, and organizing interconnection arrangements between different countries to allow international phone calls. It is one of the specialized agencies of the United Nations, and has its headquarters in Geneva, Switzerland, next to the main United Nations campus.

#### **Internet**

A global network connecting millions of computers. More than 100 countries are linked into exchanges of data, news and opinions.

Unlike online services, which are centrally controlled, the Internet is decentralized by design. Each Internet computer, called a host, is independent. Its operators can choose which Internet services to use and which local services to make available to the global Internet community. Remarkably, this anarchy by design works exceedingly well.

There are a variety of ways to access the Internet. Most online services, such as America Online, offer access to some Internet services. It is also possible to gain access through a commercial Internet Service Provider (ISP).

### **LAN**

Local-area network (LAN) is a computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance via telephone lines and radio waves. A system of LANs connected in this way is called a wide-area network (WAN).

Most LANs connect workstations and personal computers. Each node (individual computer) in a LAN has its own CPU with which it executes programs, but it also is able to access data and devices anywhere on the LAN. This means that many users can share expensive devices, such as laser printers, as well as data. Users can also use the LAN to communicate with each other, by sending e-mail or engaging in chat sessions.

### **MCU**

A **Multipoint Control Unit** (MCU) is a device commonly used to bridge videoconferencing connections. It is an endpoint on the network that provides the capability for 3 or more video codec endpoints and gateways to participate in a multipoint conference.

### **QoS**

QoS (Quality of Service) refers to the capability of a network to provide better service to selected network traffic over various technologies, including Frame Relay, Asynchronous Transfer Mode (ATM), Ethernet and 802.1 networks, SONET, and IP-routed networks that may use any or all of these underlying technologies.

### **URL**

URL (Uniform Resource Locator) is the global address of documents and other resources on the World Wide Web. The first part of the address indicates what protocol to use, and the second part specifies the IP address or the domain name where the resource is located.

For example, the two URLs below point to two different files at the domain pcwebopedia.com. The first specifies an executable file that should be fetched using the FTP protocol; the second specifies a Web page that should be fetched using the HTTP protocol:

ftp://www.webpage.com/example.exe  
http://www.webpage.com/index.html

### **Video codec**

A video codec is a device or software module that enables the use of compression for digital video. The compression usually employs lossy data compression. See codec.

**VoIP**

Voice over Internet Protocol, a category of hardware and software that enables people to use the Internet as the transmission medium for telephone calls by sending voice data in packets using IP rather than by traditional circuit transmissions of the PSTN. One advantage of VoIP is that the telephone calls over the Internet do not incur a surcharge beyond what the user is paying for Internet access, much in the same way that the user doesn't pay for sending individual e-mails over the Internet.

**WAN**

WAN (Wide Area Network) is a network that spans a large area, typically including routers, gateways, and many different IP address groups.

In the context of firewalls, the WAN interface is the one directly connected to the Internet. In the context of corporate networks, the WAN generally refers to the network that connects all of the organization's locations onto the corporate network. Historically this was accomplished with expensive private leased lines like frame relay and similar technologies. With the low cost and widespread availability of broadband Internet connections, many organizations are switching to using VPN in lieu of leased lines. VPN provides the same functionality, though is not as reliable as leased lines and has higher latency.

## 11.2 BREAKDOWN OF COSTS – IMMEDIATE RECOMMENDATIONS

Dist. Ed. (Higher Ed.) OVN, Sheridan College, WWCC, CWC			Dist. Ed. (K-12) WEN			Corp. & Gov. Meetings WyDOT, WVCS		
Endpoints	Total Endpoints:	83	Total Endpoints:	115	Total Endpoints:	55		
	# EOL:	23	# EOL:	0	# EOL:	16		
	990 MXP:	\$7,544.00	990 MXP:	\$7,544.00	990 MXP:	\$7,544.00		
	NPP:	\$1,680.00	NPP:	\$1,680.00	NPP:	\$1,680.00		
	Materials:	\$212,152.00	Materials:	\$0.00	Materials:	\$147,584.00		
Labor:	\$39,778.50	Labor:	\$0.00	Labor:	\$27,672.00			
<b>Total:</b>	<b>\$252,000.00</b>	<b>Total:</b>	<b>\$0.00</b>	<b>Total:</b>	<b>\$176,000.00</b>			
AV Accessories	Total Rooms:	83	Total Rooms:	115	Total Rooms:	55		
	Refresh %:	16%	Refresh %:	10%	Refresh %:	15%		
	# Rooms Refresh:	13	# Rooms Refresh:	12	# Rooms Refresh:	8		
	Displays:	\$3,000.00	Displays:	\$3,000.00	Displays:	\$3,000.00		
	Microphones:	\$300.00	Microphones:	\$300.00	Microphones:	\$300.00		
	Cameras:	\$2,500.00	Cameras:	\$2,500.00	Cameras:	\$2,500.00		
	Control:	\$34,030.00	Control:	\$47,150.00	Control:	\$22,550.00		
	Subtotal Materials:	\$109,850.50	Subtotal Materials:	\$113,850.00	Subtotal Materials:	\$70,400.00		
	Labor:	\$16,477.58	Labor:	\$17,077.50	Labor:	\$10,560.00		
	<b>Total:</b>	<b>\$127,000.00</b>	<b>Total:</b>	<b>\$131,000.00</b>	<b>Total:</b>	<b>\$81,000.00</b>		
Training	Hours	1000	Hours	500	Hours	500		
	Rate	\$75.00	Rate	\$75.00	Rate	\$75.00		
<b>Total:</b>	<b>\$75,000.00</b>	<b>Total:</b>	<b>\$38,000.00</b>	<b>Total:</b>	<b>\$38,000.00</b>			
VTC Infrastructure	MCU Cost:	\$157,267.50	MCU Cost:	\$157,267.50	MCU Cost:	\$157,267.50		
	VCS Cost:	\$39,959.17	VCS Cost:	\$39,959.17	VCS Cost:	\$39,959.17		
	TMS Cost:	\$4,465.83	TMS Cost:	\$4,465.83	TMS Cost:	\$4,465.83		
	Outlook Cost:	\$6,500.00	Outlook Cost:	\$6,500.00	Outlook Cost:	\$6,500.00		
	Content Srvr Cost:	\$5,037.50	Content Srvr Cost:	\$5,037.50	Content Srvr Cost:	\$5,037.50		
<b>Total:</b>	<b>\$214,000.00</b>	<b>Total:</b>	<b>\$214,000.00</b>	<b>Total:</b>	<b>\$214,000.00</b>			
Labor %:	15%	Labor %:	15%	Labor %:	15%			

Corp. & Gov. Training WyDOT, WVCS			TeleHealth Remote Med. TeleHealth, UW Pharmacy, UW Health Sci.			TeleHealth Training TeleHealth, UW Pharmacy, UW Health Sci.		
Endpoints	Total Endpoints:	55	Total Endpoints:	21	Total Endpoints:	22		
	# EOL:	16	# EOL:	9	# EOL:	9		
	990 MXP:	\$7,544.00	990 MXP:	\$7,544.00	990 MXP:	\$7,544.00		
	NPP:	\$1,680.00	NPP:	\$1,680.00	NPP:	\$1,680.00		
	Materials:	\$147,584.00	Materials:	\$83,016.00	Materials:	\$83,016.00		
Labor:	\$27,672.00	Labor:	\$15,565.50	Labor:	\$15,565.50			
<b>Total:</b>	<b>\$176,000.00</b>	<b>Total:</b>	<b>\$99,000.00</b>	<b>Total:</b>	<b>\$99,000.00</b>			
AV Accessories	Total Rooms:	55	Total Rooms:	21	Total Rooms:	22		
	Refresh %:	15%	Refresh %:	14%	Refresh %:	14%		
	# Rooms Refresh:	8	# Rooms Refresh:	3	# Rooms Refresh:	3		
	Displays:	\$3,000.00	Displays:	\$3,000.00	Displays:	\$3,000.00		
	Microphones:	\$300.00	Microphones:	\$300.00	Microphones:	\$300.00		
	Cameras:	\$2,500.00	Cameras:	\$6,600.00	Cameras:	\$6,600.00		
	Control:	\$22,550.00	Control:	\$8,610.00	Control:	\$9,020.00		
	Subtotal Materials:	\$70,400.00	Subtotal Materials:	\$38,409.00	Subtotal Materials:	\$40,238.00		
	Labor:	\$10,560.00	Labor:	\$5,761.35	Labor:	\$6,035.70		
	<b>Total:</b>	<b>\$81,000.00</b>	<b>Total:</b>	<b>\$45,000.00</b>	<b>Total:</b>	<b>\$47,000.00</b>		
Training	Hours	500	Hours	500	Hours	500		
	Rate	\$75.00	Rate	\$75.00	Rate	\$75.00		
<b>Total:</b>	<b>\$38,000.00</b>	<b>Total:</b>	<b>\$38,000.00</b>	<b>Total:</b>	<b>\$38,000.00</b>			
VTC Infrastructure	MCU Cost:	\$157,267.50	MCU Cost:	\$157,267.50	MCU Cost:	\$157,267.50		
	VCS Cost:	\$39,959.17	VCS Cost:	\$39,959.17	VCS Cost:	\$39,959.17		
	TMS Cost:	\$4,465.83	TMS Cost:	\$4,465.83	TMS Cost:	\$4,465.83		
	Outlook Cost:	\$6,500.00	Outlook Cost:	\$6,500.00	Outlook Cost:	\$6,500.00		
	Content Srvr Cost:	\$5,037.50	Content Srvr Cost:	\$5,037.50	Content Srvr Cost:	\$5,037.50		
<b>Total:</b>	<b>\$214,000.00</b>	<b>Total:</b>	<b>\$214,000.00</b>	<b>Total:</b>	<b>\$214,000.00</b>			
Labor %:	15%	Labor %:	15%	Labor %:	15%			

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Desktop Collaboration		
Endpoints	Any	
	Elluminate Licenses:	1000
	Elluminate Cost:	\$31,300.00
	<b>Total:</b>	<b>\$32,000.00</b>
Training		
	Hours	250
	Rate	\$75.00
	<b>Total:</b>	<b>\$19,000.00</b>

### 11.3 BREAKDOWN OF COSTS – FUTURE RECOMMENDATIONS

Dist. Ed. (Higher Ed.) OVN, Sheridan College, WWCC, CWC			Dist. Ed. (K-12) WEN			Corp. & Gov. Meetings WyDOT, WVCS		
Endpoints	Total Endpoints:	83	Total Endpoints:	115	Total Endpoints:	55		
	Refresh %;	11.9	Refresh %;	16.4	Refresh %;	7.9		
	990 MXP:	\$7,544.00	990 MXP:	\$7,544.00	990 MXP:	\$7,544.00		
	NPP:	\$1,680.00	NPP:	\$1,680.00	NPP:	\$1,680.00		
	Materials:	\$109,370.29	Materials:	\$151,537.14	Materials:	\$72,474.29		
	Labor:	\$20,506.93	Labor:	\$28,413.21	Labor:	\$13,588.93		
	<b>Total:</b>	<b>\$130,000.00</b>	<b>Total:</b>	<b>\$180,000.00</b>	<b>Total:</b>	<b>\$87,000.00</b>		
AV Accessories	Total Rooms:	83	Total Rooms:	115	Total Rooms:	55		
	Refresh %:	10%	Refresh %:	10%	Refresh %:	10%		
	# Rooms Refresh:	8	# Rooms Refresh:	12	# Rooms Refresh:	6		
	Displays:	\$3,000.00	Displays:	\$3,000.00	Displays:	\$3,000.00		
	Microphones:	\$300.00	Microphones:	\$300.00	Microphones:	\$300.00		
	Cameras:	\$2,500.00	Cameras:	\$2,500.00	Cameras:	\$2,500.00		
	Subtotal Materials:	\$48,140.00	Subtotal Materials:	\$66,700.00	Subtotal Materials:	\$31,900.00		
	Labor:	\$7,221.00	Labor:	\$10,005.00	Labor:	\$4,785.00		
		<b>Total:</b>	<b>\$56,000.00</b>	<b>Total:</b>	<b>\$77,000.00</b>	<b>Total:</b>	<b>\$37,000.00</b>	
	Training	Hours	500	Hours	250	Hours	250	
Rate		\$75.00	Rate	\$75.00	Rate	\$75.00		
	<b>Total:</b>	<b>\$38,000.00</b>	<b>Total:</b>	<b>\$19,000.00</b>	<b>Total:</b>	<b>\$19,000.00</b>		
VTC Infrastructure	MCU Cost:	\$7,728.33	MCU Cost:	\$7,728.33	MCU Cost:	\$7,728.33		
	VCS Cost:	\$4,530.00	VCS Cost:	\$4,530.00	VCS Cost:	\$4,530.00		
	TMS Cost:	\$2,670.00	TMS Cost:	\$2,670.00	TMS Cost:	\$2,670.00		
	Outlook Cost:	\$735.00	Outlook Cost:	\$735.00	Outlook Cost:	\$735.00		
	Content Svr Cost:	\$550.00	Content Svr Cost:	\$550.00	Content Svr Cost:	\$550.00		
	<b>Total:</b>	<b>\$17,000.00</b>	<b>Total:</b>	<b>\$17,000.00</b>	<b>Total:</b>	<b>\$17,000.00</b>		
	Labor %:	15%	Labor %:	15%	Labor %:	15%		

Corp. & Gov. Training WyDOT, WVCS			TeleHealth Remote Med. TeleHealth, UW Pharmacy, UW Health Sci.			TeleHealth Training TeleHealth, UW Pharmacy, UW Health Sci.		
Endpoints	Total Endpoints:	55	Total Endpoints:	21	Total Endpoints:	22		
	Refresh %;	7.9	Refresh %;	3.0	Refresh %;	3.1		
	990 MXP:	\$7,544.00	990 MXP:	\$7,544.00	990 MXP:	\$7,544.00		
	NPP:	\$1,680.00	NPP:	\$1,680.00	NPP:	\$1,680.00		
	Materials:	\$72,474.29	Materials:	\$27,672.00	Materials:	\$28,989.71		
	Labor:	\$13,588.93	Labor:	\$5,188.50	Labor:	\$5,435.57		
	<b>Total:</b>	<b>\$87,000.00</b>	<b>Total:</b>	<b>\$33,000.00</b>	<b>Total:</b>	<b>\$35,000.00</b>		
AV Accessories	Total Rooms:	55	Total Rooms:	21	Total Rooms:	22		
	Refresh %:	10%	Refresh %:	10%	Refresh %:	10%		
	# Rooms Refresh:	6	# Rooms Refresh:	2	# Rooms Refresh:	2		
	Displays:	\$3,000.00	Displays:	\$3,000.00	Displays:	\$3,000.00		
	Microphones:	\$300.00	Microphones:	\$300.00	Microphones:	\$300.00		
	Cameras:	\$2,500.00	Cameras:	\$6,600.00	Cameras:	\$6,600.00		
	Subtotal Materials:	\$31,900.00	Subtotal Materials:	\$20,790.00	Subtotal Materials:	\$21,780.00		
	Labor:	\$4,785.00	Labor:	\$3,118.50	Labor:	\$3,267.00		
		<b>Total:</b>	<b>\$37,000.00</b>	<b>Total:</b>	<b>\$24,000.00</b>	<b>Total:</b>	<b>\$26,000.00</b>	
	Training	Hours	250	Hours	250	Hours	250	
Rate		\$75.00	Rate	\$75.00	Rate	\$75.00		
	<b>Total:</b>	<b>\$19,000.00</b>	<b>Total:</b>	<b>\$19,000.00</b>	<b>Total:</b>	<b>\$19,000.00</b>		
VTC Infrastructure	MCU Cost:	\$7,728.33	MCU Cost:	\$7,728.33	MCU Cost:	\$7,728.33		
	VCS Cost:	\$4,530.00	VCS Cost:	\$4,530.00	VCS Cost:	\$4,530.00		
	TMS Cost:	\$2,670.00	TMS Cost:	\$2,670.00	TMS Cost:	\$2,670.00		
	Outlook Cost:	\$735.00	Outlook Cost:	\$735.00	Outlook Cost:	\$735.00		
	Content Svr Cost:	\$550.00	Content Svr Cost:	\$550.00	Content Svr Cost:	\$550.00		
	<b>Total:</b>	<b>\$17,000.00</b>	<b>Total:</b>	<b>\$17,000.00</b>	<b>Total:</b>	<b>\$17,000.00</b>		
	Labor %:	15%	Labor %:	15%	Labor %:	15%		

State of Wyoming – Governor’s Task Force  
IP-Based Videoconferencing and Governance Final Report

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Desktop Collaboration	
Endpoints	Any
	Eliminate Licenses: 7500
	Eliminate Cost: \$31,300.00
	<b>Total: \$32,000.00</b>
Training	Hours 100
	Rate \$75.00
	<b>Total: \$8,000.00</b>

## 11.4 LIST OF INTERVIEW PARTICIPANTS

No.	Date	Meeting	No. of Attendees
1	5/12	B Morrison, R. Aylward	3
2	5/12	OVN	10
3	5/12	Outreach School	6
4	5/12	Governor Dave Freudenthal	5
5	5/12	Miscellaneous Directors	10
6	5/12	Miscellaneous Directors	11
7	5/13	John Hartwig, Jamie Markus	2
8	5/13	CIOs	8
9	5/13	Health	4
10	5/13	WEN	12
11	5/14	LSO	4
12	5/14	State Parks	2
14	5/18	Community Colleges Mtg1	8
15	5/18	WyDEC	10
16	5/20	Legislators - Rose Berger	1
17	5/22	Final Catch-up Interview with	9
18	6/2	Community Colleges Mtg2	20
19	6/2	Rep. Pete Illoway	1
20	6/3	Community Colleges Mtg3	9
21	6/17	MCU Administrators	10
22	6/17	Governance Interview No. 1	5
23	6/18	Governance Interview No. 2	4
24	6/19	Governance Interview No. 3	5
25	6/22	Governance Interview No. 4	8
26	6/23	Legislators Interview	3
27	6/25	Legislators Interview	2
		Total	172

## 11.5 INVENTORIES

- State of Wyoming Videoconferencing Systems Inventory
- State of Wyoming Combined WAN Inventory
- State of Wyoming WAN Hardware Inventory

**State of Wyoming  
Videoconference Systems Inventory**

Network Name	Endpoint Name	Location / Site	Address	Room	Manufacturer	Model	OS Version	End of Life (EOL) Date	ISDN / IP	Content Sharing	Multipoint	QoS Enabled	Portable	Monitors	Comments	Data Source
OVN	Laramie/OVN 5			UW Campus, Wyo Hall 304	Lifesize	LS_TM1	3.0.2(1)	No	IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
OVN	Riverton/OVN 3			Riverton Outreach Building	Polycom	3000	8.5	No	IP	yes	no	no	no	built in		UW Inventory.xlsx
OVN	Laramie/OVN 1			UW Campus, Classroom Bldg	Polycom	8000	8.5	No	IP	yes	no	yes	no	(2) 60"	(2) cameras	UW Inventory.xlsx
OVN	Laramie/OVN 4			UW Campus, Wyo Hall 312	Polycom	8000	8.7.1	No	IP	yes	yes, 4	yes	no	(2) 32"		UW Inventory.xlsx
OVN	Laramie/OVN 2			UW Campus, Education Bldg Rm	Polycom	HDX 9004	2.5.0.1-3332	No	IP	yes	yes, 8	yes	no	(2) 72"	(2) Cameras	UW Inventory.xlsx
OVN	Gillette/OVN 1			Gillette Campus, NW Regional	Polycom	VSX 7400	8.5	?	IP	yes	no	yes	no	(1) 32"		UW Inventory.xlsx
OVN	Jackson/OVN 1			Center for the Arts, Rm 120	Polycom	VSX 7400	8.5	?	IP	yes	no	no	no	(1) 32"		UW Inventory.xlsx
OVN	Laramie/OVN 6			UW Campus, Wyo Hall 327	Polycom	VSX 7400	8.7.1	?	IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
OVN	Laramie/OVN 8			UW Campus, Wyo Hall 333	Polycom	VSX 7400	8.7.1	?	IP	yes	no	yes	no	(1) 32"	office unit	UW Inventory.xlsx
OVN	Lusk/OVN 1			Niobrara County School District	Polycom	VSX 7400	9.0.1	?	IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Newcastle/OVN 1			Newcastle Community	Polycom	VSX 7400	9.0.1	?	IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Rawlins/OVN 1			Carbon County Higher Education	Polycom	VSX 7400	8.5.2	?	IP	yes	no	no	no	(1) 32"		UW Inventory.xlsx
OVN	Riverton/OVN 1			Central Wyoming College	Polycom	VSX 7400	8.5	?	IP	yes	no	yes	no	(1) 32"		UW Inventory.xlsx
OVN	Rock Springs/OVN 1			Western Wyoming College Rm	Polycom	VSX 7400	8.5	?	IP	yes	no	yes	no	(1) 32"		UW Inventory.xlsx
OVN	Torrington/OVN 1			Eastern Wyoming College,	Polycom	VSX 7400	8.5	?	IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Laramie/OVN 7			UW Campus, Classroom Bldg	Polycom	VSX 8000	8.5	No	IP	yes	no	yes	no	(3) large	(2) Cameras	UW Inventory.xlsx
OVN	Laramie/OVN 3			UW Campus, Beta House Rm	Polycom	HDX 9004	2.0.3.1-2729	No	IP	yes	yes, 8	yes	no	(3) 42"	(2) Cameras	UW Inventory.xlsx
OVN	Casper/OVN 1			Outreach Building Room 106	Polycom	HDX 9004	v.2.0.3.1-	No	IP	yes	no	yes	no	(2) 72"	(2) Cameras	UW Inventory.xlsx
OVN	Casper/OVN 7			UW Casper College Room AD 4	Polycom	HDX 9004	2.0.3.1-2729	No	IP	yes	no	yes	no	(3) 72"	(2) Cameras	UW Inventory.xlsx
OVN	Casper/OVN 2			Outreach Building Room 107	Polycom	VSX 7000	v.9.0.1	12/31/2010	IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
OVN	Afton/OVN 1			Afton Lincoln Civic Center Room	Polycom	VSX 7400	V.8.7.1	?	IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Casper/OVN 5			Outreach Building Room 104	Polycom	VSX 7400	v.8.53	?	IP	yes	no	yes	no	(1) 32"		UW Inventory.xlsx
OVN	Cheyenne/OVN 1			Laramie County Community	Polycom	VSX 7400	v.8.7.1	?	IP	yes	no	yes	no	(1) 32"		UW Inventory.xlsx
OVN	Cheyenne/OVN 3			Laramie County Community	Polycom	VSX 7400	v.9.0.1	?	IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
OVN	Cody/OVN 1			Park County Building Suite 2011	Polycom	VSX 7400	v. 8.7	?	IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Douglas/OVN 1			Eastern Wyoming College	Polycom	VSX 7400	9.0.1	?	IP	yes	no	non	no	(1) 42"		UW Inventory.xlsx
OVN	Evanston/OVN 1			Uinta Boces Higher Ed Center	Polycom	VSX 7400	8.5.3	?	IP	yes	no	no	no	(1) 32"		UW Inventory.xlsx
OVN	Powell /OVN 1			Northwest College ORB 137	Polycom	VSX 7400	8.5	?	IP	yes	no	yes	no	(1) 32"		UW Inventory.xlsx
OVN	Sheridan/OVN 1			Sheridan College Whitney 158	Polycom	VSX 7400	8.5	?	IP	yes	no	yes	no	(1) 32"		UW Inventory.xlsx
OVN	Casper/OVN 4			Outreach Building Room 113	Polycom	VSX 8000	v.8.7.1	?	IP	yes	no	yes	no	(3) 42"	(2) Cameras	UW Inventory.xlsx
OVN	Casper/OVN 6			UW Casper College Room AD	TANDBERG	990	E.4.0	12/31/2009	IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
OVN	Casper/OVN 8			UW Casper College Room AD	TANDBERG	1000	E.3.3	12/31/2009	IP	receive	no	yes	no	(1) built in	office unit	UW Inventory.xlsx
OVN	Casper/OVN 9			UW Casper College Room AD	TANDBERG	1000	E.3.3	12/31/2009	IP	receive	no	yes	no	(1) built in	office unit	UW Inventory.xlsx
OVN	Casper/OVN 10			I backed up my PST file	TANDBERG	1000	E.3.3	12/31/2009	IP	receive	no	yes	no	(1) built in	office unit	UW Inventory.xlsx
OVN	Cheyenne/OVN 2			Laramie County Community	TANDBERG	880 MXP	F6.2		IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
OVN	Cody/OVN 2			Park County Building Suite 2011	TANDBERG	880 MXP	F6.2		IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Evanston/OVN 2			Uinta Boces Higher Ed Center	TANDBERG	880 MXP	F6.2		IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Gillette/OVN 2			Gillette Campus, NW Regional	TANDBERG	880 MXP	F6.2		IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
OVN	Gillette/OVN 3			Gillette Campus, NW Regional	TANDBERG	880 MXP	F6.2		IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
OVN	Green River/OVN 1			Western Wyoming College	TANDBERG	880 MXP	F6.2		IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Jackson/OVN 2			Center for the Arts, Rm 118	TANDBERG	880 MXP	F6.2		IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Lander/OVN 1			Fremont County Library	TANDBERG	880 MXP	F6.2		IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Sheridan/OVN 2			Sheridan College Griffith Bldg	TANDBERG	880 MXP	F6.2		IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
OVN	Sheridan/OVN 3			Sheridan College Griffith Bldg	TANDBERG	880 MXP	F6.2		IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
OVN	Torrington/OVN 2			Eastern Wyoming College,	TANDBERG	880 MXP	F6.2		IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Powell/ OVN 2			Northwest College ORB 122	TANDBERG	880 MXP	F6.2		IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Rawlins/OVN 2			Carbon County Higher Education	TANDBERG	880 MXP	F6.2		IP	yes	no	no	no	(1) 42"		UW Inventory.xlsx
OVN	Riverton/OVN 2			Central Wyoming College	TANDBERG	880 MXP	F6.2		IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
OVN	Rock Springs/OVN2			Western Wyoming College Rm	TANDBERG	880 MXP	F6.2		IP	yes	no	yes	no	(1) 42"		UW Inventory.xlsx
UW - Pharmacy	Pharmacy Greybull, Midway Clinic				Polycom	Via Video II		9/30/2010								UW Inventory.xlsx
UW - Pharmacy	Pharmacy Basin, Big Horn Pharmacy				Polycom	Via Video II		9/30/2010								UW Inventory.xlsx
UW - Pharmacy	Pharmacay Laramie, Beverly Sullivan's office				Polycom	Via Video II		9/30/2010								UW Inventory.xlsx
UW - Pharmacy	Pharmacy Laramie, John Vandel's office				Polycom	Via Video II		9/30/2010								UW Inventory.xlsx
UW - Pharmacy	Pharmacy Laramie, Jeffery Bernard's office				Polycom	Via Video II		9/30/2010								UW Inventory.xlsx
UW - Pharmacy	Pharmacy Laramie, Drug Information Center				Polycom	Via Video II		9/30/2010								UW Inventory.xlsx
UW - Pharmacy	Pharmacy Thermopolis Red Rock Family Practice				Polycom	Via Video II		9/30/2010								UW Inventory.xlsx
UW - Pharmacy	Pharmacy Thermopolis Vicklund Pharmacy				Polycom	Via Video II		9/30/2010								UW Inventory.xlsx
UW - Pharmacy	Pharmacy Casper, Community Health				Polycom	VSX 7000		12/31/2010								UW Inventory.xlsx
UW - Pharmacy	Pharmacy Casper, Wyo Med Center				Polycom	VSX 7000		12/31/2010								UW Inventory.xlsx
UW - Pharmacy	Pharmacy Cheyenne, family proactice				Polycom	VSX 7000		12/31/2010								UW Inventory.xlsx
UW - Pharmacy	Pharmacy Ft. Washkie				Polycom	VSX 7000		12/31/2010								UW Inventory.xlsx

**State of Wyoming  
Videoconference Systems Inventory**

Network Name	Endpoint Name	Location / Site	Address	Room	Manufacturer	Model	OS Version	End of Life (EOL) Date	ISDN / IP	Content Sharing	Multipoint	QoS Enabled	Portable	Monitors	Comments	Data Source
UW - Pharmacy		Pharmacy Laramie, Pharmacy Con Room			Polycom	VSX 7000		12/31/2010								UW Inventory.xlsx
UW - Pharmacy		Pharmacy Ft, Collins CO Poudre Valley Hospital			Polycom	VSX 7000		12/31/2010								UW Inventory.xlsx
UW - Pharmacy		Pharmacy Denver, CO Swedish Family Practice			Polycom	VSX 7000		12/31/2010								UW Inventory.xlsx
UW - Pharmacy		Pharmacy Scottsbluff, NE Regional West Medical			Polycom	VSX 7000		12/31/2010								UW Inventory.xlsx
UW - Health Sciences		Rural Health Nursing			Polycom	3000		No								UW Inventory.xlsx
UW - Health Sciences		Rural Health Nursing			Polycom	7800		12/31/2010								UW Inventory.xlsx
UW - Health Sciences		Rural Health Nursing			Polycom	V500		No								UW Inventory.xlsx
UW - Health Sciences		Rural Health Nursing Rock Springs			Polycom	V500		No								UW Inventory.xlsx
UW - Health Sciences		UW Campus, Health Sciences Bldg		Rm 105	Polycom			?								UW Inventory.xlsx
UW - Health Sciences		UW Campus, Health Sciences Bldg WIND		Rm 135b	Polycom			?								UW Inventory.xlsx
UW - Health Sciences		UW Campus, Health Sciences Bldg		Deans Conf Rm 232	Polycom			?								UW Inventory.xlsx
UW - Health Sciences		UW Campus, Health Sciences Bldg		Pharmacy 463	Polycom			?								UW Inventory.xlsx
UW - Health Sciences		Uw Campus, HealthSciences Bldg		Rm 427	Polycom			?								UW Inventory.xlsx
Sheridan		Whitney		136	Polycom	iPower 9000	6.2.0.1208	9/30/2010	IP	Yes	No	Yes	No	2		Sheridan Videoconference System Inventory.xls
Sheridan		Whitney		139a	Polycom	iPower 9000	6.2.0.1208	9/30/2010	IP	Yes	No	Yes	No	2		Sheridan Videoconference System Inventory.xls
Sheridan		Whitney		139b	Polycom	iPower 9000	6.2.0.1208	9/30/2010	IP	Yes	No	Yes	No	2		Sheridan Videoconference System Inventory.xls
Sheridan		GMB		13	Polycom	iPower 9000	6.2.0.1208	9/30/2010	IP	Yes	No	Yes	No	1		Sheridan Videoconference System Inventory.xls
Sheridan		Gillette - GC		153	Polycom	iPower 9000	6.2.0.1208	9/30/2010	IP	Yes	No	Yes	No	1		Sheridan Videoconference System Inventory.xls
Sheridan		Gillette - GC		120	Polycom	iPower 9000	6.2.0.1208	9/30/2010	IP	Yes	No	Yes	No	1		Sheridan Videoconference System Inventory.xls
Sheridan		Whitney		132c	Polycom	V500	9.0.1	No	IP	No	No	Yes	No	1		Sheridan Videoconference System Inventory.xls
Sheridan		Whitney		140	Polycom	V500	9.0.1	No	IP	No	No	Yes	No	1		Sheridan Videoconference System Inventory.xls
Sheridan		Gillette - BN		208	Polycom	VS4000	6.0.5 FX	9/30/2010	IP	Yes	No	Yes	No	1		Sheridan Videoconference System Inventory.xls
Sheridan		Whitney		145c	Polycom	VSX5000	9.0.1.1	No	IP	Yes	No	Yes	No	1		Sheridan Videoconference System Inventory.xls
Sheridan		Gillette - GC		202b	Polycom	VSX5000	9.0.1.1	No	IP	Yes	No	Yes	No	1		Sheridan Videoconference System Inventory.xls
Sheridan		Buffalo			Polycom	VSX5000	9.0.1.1	No	IP	No	No	Yes	No	1		Sheridan Videoconference System Inventory.xls
TeleHealth - Cheyenne Regional		Torrington Community Hc	2000 Campbell Drive	Torrington, WY 8224C	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - Cheyenne Regional		Platte County Memorial I	201 14th st	Wheatland, Wyoming 82201	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - Cheyenne Regional		Memorial Hospital of Con	111 S 5th St	Douglas, WY 82633	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - Cheyenne Regional		Niobrara Health & Life Ce	921 S Ballencee Lusk,	WY 82225	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - Cheyenne Regional		Ivinson Memorial Hospita	255 North 30th St.	Laramie, WY 82072	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - Cheyenne Regional		Memorial Hospital of Carl	2221 W Elm Street	Rawlins WY 82301	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		South Lincoln Medical Cei	711 Onyx Kemmerer,	WY 83101	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		Memorial Hospital Sweet	1200 College Drive	Rock Springs, WY 82901	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		Hot Springs County Mem	150 East Arapahoe	Thermopolis, WY 82443	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		Campbell County Memori	501 South Burma	Gillette, WY 82717	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		Crook County Medical Ser	713 Oak Street	Sundance, WY 82729	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		Johnson County Healthca	497 West Lott	Buffalo, WY 82834	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		Sheridan Memorial Hospi	1401 West 5th Street	Sheridan, WY 82801	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		South Big Horn County Hc	388 South US Hwy 20	Basin, WY 82410	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		Star Valley Medical Cente	901 Adams Street	Afton, WY 83110	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		Riverton Memorial Hospi	2100 W. Sunset Drive	Riverton, WY 82501	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		Weston County Health Se	1124 Washington BLVD	Newcastle, WY 82701	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TeleHealth - WY Hosp. Assn.		Powell Valley Health Care	777 Avenue H	Powell, WY 82435	Polycom	VSX7000S		No	IP							TeleHealth - Wyoming Installations CRMC and WHA.xls
TLN-WYDOT		Cheyenne	5300 Bishop Blvd		TANDBERG	770 MXP										WyDOT Network Inventory_v2 5.xls
TLN-WYDOT		Laramie	3411 South 3rd St		TANDBERG	770 MXP										WyDOT Network Inventory_v2 5.xls
TLN-WYDOT		Casper	900 Bryan Stock Trail		TANDBERG	770 MXP										WyDOT Network Inventory_v2 5.xls
TLN-WYDOT		Rock Springs	3200 Elk St		TANDBERG	770 MXP										WyDOT Network Inventory_v2 5.xls
TLN-WYDOT		Sheridan	10 East Brundage Ln		TANDBERG	770 MXP										WyDOT Network Inventory_v2 5.xls
TLN-WYDOT		Basin	218 West C St		TANDBERG	770 MXP										WyDOT Network Inventory_v2 5.xls
TLN-WYDOT		Gillette	3540 East Warlow Dr		TANDBERG	770 MXP										WyDOT Network Inventory_v2 5.xls
TLN-WYDOT		Riverton	3615 West Main St		TANDBERG	770 MXP										WyDOT Network Inventory_v2 5.xls
TLN-WYDOT		Rawlins	301 Airport Rd		TANDBERG	770 MXP										WyDOT Network Inventory_v2 5.xls
WEN		WDE Dale Meyer	2300 Capitol Ave,	Room 268	TANDBERG	1500 MXP	f7.2		IP	H.239	YES	DIFFSERV	NO	1	operations cente	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		WDE Greg.Lundvall	Laramie Outreach Office		TANDBERG	1500 MXP	f6.3		IP	H.239	YES	DIFFSERV	NO	1	operations cente	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		WDE Ken.Hert	2300 Capitol Ave,	Room 265	TANDBERG	1500 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	1	operations cente	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		WDE Summer.Wasson	2300 Capitol Ave,	Room 241	TANDBERG	1500 MXP	f5.0		IP	H.239	YES	DIFFSERV	NO	1	operations cente	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		Casper College	125 College Dr		TANDBERG	3000 MXP	f6.3		IP	H.239	NO	DIFFSERV	NO	4	MANDATED BY L	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		Laramie UW College of Ec	1000 East University Avenue		TANDBERG	3000 MXP	f6.0		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		Powell Northwest College	231 W 6th Street		TANDBERG	3000 MXP	f6.0		IP	H.239	NO	DIFFSERV	NO	4	MANDATED BY L	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		Torrington FWC	3200 West C Street		TANDBERG	3000 MXP	f6.3		IP	H.239	NO	DIFFSERV	NO	4	MANDATED BY L	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		Subscribed: Big Horn SD	# District Office,	Cowley WY	TANDBERG	550 MXP	f6.3		IP	H.239	NO	DIFFSERV	NO	1	subscribed	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		Subscribed: Ranchester B	1127 Dayton Street		TANDBERG	6000 MXP	f3.2		IP	H.239	YES	DIFFSERV	NO	4	subscribed	WEN Video WY Videoconference System Inventory_v1 1.xls

**State of Wyoming  
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Network Name	Endpoint Name	Location / Site	Address	Room	Manufacturer	Model	OS Version	End of Life (EOL) Date	ISDN / IP	Content Sharing	Multipoint	QoS Enabled	Portable	Monitors	Comments	Data Source
WEN		Afton Star Valley HS	445 West Swift Creek Lane		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Afton Swift Creek LC	445 W. Swift Creek Lane		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Arvada Clearmont HS	1601 Meade Ave		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Baggs HS	100 Meeker Rd		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Basin Riverside HS	919 West B Room 111		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Big Horn HS	333 US Hwy 335		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Big Piney HS	916 Piney Drive		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Buffalo HS	29891 Old Highway 87		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Buffalo Learning Center	300 S. Spruce		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Burlington HS	109 North Street		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Burns HS	524 E 4th Street		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Byron Rocky Mtn HS	30 East Main		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Casper Kelly Walsh HS	3500 E. 12th St		TANDBERG	880 MXP	f6.0		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Casper Natrona County H	930 S. Elm St.		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Casper Roosevelt HS	140 E. K St		TANDBERG	880 MXP	f6.0		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Cheyenne Central HS	5500 Education Drive		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Cheyenne East HS	2800 East Pershing		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Cheyenne Triumph HS	College Drive		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Chugwater HS	406 5th Street		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Cody HS	1225 10th Street		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Cokeville HS	300 Pine		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Dayton Tongue River HS	1100 US Hwy 14		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Douglas HS	1701 Hamilton St		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Dubois HS	314 Helmer St		TANDBERG	880 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Encampment HS	514 Rankin		TANDBERG	880 MXP	f4.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Ethete HS	638 Blue Sky Hwy		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Evanston Horizon	1013 W. Cheyenne Drive		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Evanston HS	701 W. Cheyenne Drive		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Farson Eden HS	Highway 28		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Gillette CCHS	1000 Camel Dr.		TANDBERG	880 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Gillette South Campus HS	Will have to check		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Gillette Westwood HS	601 Rohan		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Glendo HS	305 Paige		TANDBERG	880 MXP	f6.0		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Glenrock HS	225 Oregon Trail		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Green River Expedition Ar	320 Monroe Avenue		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Green River High School	320 Monroe Avenue		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Greybull HS	600 N 6th St		TANDBERG	880 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Guernsey Sunrise HS	555 South Wyoming		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Hanna HS	US Hwy 72		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Help Desk, Emerson	2300 Capitol Ave		TANDBERG	880 MXP	f6.2		IP	H.239	YES	DIFFSERV	NO	1	operations cente WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Hulett HS	429 Sager		TANDBERG	880 MXP	f4.1		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Jackson Hole HS	1910 West High School Road		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Jackson Summit HS	100 Middle School Road		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Kaycee HS	235 Holt St		TANDBERG	880 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Kemmerer Alt HS	1004 Elk Street		TANDBERG	880 MXP	f6.3		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Kemmerer HS	1525 3rd West Ave		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Lander Pathfinder HS	Smith Cottage 98 (Wyoming State Training Scho		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Lander Valley HS	350 Baldwin Creek Road		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Laramie HS	1275 N 11th		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Laramie Whiting HS	801 South 24th Street		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Lingle Ft Laramie HS	3rd Street		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Lovell HS	502 Hampshire Ave		TANDBERG	880 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Lusk Niobrara HS	702 west 5th Street		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Lyman HS	1305 E Clark St		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Meetetse HS	2107 Idaho St		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Midwest HS	Midwest Wyoming		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Moorcroft HS	47 Country Lane		TANDBERG	880 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Mountain View HS	330 7th St		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Newcastle HS	111 Casper Avenue		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Pavillion Wind River HS	1994 Cougar Drive		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Pine Bluffs HS	512 Maple Street		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Powell HS	1151 E 7th Street		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Powell Shoshone LC	140 North Ferris		TANDBERG	880 MXP	f4.1		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Rawlins Coop HS	615 Rodeo St		TANDBERG	880 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Rawlins HS	1401 Colorado St		TANDBERG	880 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Riverton CWC	2660 Peck Ave		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Riverton HS	2001 West Sunset Drive		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Rock River HS	262 North Morris		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Rock Springs HS	1375 James Drive		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Rock Springs Indep HS	1300 Lowell Ave		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Saratoga HS	801 West Elm		TANDBERG	880 MXP	f6.3		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Sheridan College	3059 Coffeen Ave		TANDBERG	880 MXP	f6.0		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	

**State of Wyoming  
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Network Name	Endpoint Name	Location / Site	Address	Room	Manufacturer	Model	OS Version	End of Life (EOL) Date	ISDN / IP	Content Sharing	Multi-point	QoS Enabled	Portable	Monitors	Comments	Data Source	
WEN		Sheridan Fort Mackenzie	620 Lewis Street		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Sheridan WY Girls School	3500 Big Horn Ave		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Shoshoni HS	112 West 3rd Street		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Subscribed: Casper Centr	970 North Glenn Road		TANDBERG	880 MXP	f6.3		IP	H.239	NO	DIFFSERV	NO	2	subscribed	WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Subscribed: Evanston HS	Imobile, varying locations		TANDBERG	880 MXP	f2.5		IP	H.239	NO	DIFFSERV	YES	2	subscribed	WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Subscribed: Powell HS	Ad 160 North Everts		TANDBERG	880 MXP	f6.3		IP	H.239	YES	DIFFSERV	NO	2	subscribed	WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Subscribed: Powell HS	Ma 160 North Everts		TANDBERG	880 MXP	f6.3		IP	H.239	YES	DIFFSERV	NO	2	subscribed	WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Subscribed: Ranche	ster Ti 1127 Dayton Street		TANDBERG	880 MXP	f3.2		IP	H.239	NO	DIFFSERV	NO	2	subscribed	WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Sundance Bear Lodge HS	405 Main Street		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Sundance HS	1016 East Cleveland		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Tensleep HS	242 Cedar St		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Thermopolis HS	231 Park St.		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Torrington HS	2400 West C Street		TANDBERG	880 MXP	f7.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Upton HS	610 Poplar		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		WDE 181	2300 Capitol Ave, Room 181		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	1	operations cente	WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		WDE 281	2300 Capitol Ave, Room 281		TANDBERG	880 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	1	operations cente	WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		WDE Laramie	2020 Grand Avenue, Suite 500		TANDBERG	880 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	2	operations cente	WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		WDE Riverton	320 West Main, 3rd Floor		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	operations cente	WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Wheatland HS	1350 Oak St.		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Worland HS	801 S. 17th Street		TANDBERG	880 MXP	f6.1		IP	H.239	YES	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Worland WY Boys School	1550 Hwy 20 So		TANDBERG	880 MXP	f6.1		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Wright Jr Sr HS	220 Wright Blvd		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Yoder Southeast HS	Lacey Avenue		TANDBERG	880 MXP	f6.2		IP	H.239	NO	DIFFSERV	NO	2	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls		
WEN		Arapahoe HS	189 Left Hand Ditch Road		TANDBERG	880 MXP MEDIA PLACE	f6.0		IP	H.239	YES	DIFFSERV	NO	0	- projectc	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Cheyenne LCCC	1400 E. College Drive		TANDBERG	880 MXP MEDIA PLACE	f4.1		IP	H.239	YES	DIFFSERV	NO	0	- projectc	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Fort Washakie HS	90 Ethete Road		TANDBERG	880 MXP MEDIA PLACE	f6.0		IP	H.239	YES	DIFFSERV	NO	0	- projectc	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Pinedale HS	101 E. Hennick		TANDBERG	880 MXP MEDIA PLACE	f6.1		IP	H.239	YES	DIFFSERV	NO	0	- projectc	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Rock Springs WWCC	2500 College Blvd		TANDBERG	880 MXP MEDIA PLACE	f6.1		IP	H.239	YES	DIFFSERV	NO	0	- projectc	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Sheridan HS	1056 Long Dr.		TANDBERG	880 MXP MEDIA PLACE	f6.1		IP	H.239	YES	DIFFSERV	NO	0	- projectc	MANDATED BY L WEN Video WY Videoconference System Inventory_v1 1.xls	
WEN		Subscribed: Ethete WY	In 23 Coolidge Dr		TANDBERG	880 MXP MEDIA PLACE	f5.3		IP	H.239	YES	DIFFSERV	YES	0	- projectc	subscribed	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		Subscribed: Wamsutter	L235 Bugas		TANDBERG	880 MXP MEDIA PLACE	f5.3		IP	H.239	YES	DIFFSERV	YES	0	- projectc	subscribed	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		Subscribed: Wheatland	H 1207 13th Street		TANDBERG	880 MXP MEDIA PLACE	f6.2		IP	H.239	YES	DIFFSERV	YES	0	- projectc	subscribed	WEN Video WY Videoconference System Inventory_v1 1.xls
WEN		WDE MAIN WEN Room	2300 Capitol Ave, Room 236B		TANDBERG	880 MXP MEDIA PLACE	f6.2		IP	H.239	YES	DIFFSERV	NO	0	- projectc	operations cente	WEN Video WY Videoconference System Inventory_v1 1.xls
WVCS	Buffalo DFS	Buffalo	Buffalo DFS		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Casper DFS	Casper	851 Werner Ct		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Cheyenne CBC DFS	Cheyenne	1510 E Pershing		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Chy DFS Casey Bl	Cheyenne	130 Hobbs		TANDBERG	550	E3.4 NTSC HE	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Cody DFS	Cody	1301 Rumsey		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Douglas DFS	Douglas	219 N Russell		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Evanston DFS	Evanston	350 City View		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Gillette DFS	Gillette	1901 Energy Ct		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Jackson DFS	Jackson	115 W Snow King		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Lander DFS	Lander	201 N 4th St		TANDBERG	550	E5.3 NTSC HE	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Laramie DFS	Laramie	2020 Grand Ave, 4th Fl		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Newcastle DFS	Newcastle	2013 W Main		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Rawlins DFS	Rawlins	215 W Buffalo		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Riverton DFS	Riverton	120 N 6th East		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Rock Springs DFS	Rock Springs	2451 Foothill Blvd		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Sheridan DFS	Sheridan	61 S Gould		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Sheridan Girls S	Sheridan	3500 Big Horn		TANDBERG	550	E3.4 NTSC HE	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Thermopolis DFS	Thermopolis	403 Big Horn		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Torrington DFS	Torrington	1618 East M		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Wheatland DFS	Wheatland	975 Gilchrist		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Worland Boy's School DF	Worland	1550 US Hwy 20 S		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Worland DFS	Worland	1702 Robertson		TANDBERG	550	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	A&I CHEY City Center Pal	Cheyenne	1920 Thomes		TANDBERG	1000	B10.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	A&I CHEY EMERSON Brac	Cheyenne	2001 Capitol Ave		TANDBERG	1000	B10.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Gillette Rob Mitchell	Gillette	525 W Lakeway		TANDBERG	1000	B10.0 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Rawlins Penitentiary - So	Rawlins	2900 Higley Blvd		TANDBERG	6000	B10.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	State Hospital Evanston	Evanston	831 S Highway 150		TANDBERG	6000	B10.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	DOC Portable	Cheyenne	1934 Wyatt Dr		TANDBERG	1000 MXP	F6.0 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	A&I CHEY EMERSON Ken	Cheyenne	2001 Capitol Ave		TANDBERG	1700 MXP	F7.2 PAL		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	A&I CHEY EMERSON Bob	Cheyenne	2001 Capitol Ave		TANDBERG	1700 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	A&I CHEY EMERSON CIO	Cheyenne	2001 Capitol Ave		TANDBERG	1700 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	A&I CHEY EMERSON Dire	Cheyenne	2001 Capitol Ave		TANDBERG	1700 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	A&I CHEY EMERSON Rogi	Cheyenne	2001 Capitol Ave		TANDBERG	1700 MXP	F7.2 PAL		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Governor's Office	Cheyenne	Capitol Bldg, 1st Fl		TANDBERG	1700 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Eugene Porter (Health)	Cheyenne	6101 Yellowstone		TANDBERG	1700 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Hathaway Health Directo	Cheyenne	2300 Capitol		TANDBERG	1700 MXP	F6.2 PAL		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Sheridan Immunization H	Sheridan	23 N Scott, Ste 14		TANDBERG	1700 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Cheyenne Medical Comrn	Cheyenne	6101 Yellowstone		TANDBERG	6000 MXP PORTABLE	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	
WVCS	Cody Medical Commissio	Cody	1026 Blackburn		TANDBERG	770 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls	

**State of Wyoming  
Videoconference Systems Inventory**

Network Name	Endpoint Name	Location / Site	Address	Room	Manufacturer	Model	OS Version	End of Life (EOL) Date	ISDN / IP	Content Sharing	Multipoint	QoS Enabled	Portable	Monitors	Comments	Data Source
WVCS	Gillette Medical Commis	Gillette	1901 Energy Ct		TANDBERG	770 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Lander Medical Commiss	Lander	455 Lincoln St		TANDBERG	770 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Sheridan Medical Commi	Sheridan	61 S Gould		TANDBERG	770 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	A&I CHEY EMERSON Neth	Cheyenne	2001 Capitol Ave		TANDBERG	880 Classic	E5.3 NTSC H	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	A&I CHEY City Center (2)	Cheyenne	2001 Capitol Ave		TANDBERG	880 Classic	E5.3 NTSC H	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	A&I CHEY EMERSON Helç	Cheyenne	2001 Capitol Ave		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	A&I CHEY EMERSON Helç	Cheyenne	2001 Capitol Ave		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Cheyenne DOC	Cheyenne	1934 Wyatt Dr		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Honor Conservation Cam	Newcastle	40 Pippen Rd		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Lusk WWC Conference	Lusk	1000 W Griffith		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Rawlins State Penitentair	Rawlins	2900 Higley Blvd		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Riverton Honor Farm	Riverton	40 Honor Farm Rd		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Hathaway 3rd Floor DFS	Cheyenne	2300 Capitol		TANDBERG	880 MXP	F7.0 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Casper WGF	Casper	3030 Energy Ln		TANDBERG	880 MXP	F6.3 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Cheyenne WGF	Cheyenne	5400 Bishop Blvd		TANDBERG	880 MXP	F6.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Cody WGF	Cody	2820 Hwy 120		TANDBERG	880 MXP	F6.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Green River WGF	Green River	351 Astle Ave		TANDBERG	880 MXP	F6.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Jackson WGF	Jackson	420 N Cache Dr		TANDBERG	880 MXP	F6.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Lander WGF	Lander	260 Buena Vista Dr		TANDBERG	880 MXP	F6.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Sheridan WGF	Sheridan	700 Valley View Dr		TANDBERG	880 MXP	F6.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Hathaway (RM475) Healt	Cheyenne	2300 Capitol		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Hathaway (RM522) Healt	Cheyenne	2300 Capitol		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Hathaway (RM596) Healt	Cheyenne	2300 Capitol		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Hathaway EOC (RM432) I	Cheyenne	2300 Capitol		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Health Buffalo Vet's Hom	Buffalo	700 Veteran's Ln		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Qwest (RM510) Health	Cheyenne	6101 Yellowstone		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Qwest Health Director's	Cheyenne	2300 Capitol		TANDBERG	880 MXP	F5.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Casper Medical Commiss	Casper	100 W Midwest		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Cheyenne WSC CBC	Cheyenne	1510 E Pershing		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Rock Springs Medical Cor	Rock Springs	2451 Foothill Blvd		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Casper (Oil & Gas) WVCS	Casper	2211 King Blvd		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Cheyenne STARBASE (NO	Cheyenne	217 Dell Range		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS CHEY 821 W Pershir	Cheyenne	821 W Pershing Blvd		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS CHEY Herschler 2nd	Cheyenne	Herschler Bldg, 2nd Fl		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Evanston WVCS Site	Evanston	98 Independence Dr		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Gillette Energy Ct	Gillette	1901 Energy Ct		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Jackson WVCS Site	Jackson	155 W Gill		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Laramie WVCS Site	Laramie	112 S 5th St		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Newcastle WVCS Si	Newcastle	2013 W Main		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Rawlins WVCS Site	Rawlins	1703 Edinburgh		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Riverton WVCS Site	Riverton	422 E Fremont Ave		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Rock Springs WMM	Rock Springs	2451 Foothill Blvd		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Sheridan WVCS Site	Sheridan	61 S Gould		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Torrington WVCS Si	Torrington	1618 East M		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	A&I CHEY EMERSON Con	Cheyenne	2001 Capitol Ave		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	A&I Kemmerer BOCES W	Kemmerer	136 Burgoone		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	A&I Pinedale HS BOCES	V Pinedale	101 East Hennick St		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	A&I Worland Ag Extensio	Worland	1200 Culberson		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Casper 851 Werner	Casper	851 Werner Ct, Ste 121		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Cody WVCS Site	Cody	1026 Blackburn Ave		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Douglas WVCS Site	Douglas	311 N Russell		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Health Afton PHN WVCS	Afton	421 Jefferson St		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Health Lander WLRC WVI	Lander	8204 N Hwy 789, Rothwell Bldg		TANDBERG	880 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Health Sundance PHN W	Sundance	410 1/2 E Main St		TANDBERG	880 MXP	F7.0 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Hathaway EOC (RM430) I	Cheyenne	2300 Capitol		TANDBERG	CODEC 6000 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Legislative Hearing Room	Cheyenne	Capitol Bldg, 3rd Fl		TANDBERG	CODEC 6000 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Basin Retirement Home	Basin	890 Hwy 20 S		TANDBERG	Director 6000	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Health Chey Qwest DDD	Cheyenne	6101 Yellowstone		TANDBERG	Director 6000	B10.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	Health Lander WLRC Adn	Lander	8204 N Hwy 789, Admin Bldg		TANDBERG	Director 6000	E5.3 NTSC	12/31/2009	IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	WLSB CHEY UNICOVER C	Cheyenne	1934 Wyatt Dr		TANDBERG	Edge 95 MXP	F6.3 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	A&I CHEY City Center (1)	Cheyenne	2001 Capitol Ave		TANDBERG	Edge 95 MXP	F7.0 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WVCS	DWS Wheatland WVCS Si	Wheatland	956 Maple St		TANDBERG	Profile 2000 MXP	F7.2 NTSC		IP							St of WY - Gov Task Force - Video list 5-8-2009.xls
WWCC	Afton				Logitech	5000 PVX	8.0.2		IP	No	No	Yes	No	1		WWCC Inventory.xls
WWCC	LSRV Baggs				Logitech	5000 PVX	8.0.2		IP	No	No	Yes	No	1		WWCC Inventory.xls
WWCC	Bridger Valley				Logitech	5000 PVX	8.0.2		IP	No	No	Yes	No	1		WWCC Inventory.xls
WWCC	Hannah				Logitech	5000 PVX	8.0.2		IP	No	No	Yes	No	1		WWCC Inventory.xls
WWCC	Evanston (3)				Logitech	5000 PVX	8.0.2		IP	No	No	Yes	No	1		WWCC Inventory.xls
WWCC	Rawlins CCHC (2)				Logitech	5000 PVX	8.0.2		IP	No	No	Yes	No	1		WWCC Inventory.xls
WWCC	Saratoga				Logitech	5000 PVX	8.0.2		IP	No	No	Yes	No	1		WWCC Inventory.xls
WWCC	Rock Springs (1)				Logitech	9000 PVX	8.0.4		IP	No	No	Yes	No	1		WWCC Inventory.xls
WWCC	Kemmerer (2)				Polycom	ViaVideo	6.0.1	5/30/2008	IP	No	No	Yes	No	1		WWCC Inventory.xls
WWCC	Pinedale (1)				Polycom	ViaVideo	6.0.1	5/30/2008	IP	No	No	Yes	No	1		WWCC Inventory.xls

**State of Wyoming  
Videoconference Systems Inventory**

Network Name	Endpoint Name	Location / Site	Address	Room	Manufacturer	Model	OS Version	End of Life (EOL) Date	ISDN / IP	Content Sharing	Multipoint	QoS Enabled	Portable	Monitors	Comments	Data Source
WWCC		LSRV Baggs			Polycom	ViewStation FX	6.0.5	9/30/2010	IP	No	Yes	Yes	Yes	1		WWCC Inventory.xls
WWCC		Evanston (1)			Polycom	ViewStation FX	6.0.5	9/30/2010	IP	Yes	Yes	Yes	No	2		WWCC Inventory.xls
WWCC		Evanston (2)			Polycom	ViewStation FX	6.0.5	9/30/2010	IP	Yes	Yes	Yes	No	2		WWCC Inventory.xls
WWCC		Green River Ctr.			Polycom	ViewStation FX	6.0.5	9/30/2010	IP	Yes	Yes	Yes	No	2		WWCC Inventory.xls
WWCC		Kemmerer (1)			Polycom	ViewStation FX	6.0.5	9/30/2010	IP	Yes	Yes	Yes	No	2		WWCC Inventory.xls
WWCC		Pinedale (1)			Polycom	ViewStation FX	6.0.5	9/30/2010	IP	Yes	Yes	Yes	No	2		WWCC Inventory.xls
WWCC		Rawlins CCHC (1)			Polycom	ViewStation FX	6.0.5	9/30/2010	IP	Yes	Yes	Yes	No	2		WWCC Inventory.xls
WWCC		Big Piney			Polycom	VSX 7000	8.0.3	12/31/2010	IP	No	No	Yes	Yes	1		WWCC Inventory.xls
WWCC		Rock springs (3)			Polycom	HDX 8000	2.5.0.1	No	IP	Yes	No	Yes	Yes	1		WWCC Inventory.xls
WWCC		Rock Springs (2)			Polycom	VSX 7000		12/31/2010	IP	Yes	No	Yes	No	2		WWCC Inventory.xls
CWC		WEN Codec		CWC, Classroom Wing 133	Tandberg	880 MXP	?		IP	?	?	?	?	2	Probably Duplica	CWC WY Videoconference System Inventory_v1 1.xlsx
CWC		Thermopolis HS Codec		Thermopolis	Tandberg	Edge MXP	F7.0 NTSC		IP	?	No	Yes	Yes	1		CWC WY Videoconference System Inventory_v1 1.xlsx
CWC		CW 129 Codec		CWC, Classroom Wing 129	Tandberg	Edge MXP	F7.0 NTSC		IP	?	Yes	Yes	No	2		CWC WY Videoconference System Inventory_v1 1.xlsx
CWC		CW 131 Codec		CWC, Classroom Wing 131	Tandberg	Edge MXP	F7.0 NTSC		IP	?	Yes	Yes	No	2		CWC WY Videoconference System Inventory_v1 1.xlsx
CWC		CWC Lander Codec		CWC Lander	Tandberg	Edge MXP	F7.0 NTSC		IP	?	Yes	Yes	No	2		CWC WY Videoconference System Inventory_v1 1.xlsx
CWC		Jackson AC Codec		Jackson AC	Tandberg	Edge MXP	F7.0 NTSC		IP	?	Yes	Yes	No	2		CWC WY Videoconference System Inventory_v1 1.xlsx
CWC		St John's Codec		St John's, Bison	Tandberg	Edge MXP	F7.0 NTSC		IP	?	Yes	Yes	No	2		CWC WY Videoconference System Inventory_v1 1.xlsx
CWC		Test Codec		IT Suite MH210E	Tandberg	Edge MXP	F7.0 NTSC		IP	?	No	Yes	Yes	1		CWC WY Videoconference System Inventory_v1 1.xlsx
CWC		PT106 Codec		CWC, PT-106	Tandberg	Edge MXP	F7.0 NTSC		IP	?	Yes	Yes	No	2		CWC WY Videoconference System Inventory_v1 1.xlsx
CWC		BOCHES (For WRHS)		IT Suite MH210E	Tandberg	Edge MXP	F7.0 NTSC		IP	?	No	Yes	Yes	1		CWC WY Videoconference System Inventory_v1 1.xlsx

**State of Wyoming  
Videoconference Systems Inventory**

Data Source	Network		Location / Site	Address	Manufacturer	Model	OS Version	ISDN / IP	Content			Monitor		
	Name	Endpoint Name							Sharing	Multipoint	QoS Enabled	Portable s	Comments	
UW Inventory.xlsx	OVN		Gatekeepers		Cisco	Gatekeeper								
090612 VC WAN Inventory UW NETWORK.xlsx	OVN		Laramie	UW Centrex	Cisco	IPVC-3545-CHAS=		Ethernet						
090612 VC WAN Inventory UW NETWORK.xlsx	OVN		Laramie	UW Centrex	Cisco	IPVC-3545-EMP=	5.6.1	Ethernet						
090612 VC WAN Inventory UW NETWORK.xlsx	OVN		Laramie	UW Centrex	Cisco	IPVC-3545-EMP=	5.6.1	Ethernet						
090612 VC WAN Inventory UW NETWORK.xlsx	OVN		Laramie	UW Centrex	Cisco	IPVC-3545-EMP=	5.6.1	Ethernet						
UW Inventory.xlsx	OVN		Scheduling software		Radvision	Iview Suite	v.5.6							
WEN Video WY Videoconference System Inventory_v1 1.xlsx	WEN		Bridge	Emerson Server Farm, Cheyenne	TANDBERG	800 MPS	J4.3	ISDN / IP	H.239	YES - 160	DIFFSERV	NO	0	see network map
WEN Video WY Videoconference System Inventory_v1 1.xlsx	WEN		Border Controller	Emerson Server Farm, Cheyenne	TANDBERG	Border Controller	Q5.1	IP	n/a	n/a	DIFFSERV	NO	0	see network map
WEN Video WY Videoconference System Inventory_v1 1.xlsx	WEN		Gatekeeper (internal)	Emerson Server Farm, Cheyenne	TANDBERG	Gatekeeper	N5.2	IP	n/a	n/a	DIFFSERV	NO	0	see network map
WEN Video WY Videoconference System Inventory_v1 1.xlsx	WEN		Gatekeeper (external)	Emerson Server Farm, Cheyenne	TANDBERG	Gatekeeper	N5.1	IP	n/a	n/a	DIFFSERV	NO	0	see network map
WEN Video WY Videoconference System Inventory_v1 1.xlsx	WEN		See and Share Server	Emerson Server Farm, Cheyenne	TANDBERG	SAS	11.8	IP	n/a	YES	DIFFSERV	NO	0	see network map
WEN Video WY Videoconference System Inventory_v1 1.xlsx	WEN		Content Server	Emerson Server Farm, Cheyenne	TANDBERG	TCS	S3.0.0	IP	H.239	YES - 5	DIFFSERV	NO	0	see network map
WEN Video WY Videoconference System Inventory_v1 1.xlsx	WEN		Tandberg Management Suite	Emerson Server Farm, Cheyenne	TANDBERG	TMS	11.8	IP	H.239	n/a	DIFFSERV	NO	0	see network map
St of WY - Gov Task Force - Video list 5-8-2009.xlsx	WVCS	State Border Controller	Cheyenne	2001 Capitol Ave	TANDBERG	Border Controller	Q6.1	IP						
St of WY - Gov Task Force - Video list 5-8-2009.xlsx	WVCS	State Internal Gatekeeper	Cheyenne	2001 Capitol Ave	TANDBERG	Gatekeeper	N6.1	IP						
St of WY - Gov Task Force - Video list 5-8-2009.xlsx	WVCS	State MPS Bridge	Cheyenne	2001 Capitol Ave	TANDBERG	MPS800	J4.3	IP						
WWCC Inventory.xls	WWCC		Rock Springs (4)		Polycom Bridge	MGC-50	7.0.1.11	IP	n/a	Yes	Yes	No	n/a	

State of Wyoming Combined WAN Inventory

Network Name	Location / Site2	Address	Network Architecture (ATM, Frame Relay, etc.)	QoS Supported?		Link Utilization Average / Peak	Network Managed By	Network Management Tool Used	WAN Port		Service Provider	Circuit ID#	Comments	
				Yes/No	QoS Amount				Speed	WAN Access Speed				
CWC Jackson Center Jackson CFA		240 S Glenwood St, Jackson	ATM	Yes			MAI	Ping Utility	6 mbps	6 mbps	WEN	ATM 1/0.36		
CWC Lander Center	CWC Lander Center	427 Main, Lander	ATM	Yes			MAI	Ping Utility	6 mbps	6 mbps	WEN	ATM 1/0.37		
OVN	Alton/OVN 1	Alton Lincoln Civic Center Room 105	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-886-5637	DSL	
OVN	Alton/OVN 1	Alton Lincoln Civic Center Room 105	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-886-5637	DSL	
OVN	Casper/OVN 1	Outreach Building Room 106	(2) Bresnan ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM		1.5	1.5	Bresnan	T-1 Bresnan 74/HCGS/912717///MS	
OVN	Casper/OVN 1	Outreach Building Room 106	(2) Bresnan ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM		1.5	1.5	Bresnan	T-1 Bresnan 74/HCGS/912717///MS	
OVN	Casper/OVN 10	UW Casper College	Quest ATM-T1	YES	see above		UW IT	Orion NCM			Quest			
OVN	Casper/OVN 10	UW Casper College	Quest ATM-T1	YES	see above		UW IT	Orion NCM			Quest			
OVN	Casper/OVN 2	Outreach Building Room 107	(2) Bresnan ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM		1.5	1.5	Bresnan	T-1 Bresnan 74/HCGS/912718///MS	
OVN	Casper/OVN 2	Outreach Building Room 107	(2) Bresnan ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM		1.5	1.5	Bresnan	T-1 Bresnan 74/HCGS/912718///MS	
OVN	Casper/OVN 4	Outreach Building Room 113	(2) Bresnan ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above	Bresnan	T-1 Bresnan 74/HCGS/912717///MS		
OVN	Casper/OVN 4	Outreach Building Room 113	(2) Bresnan ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above	Bresnan	T-1 Bresnan 74/HCGS/912717///MS		
OVN	Casper/OVN 5	Outreach Building Room 104	(2) Bresnan ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above	Bresnan	T-1 Bresnan 74/HCGS/912718///MS		
OVN	Casper/OVN 5	Outreach Building Room 104	(2) Bresnan ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above	Bresnan	T-1 Bresnan 74/HCGS/912718///MS		
OVN	Casper/OVN 6	UW Casper College Room AD 136	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGX00217 Casper Frame XLINK	
OVN	Casper/OVN 6	UW Casper College Room AD 136	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGX00217 Casper Frame XLINK	
OVN	Casper/OVN 7	UW Casper College Room AD 4	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74.HCGJ.534486 ATM	
OVN	Casper/OVN 7	UW Casper College Room AD 4	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74.HCGJ.534486 ATM	
OVN	Casper/OVN 8	UW Casper College Room AD 163B	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above	Quest	T-1 74.HCGJ.534486 ATM		
OVN	Casper/OVN 8	UW Casper College Room AD 163B	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above	Quest	T-1 74.HCGJ.534486 ATM		
OVN	Casper/OVN 9	UW Casper College Room AD 135	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above	Quest	T-1 74.HCGJ.534486 ATM		
OVN	Casper/OVN 9	UW Casper College Room AD 135	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above	Quest	T-1 74.HCGJ.534486 ATM		
OVN	Cheyenne/OVN 1	Laramie County Community College AB	Bresnan Metronet 10 Mb/s	YES	not limited	1/7 mbps	UW IT	Orion NCM	10Mb/s	10Mb/s	Bresnan Metronet	No ID info		
OVN	Cheyenne/OVN 1	Laramie County Community College AB	Bresnan Metronet 10 Mb/s	YES	not limited	1/7 mbps	UW IT	Orion NCM	10Mb/s	10Mb/s	Bresnan Metronet	No ID info		
OVN	Cheyenne/OVN 2	Laramie County Community College EEC	Bresnan Metronet 10 Mb/s	YES	see above	see above	UW IT	Orion NCM	see above	see above	Bresnan Metronet	No ID info		
OVN	Cheyenne/OVN 2	Laramie County Community College EEC	Bresnan Metronet 10 Mb/s	YES	see above	see above	UW IT	Orion NCM	see above	see above	Bresnan Metronet	No ID info		
OVN	Cheyenne/OVN 3	Laramie County Community College AB	Bresnan Metronet 10 Mb/s	YES	see above	see above	UW IT	Orion NCM	see above	see above	Bresnan Metronet	No ID info		
OVN	Cheyenne/OVN 3	Laramie County Community College AB	Bresnan Metronet 10 Mb/s	YES	see above	see above	UW IT	Orion NCM	see above	see above	Bresnan Metronet	No ID info		
OVN	Cody/OVN 1	Park County Building Suite 2011 Rm 1	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	DSL w/VoIP		
OVN	Cody/OVN 1	Park County Building Suite 2011 Rm 1	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	DSL w/VoIP		
OVN	Cody/OVN 2	Park County Building Suite 2011 Rm 2	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-527-5216 DSL		
OVN	Cody/OVN 2	Park County Building Suite 2011 Rm 2	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-527-5216 DSL		
OVN	Douglas/OVN 1	Eastern Wyoming College Branch Campus	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-358-1666 DSL		
OVN	Douglas/OVN 1	Eastern Wyoming College Branch Campus	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-358-1666 DSL		
OVN	Evanston/OVN 1	Uinta Boces Higher Ed Center Rm 114	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-783-7614 DSL w VoIP		
OVN	Evanston/OVN 1	Uinta Boces Higher Ed Center Rm 114	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-783-7614 DSL w VoIP		
OVN	Evanston/OVN 2	Uinta Boces Higher Ed Center Rm 126	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-783-7082 DSL		
OVN	Evanston/OVN 2	Uinta Boces Higher Ed Center Rm 126	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-783-7082 DSL		
OVN	Gillette/OVN 1	Gillette Campus, NW Regional Office 171G	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGJ552436 w/VoIP	
OVN	Gillette/OVN 1	Gillette Campus, NW Regional Office 171G	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGJ552436 w/VoIP	
OVN	Gillette/OVN 2	Gillette Campus, NW Regional Office 171N	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74.HCGJ.977842	
OVN	Gillette/OVN 2	Gillette Campus, NW Regional Office 171N	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74.HCGJ.977842	
OVN	Gillette/OVN 3	Gillette Campus, NW Regional Office	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above	Quest	T-1 74.HCGJ.977842		
OVN	Gillette/OVN 3	Gillette Campus, NW Regional Office	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above	Quest	T-1 74.HCGJ.977842		
OVN	Green River/OVN 1	Western Wyoming College Green River	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-875-3715 DSL		
OVN	Green River/OVN 1	Western Wyoming College Green River	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-875-3715 DSL		
OVN	Jackson/OVN 1	Center for the Arts, Rm 120	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-734-6538 DSL w VoIP		
OVN	Jackson/OVN 1	Center for the Arts, Rm 120	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-734-6538 DSL w VoIP		
OVN	Jackson/OVN 2	Center for the Arts, Rm 118	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-732-1489 DSL		
OVN	Jackson/OVN 2	Center for the Arts, Rm 118	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-732-1489 DSL		
OVN	Lander/OVN 1	Fremont County Library	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-732-1489 DSL		
OVN	Lander/OVN 1	Fremont County Library	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-732-1489 DSL		
OVN	Laramie/OVN 1	UW Campus, Classroom Bldg 109	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM			UW LAN	LAN		
OVN	Laramie/OVN 1	UW Campus, Classroom Bldg 109	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM			UW LAN	LAN		
OVN	Laramie/OVN 2	UW Campus, Education Bldg Rm 1	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 2	UW Campus, Education Bldg Rm 1	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 3	UW Campus, Beta House Rm 105	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 3	UW Campus, Beta House Rm 105	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 4	UW Campus, Wyo Hall 312	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 4	UW Campus, Wyo Hall 312	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 5	UW Campus, Wyo Hall 304	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 5	UW Campus, Wyo Hall 304	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 6	UW Campus, Wyo Hall 327	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 6	UW Campus, Wyo Hall 327	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 7	UW Campus, Classroom Bldg 105	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 7	UW Campus, Classroom Bldg 105	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 8	UW Campus, Wyo Hall 333	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Laramie/OVN 8	UW Campus, Wyo Hall 333	UW LAN	YES	not limited	50 kbps/20 mbps	UW IT	Orion NCM	100 mbps	100 mbps	UW LAN	LAN		
OVN	Lusk/OVN 1	Niobrara County School District Board	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-334-0132 DSL		
OVN	Lusk/OVN 1	Niobrara County School District Board	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-334-0132 DSL		
OVN	Newcastle/OVN 1	Newcastle Community Education Rm 120	RT DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	RT	746-1281 RT Comm DSL		
OVN	Newcastle/OVN 1	Newcastle Community Education Rm 120	RT DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	RT	746-1281 RT Comm DSL		
OVN	Powell/OVN 1	Northwest College ORB 137	Quest ATM-T1	YES			UW IT	Orion NCM			Quest	T-1 74HCGJ551646 w/VoIP		
OVN	Powell/OVN 1	Northwest College ORB 137	Quest ATM-T1	YES			UW IT	Orion NCM			Quest	T-1 74HCGJ551646 w/VoIP		
OVN	Powell/OVN 2	Northwest College ORB 122	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-754-9153 DSL		
OVN	Powell/OVN 2	Northwest College ORB 122	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-754-9153 DSL		
OVN	Rawlins/OVN 1	Carbon County Higher Education Center	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-324-3503 DSL w VoIP		
OVN	Rawlins/OVN 1	Carbon County Higher Education Center	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	307-324-3503 DSL w VoIP		
OVN	Rawlins/OVN 2	Carbon County Higher Education Center	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps	Quest	328-4666 DSL		

State of Wyoming Combined WAN Inventory

OVN	Rawlins/OVN 2	Carbon County Higher Education Center	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps		Quest	328-4666	DSL
OVN	Riverton/OVN 1	Central Wyoming College Classwing 133	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGJ549998	
OVN	Riverton/OVN 1	Central Wyoming College Classwing 133	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGJ549998	
OVN	Riverton/OVN 2	Central Wyoming College Classwing 122	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above		Quest	T-1 74HCGJ549998	
OVN	Riverton/OVN 2	Central Wyoming College Classwing 122	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above		Quest	T-1 74HCGJ549998	
OVN	Riverton/OVN 3	Riverton Outreach Building Office Area	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps		Quest	307-856-8651	DSL w VoIP
OVN	Riverton/OVN 3	Riverton Outreach Building Office Area	Quest DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps		Quest	307-856-8651	DSL w VoIP
OVN	Rock Springs/OVN 1	Western Wyoming College Rm 1229C	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGJ552100	w VoIP
OVN	Rock Springs/OVN 1	Western Wyoming College Rm 1229C	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGJ552100	w VoIP
OVN	Rock Springs/OVN2	Western Wyoming College Rm 1229E	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above		Quest	T-1 74HCGJ552100	
OVN	Rock Springs/OVN2	Western Wyoming College Rm 1229E	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above		Quest	T-1 74HCGJ552100	
OVN	Sheridan/OVN 1	Sheridan College Whitney 158	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGJ547856	
OVN	Sheridan/OVN 1	Sheridan College Whitney 158	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGJ547856	
OVN	Sheridan/OVN 2	Sheridan College Griffith Bldg Rm 11	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGJ904816	
OVN	Sheridan/OVN 2	Sheridan College Griffith Bldg Rm 11	Quest ATM-T1	YES	784 kbps	1/1.5 mbps	UW IT	Orion NCM	1.5		1.5	Quest	T-1 74HCGJ904816	
OVN	Sheridan/OVN 3	Sheridan College Griffith Bldg Rm 12	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above		Quest	T-1 74HCGJ904816	
OVN	Sheridan/OVN 3	Sheridan College Griffith Bldg Rm 12	Quest ATM-T1	YES	see above	see above	UW IT	Orion NCM	see above	see above		Quest	T-1 74HCGJ904816	
OVN	Torrington/OVN 1	Eastern Wyoming College, Tebbet 270	Embarq DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps		Embarq	307-532-1158	Embarq DSL
OVN	Torrington/OVN 1	Eastern Wyoming College, Tebbet 270	Embarq DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps		Embarq	307-532-1158	Embarq DSL
OVN	Torrington/OVN 2	Eastern Wyoming College, Tebbet 252	Embarq DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps		Embarq	307-532-0198	Embarq DSL
OVN	Torrington/OVN 2	Eastern Wyoming College, Tebbet 252	Embarq DSL	NO	n/a	50/400 kbps	UW IT	Orion NCM	900 kbps	900 kbps		Embarq	307-532-0198	Embarq DSL
Sinks Canyon Center Sinks Canyon Center	50 Field Station Road, Lander	ATM	Yes				MAI	Ping Utility	1.5 mbps	1.5 mbps		WEN	ATM 1/0.36	
St. John's Learning C/SJMC	825 E Broadway, Jackson	ATM	Yes				MAI	Ping Utility	4.5 mbps	4.5 mbps		WEN	ATM 1/0.36	
Thermopolis ICN	Hot Springs HS	250 E Arapahoe St, Thermopolis	ATM	Yes			MAI	Ping Utility	1.5 mbps	1.5 mbps		WEN	52/2:0	
WDH	Afton - WIC	350 Washington, #8, Afton WY 83110	DSL	no			WDH-IT	Nagios	1.5 Meg			Silver Star	885-0755	
WDH	Basin - WRC	890 Highway 20 South, Basin WY 82410	DSL	no			WDH-IT	Nagios	1.5 Meg			TCT	568-2648	
WDH	Big Piney - PHN	630 Piney Dr.	DSL	no			WDH-IT	A&I	1.5 Meg			Century Tell	276-4108	
WDH	Buffalo - DD		DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	684-7582	
WDH	Buffalo - PHN	210 N. Desmet	DSL	no			WDH-IT	A&I	1.5 Meg			Quest-A&I	265-2065	
WDH	Buffalo - VHW	700 Veterans Lane, Buffalo WY 82834	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	684-0654	
WDH	Casper - DD		DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	265-2065	
WDH	Casper - DD		DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	2372044	
WDH	Casper - HIV		DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	265-9985	
WDH	Casper - WIC	740 Luker Lane, Evansville WY 82636	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	265-9985	
WDH	Cheyenne - Hathaway	2300 Capital Ave, Cheyenne WY 82002	ITD Bresnan				WDH-IT	Cisco Works	100 meg			Bresnan	see A&I	
WDH	Cheyenne - Qwest	6101 Yellowstone Rd, Cheyenne WY 82009	ATM	yes			WDH-IT	Cisco Works	45 meg			Quest	74HFG658152ACSO	
WDH	Cheyenne - WIC	1307 Crook Ave, Cheyenne WY 82001	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	634-5377	
WDH	Cody - DD		DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	527-4180	
WDH	Cody - EP		DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	527-3198	
WDH	Douglas - PHN	442 Center St.	DSL	no			WDH-IT	A&I	1.5 Meg			Quest-A&I	n/a	
WDH	Douglas - WIC	117 South 2nd, #2, Douglas WY 82633	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	358-0511	
WDH	Evanston - DD		DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	789-0717	
WDH	Evanston - WIC	350 City View Dr, Suite 100, Evanston WY 82401	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	783-7096	
WDH	Evanston - WSH	830 Highway 150 South, Evanston WY 82921	ATM	yes			WDH-IT	Cisco Works	6 (MA)			Quest	74YHG1137074ACSO	
WDH	FE Wareen AFB - WIC	7601 Randall Ave, Bldg 207, Cheyenne WY Cable					WDH-IT	Nagios	1.5 Meg			Bresnan	69.146.108.186	
WDH	Gillette - WIC	2301 Sought 4-J, Gillette, WY 82718	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	686-9387	
WDH	Glenrock - PHN	925 W. Birch	DSL	no			WDH-IT	A&I	1.5 Meg			Quest-A&I	see A&I	
WDH	Green River PHN	550 Uinta, Suite E	DSL	no			WDH-IT	A&I	1.5 Meg			Quest-A&I	see A&I	
WDH	Greybull - PHN	417 S. 2nd St.	DSL	no			WDH-IT	A&I	1.5 Meg			TCT	548-2853	
WDH	Jackson - WIC	460 East Pearl, Suite 3, Jackson WY 83001	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	732-0922	
WDH	Lander - PHN/WIC	450 N 2nd St, Rm 160 & 350, Lander WY 82420	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	332-5183	
WDH	Lander - WLRC	8204 Wyoming Highway 789, Lander WY 82401	DSL	yes			WDH-IT	Cisco Works	6 (MA)			Quest	74YHGJ810120ACSO,	
WDH	Lander - WLRC	8204 Wyoming Highway 789, Lander WY 82401	DSL	yes			WDH-IT	Cisco Works	6 (MA)			Quest	74YHGJ039244ACSO	
WDH	Laramie - WIC	609 South 2nd, Laramie WY 82070	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	721-2083	
WDH	Lovell - PHN	757 Great Western	DSL	no			WDH-IT	A&I	1.5 Meg			TCT	548-2853	
WDH	Lusk - PHN	611 E. 6th St.	DSL	no			WDH-IT	A&I	1.5 Meg			Quest-A&I	see A&I	
WDH	Lyman - PHN	128 E. Owen	DSL	no			WDH-IT	none	1.5 Meg			Wen	783-8009	
WDH	Newcastle - PHN/WIC	400 Stampede St, Ste A, Newcastle WY 82701	DSL	no			WDH-IT	Nagios	1.5 Meg			R&T	746-2285	
WDH	Pinedale PHN	619 Hennick	DSL	no			WDH-IT	A&I	1.5 Meg			Century Tell	367-3599	
WDH	Powell - WIC	109 West 14th, Powell WY 82435	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	7540106	
WDH	Rawlins - PHN/WIC	215 West Buffalo, Carbon Bldg, Rm 384 & 385	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	324-4022	
WDH	Riverton - DD		DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	856-3010	
WDH	Riverton - Prev Health		DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	857-4345	
WDH	Riverton - WIC	877 North 8th West, Suite 6, Riverton WY 82401	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	332-5183	
WDH	Riverton PHN	322 N. 8th W.	DSL	no			WDH-IT	A&I	1.5 Meg			Quest - A&I	see A&I	
WDH	Rock Springs - WIC	1471 Dewar Dr, Suite 100, Rock Springs WY 82801	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	382-9981	
WDH	Saratoga - PHN	201 S. River	DSL	no			WDH-IT	A&I	1.5 Meg			Communicom	208.114.71.1	
WDH	Sheridan - IMM		DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	856-3010	
WDH	Sheridan - WIC	297 South Main, Sheridan WY 82801	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	382-9981	
WDH	Sundance PHN	420 E. Main St.	DSL	no			WDH-IT	None	1.5 Meg			R&T	283-1142	
WDH	Thermopolis - PHN	328 1/2 Arapahoe	DSL	no			WDH-IT	A&I	1.5 Meg			RT	864-4104	
WDH	Thermopolis - WPH	141 Pioneer Home Dr, Thermopolis WY 82401	DSL	no			WDH-IT	Nagios	1.5 Meg			RT	864-2934	
WDH	Torrington - PHN/WIC	2025 Campbell Dr, #2 & 1, Torrington WY 82401	DSL	no			WDH-IT	Nagios	1.5 Meg			Communicom	24.143.13.102	
WDH	Wheatland - PHN	718 9th St	DSL	no			WDH-IT	A&I	1.5 Meg			Quest-A&I	see A&I	
WDH	Wheatland - WIC	851 Spruce St, Wheatland WY 82201	DSL	no			WDH-IT	Cisco Works	1.5 Meg			Quest	637-9614	
WDH	Worland - PHN	1007 Robertson Ave.	DSL	no			WDH-IT	A&I	1.5 Meg			RT	347-6184	
WDH	Worland - PHN(Tom Henry)	510 S. 15th Street	DSL	no			WDH-IT	A&I	1.5 Meg			RT	347-3001	
WDH	Worland - WIC	2010 Robertson Ave, Worland WY 82401	DSL	no			WDH-IT	Nagios	1.5 Meg			RT	347-6184	
WDH - HDC	Cheyenne - HDC		ITD Bresnan				WDH-IT	Cisco Works				Quest	see A&I	
WEN	Afton - Star Valley High School	445 West Swift Creek Lane - Room 113	DS-3 ATM	Yes	300/1140/30	6.97 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	8 Mbps		Quest		District Aggregation Point
WEN	Afton - Swift Creek Learning Center	222 East 4th Avenue	2 X T-1 ATM Multilink	Yes	300/1140/30	2 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset				Quest		Aggregates back to Lincoln 2
WEN	Arapahoe HS	189 Left Hand Ditch Road	T-1 ATM	Yes	100/380/10	1.42 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset				Quest		District Aggregation Point
WEN	Arvada Clearmont High School	1601 Meade Avenue	2 X T-1 ATM IMA	Yes	100/380/10	2.49 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset				Quest		District Aggregation Point
WEN	Arvada Clearmont High School	1601 Meade Avenue	2 X T-1 ATM IMA	Yes	100/380/10	2.49 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset				Quest		District Aggregation Point
WEN	Baggs - Little Snake River HS	100 Meeker Street	ATM T-1	Yes	300/1140/30	456 Kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset				Quest		Aggregates back to Carbon 1
WEN	Basin - Riverside High School	919 West B Room 111	2 X T-1 ATM IMA	No		1.72 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset				TCT West		District Aggregation Point
WEN	Big Horn High School	333 Highway 335 RM 109	ATM T-1	Yes	300/1140/30	1.67 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset				Quest		Aggregates back to Sheridan 1
WEN	Big Piney High School	650 Piney Drive - Room 140	2 X T-1 ATM IMA	Yes	200/760/20	2.94 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset						

State of Wyoming Combined WAN Inventory

WEN	Casper - Natrona County High School	930 S Elm Room 40	QMOE Circuit	Yes	400/1520/40	12.92 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	200 Mbps	30 Mbps	Qwest	Aggregates back to Natrona, Access
WEN	Casper - Roosevelt High School	140 East K Street	4 X T-1 Multilink	Yes	400/1520/40	2.13 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Natrona
WEN	Casper College	125 College Drive - Werner Technical Bldg	DS-3 ATM	Yes	100/380/10	15.25 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	15 Mbps	Qwest	
WEN	Cheyenne - Central High School	5500 Education Drive - Follow Signs inside	QMOE Circuit	Yes	300/1440/30		WDE - Greg Lundvall	Solar Winds Orion Toolset	200 Mbps	200 Mbps	Qwest	Aggregates back to Laramie 1
WEN	Cheyenne - East High School	2800 East pershing - Room 39	QMOE Circuit	Yes	300/1440/30		WDE - Greg Lundvall	Solar Winds Orion Toolset	200 Mbps	200 Mbps	Qwest	Aggregates back to Laramie 1
WEN	Cheyenne - Laramie County Community College	1400 east College Drive - EEC 132	DS-3 ATM	Yes	300/1440/30	16.16 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	200 Mbps	200 Mbps	Qwest	
WEN	Cheyenne - School District Building	2810 House Avenue Room 316	DS-3 ATM	Yes	300/1440/30	33.27 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	40 Mbps	Qwest	District Aggregation Point
WEN	Cheyenne - Wyoming Department of Education	Check in at Reception	Fiber	No			WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Fiber connection back to Emerson
WEN	Cheyenne Triumph HS	College Drive	QMOE Circuit	Yes	300/1440/30		WDE - Greg Lundvall	Solar Winds Orion Toolset	200 Mbps	200 Mbps	Qwest	Aggregates to Laramie 1
WEN	Chugwater High School	306 5th St. Room 135	2 X T-1 ATM Multilink	Yes	100/380/10	816 kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates to Platte 1
WEN	Cody High School	1225 Tenth St	DS-3 ATM	Yes	100/380/10	14.12 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	15 Mbps	Qwest	District Aggregation Point
WEN	Cokeville Jr/Sr High School	300 Pine	2 X T-1 ATM Multilink	Yes	300/1140/30	1.16 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Allwest	Aggregates to Lincoln 2 + carries CO
WEN	Converse 1 Admin Building	615 Hamilton Street	DS-3 ATM	Yes	100/380/10	7.06 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset		8 Mbps	Qwest	District Aggregation Point
WEN	Converse 2 Admin Building	120 Boxelder Trail	3 X T-1 ATM IMA	No		1.81 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Dayton - Tongue River High School	1100 US Highway 14	3 X T-1 ATM Multilink	Yes	300/1140/30	1.81 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates to Sheridan 1
WEN	Douglas High School	1701 Hamilton St. / in the DHS media center	4 X T-1 ATM Multilink	Yes	100/380/10	4.33 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Converse 1 adm
WEN	Dubois High School	314 Helmer Room 1	2 X T-1 ATM IMA	Yes	200/760/20	1.26 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Encampment HS	514 Rankin, Library Media Center - Viewing T-1 ATM		Yes	500/1900/50	1.10 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Carbon 2
WEN	Ethete - Wyoming Indian High School	636 Blue Sky Highway Room 300	2 X T-1 ATM IMA	Yes	300/1140/30	2.87 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Evanston High School	701 West Cheyenne Dr - Seminar Room	DS-3 ATM	Yes	15%/500/5%	16.37 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	20 Mbps	Qwest	District Aggregation Point
WEN	Evanston Horizon	1013 W. Cheyenne Drive	District Fiber				WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Uinta 1
WEN	Farson/Eden High School	30 US Highway 28	2 X T-1 ATM Multilink	Yes	400/1520/40	1.63 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Sweetwater 1
WEN	Fort Washakie HS	907 Washakie Road	3 X T-1 ATM IMA	Yes	100/380/10	3.71 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Gillette - Campbell County High School	1000 Camel Driver Room 302. Upstairs, ac	4 X T-1 ATM Multilink	Yes	100/380/10	4.64 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Campbell Count
WEN	Gillette - South Campus	600 Rohan Ave Room 149	4 X T-1 ATM Multilink	Yes	100/380/10	2.36 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Campbell Count
WEN	Gillette - Westwood High School	205 Paige Street	T-1 ATM	Yes	100/380/10	1.07 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Campbell Count
WEN	Glendo High School	225 Oregon Trail	2 X T-1 ATM Multilink	Yes	100/380/10	1.17 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Platte 1
WEN	Glenrock High School	225 Oregon Trail	3 X T-1 ATM IMA	No		1.81 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Fiber connection back to Converse 1
WEN	Green River Expedition Academy	351 Monroe Avenue	District Fiber	N/A							Qwest	District provided fiber connection b
WEN	Green River High School	1615 Hitching Post	DS-3 ATM	Yes	100/380/10	7.75 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	9 Mbps	Qwest	District Aggregation Point
WEN	Greybull High School	600 N. 6th Street	2 X T-1 ATM Ima	Yes	100/380/10	2.54 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			TCT West	District Aggregation Point
WEN	Guernsey-Sunrise High	172 west Burlington	T-1 ATM	Yes	100/380/10	1.63 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Embarq	District Aggregation Point - 2nd T-1
WEN	Hanna Elk Mountain High School	US Highway 72	T-1 ATM	Yes	500/1900/50	1.50 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Carbon 2
WEN	Hulett High School	401 Sager St.	2 X T-1 ATM Multilink	Yes	400/1520/40	1.19 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Crook 1
WEN	Hulett HS	429 Sager	2 X T-1 ATM IMA	Yes	300/1140/30	1.21 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Crook 1
WEN	Jackson Hole High School	1910 West High School Road	DS-3 ATM	Yes	200/760/20	11.04 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	18 Mbps	Qwest	District Aggregation Point
WEN	Jackson Hole Summit High School	100 Middle School Road	District Fiber	Yes	200/760/20		WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District provided fiber connection b
WEN	Kaycee High School	235 Holt	2 X T-1 ATM Multilink	Yes	100/380/10	1.61 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			RT Communications	Aggregates back to Johnson 1
WEN	Kemmerer Alt HS	1004 Elk Street	District Fiber	N/A							Qwest	District Provided Fiber
WEN	Kemmerer High School	1525 Third West	3 X T-1 ATM IMA	Yes	300/1140/30	2.7 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Lakeway Learning Center	525 W. Lakeway Dr.	DS-3 ATM	Yes	800/3040/80	23.43 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	25 Mbps	Qwest	District Aggregation Point
WEN	Lander - Pathfinder High School	100 S.T.S. Smith College 98	2 X T-1 ATM Multilink	Yes	400/1520/40	1.29 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Fremont 1
WEN	Lander - Valley High School	350 Baldwin Creek Rd Room W205	DS-3 ATM	Yes	400/1520/40	8.53 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	20 Mbps	Qwest	District Aggregation Point
WEN	Laramie - High School	1275 North 11th Room 209	4 X T-1 ATM Multilink	Yes	300/1140/30	6.29 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates to Albany 1
WEN	Laramie - University of Wyoming	College of Education Bldg., Room #1	UW Network				WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	
WEN	Laramie - Whiting High School	509 South 9th Room 103	2 X T-1 ATM Multilink	Yes	300/1140/30	653 Kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates to Albany 1
WEN	Lingle Fort Laramie High School	3rd Street	T-1 ATM	Yes	500/1900/50	1.55 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Embarq	Aggregates to Goshen 1
WEN	Lovell High School	502 Hampshire Avenue	2 X T-1 ATM IMA	Yes	100/380/10	2.67 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			TCT West	District Aggregation Point
WEN	Lusk - Niobrara County High School	702 West 5th - Room 100	2 X T-1 ATM IMA	Yes	100/380/10	2.21 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Lyman High School	1305 E Clark St. C-303	3 X T-1 ATM IMA	Yes	100/380/10	3.06 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	M&O (District Aggregation Point)	804 Skyline Drive	DS-3 ATM	Yes	300/1140/30		WDE - Greg Lundvall	Solar Winds Orion Toolset	12 Mbps	10.02 Mbps	Qwest	District Aggregation point - No vide
WEN	Meeteetse School	2107 Idaho	T-1 ATM	Yes	100/380/10	1.04 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			TCT West	District Aggregation Poing
WEN	Midwest High School	245 Lewis	2 X T-1 ATM Multilink	Yes	400/1520/40	1.63 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			RT Communications	Aggregates back to Natrona
WEN	Moorcroft High School	2 Country Lane	2 X T-1 ATM Multilink	Yes	400/1520/40	1.43 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Crook 1
WEN	Mountain View High School	330 Seventh St	2 X T-1 ATM IMA	Yes	100/380/10	2.87 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Newcastle High School	111 Casper Avenue - Room 103	2 X T-1 ATM IMA	Yes	100/380/10	5.64 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			RT Communications	District Aggregation Point
WEN	Newcastle High School	111 Casper Avenue - Room 103	2 X T-1 ATM IMA	Yes	100/380/10	5.64 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			RT Communications	District Aggregation Point
WEN	Pavilion - Wind River High School	1994 North Cougar Dr	2 X T-1 ATM IMA	Yes	100/380/10	2.65 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Pine Bluffs High School	512 Maple St - Room 113 (north wing)	2 X T-1 ATM IMA	Yes	200/760/20	3.09 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			RT Communications	District Aggregation Point
WEN	Pinedale High School	101 E Hennick, Room 100	2 X T-1 ATM IMA	Yes	200/760/20	3.09 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Powell - Northwest College	231 West 6th Street Room MB112	DS-3 ATM	No		24.66 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	30 Mbps	Qwest	
WEN	Powell High School	245 North Everts St - Room 218	DS-3 ATM	Yes	400/1520/40	8.13 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	20 Mbps	Qwest	District Aggregation Point
WEN	Powell Shoshone LC	140 North Ferris	District Fiber	N/A							Qwest	District Provided Fiber
WEN	Ranchester - School District Office	1127 Dayton Street	4 X T-1 ATM IMA	Yes	300/1140/30	5.37 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Rawlins Cooperative School	615 Rodeo Street	T-1 ATM	Yes	300/1140/30	308 Kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates to Carbon 1
WEN	Rawlins High School	1401 Colorado Room 105	DS-3 ATM	Yes	300/1140/30	5.6 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	6 Mbps	Qwest	District Aggregation Point
WEN	Riverton - Central Wyoming College	2660 Peck Avenue CW 133	DS-3 ATM	No		14.1 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	20 Mbps	Qwest	
WEN	Riverton High School	2001 West Sunset Dr	DS-3 ATM	Yes	100/380/10	6.72 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	20 Mbps	Qwest	District Aggregation Point
WEN	Rock River High School	262 N. Morris	2 X T-1 ATM Multilink	Yes	300/1140/30	731 Kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates to Albany 1
WEN	Rock Springs - Independence High School	1300 Lowell Avenue	2 X T-1 ATM Multilink	Yes	400/1520/40	19.7 Kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates to Sweetwater 1
WEN	Rock Springs - Western Wyoming Commu	2500 College Drive Room A101	DS-3 ATM	Yes	400/1520/40	17.08 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	20 Mbps	Qwest	
WEN	Rock Springs (Polycam V5X7000, HDX8000	2500 College Dr., Rock Springs	WEN, DS3	yes	N/A	N/A	WEN	SolarWinds	100 Full	20 MB bandwidth	Qwest	fiber by Sweetwater Cable
WEN	Rock Springs High School	1375 James Drive	6 X T-1 ATM Multilink	Yes	400/1520/40	1.23 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates to Sweetwater 1
WEN	Saratoga High School	801 West Elm	3 X T-1 ATM IMA	Yes	500/1900/50	3.20 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Sheridan - Fort Mackenzie High School	620 Lewis Street - Library	District Fiber	N/A							Qwest	District Provided Fiber
WEN	Sheridan - Wyoming Girls School	3500 Big Horn Avenue	T-1 ATM	Yes	100/380/10	1.15 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	15 Mbps	Qwest	
WEN	Sheridan College	3059 Coffeen Ave Griffith Memorial Building	DS-3 ATM	No		12.84 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	9 Mbps	Qwest	
WEN	Sheridan High School	1056 Long Drive C163	DS-3 ATM	No		8.51 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	9 Mbps	Qwest	District Aggregation Point
WEN	Shoshoni High School	112 West 3rd Wren Video Room 17	2 X T-1 ATM IMA	No		2.15 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			RT Communications	District Aggregation Point
WEN	Subscribed: Wamsutter Desert Elem	235 Bugas	2 X T-1 ATM Multilink	Yes	100/380/10	605 kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	Aggregates back to Sweetwater 1
WEN	Subscribed: Big Horn SD #1	District Office, Cowley WY	District Provided 54 Mbps Wireless	No							Qwest	District Provided 54 Mbps Wireless
WEN	Subscribed: Casper Central Services Office	970 North Glenn Road	DS-3 ATM	Yes	400/1520/40	68 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	90 Mbps	90 Mbps	Qwest	District Aggregation Point
WEN	Subscribed: Ethete WY Indian Elem	23 Coolidge Dr	2 X T-1 ATM IMA	Yes	300/1140/30	2.88 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Subscribed: Evanston HS Portable Unit	mobile, varying locations	District Fiber	Yes	15%/500/5%						Qwest	District Provided Fiber
WEN	Subscribed: Powell HS Admin	160 North Everts	District Fiber	N/A							Qwest	District Provided Fiber
WEN	Subscribed: Powell HS Main	160 North Everts	DS-3 ATM	Yes	400/1520/40	7.09 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset		20 Mbps	Qwest	District Aggregation Point
WEN	Subscribed: Ranchester Board Room	1127 Dayton Street	4 X T-1 ATM IMA	Yes	300/1140/30	5.47 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest	District Aggregation Point
WEN	Subscribed: Ranchester Training Room	1127 Dayton Street	District Connected	Yes	300/1140/30						Qwest	District LAN connected
WEN	Subscribed: Wheatland HS Portable Unit	1207 13th Street	DS-3 ATM	Yes	100/380/10	5.38 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	10 Mbps	Qwest	District Aggregation Point
WEN	Sundance Bear Lodge High School	406 E Main	District Fiber	Yes	400/1520/40		WDE - Greg Lundvall	Solar Winds Orion Toolset				

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WEN	Torrington High School	2400 West C Street	6 X T-1 ATM Multilink	Yes	500/1900/50	8.92 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset		Embarq	District Aggregation Point
WEN	Upton High School	610 Poplar Street	2 X T-1 ATM IMA	Yes	100/380/10	2.19 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset		RT Communications	District Aggregation Point
WEN	WDE 181	2300 Capitol Ave, Room 181	LAN		N/A (LAN Connection)						LAN Connected
WEN	WDE 281	2300 Capitol Ave, Room 281	LAN		N/A (LAN Connection)						LAN Connected
WEN	WDE Dale Meyer	2300 Capitol Ave, Room 268	LAN		N/A (LAN Connection)						LAN Connected
WEN	WDE Greg Lundvall	Laramie Outreach Office	T-1 ATM	Yes	360/760/30	98.4 Kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset		Qwest	
WEN	WDE Ken Hertz	2300 Capitol Ave, Room 265	LAN		N/A (LAN Connection)						LAN Connected
WEN	WDE Laramie	2020 Grand Avenue, Suite 500	T-1 ATM	No		65.3 Kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset		Qwest	Aggregates to Cheyenne - Only user
WEN	WDE MAIN WEN Room	2300 Capitol Ave, Room 236B	LAN		N/A (LAN Connection)						LAN Connected
WEN	WDE Riverton	320 West Main, 3rd Floor	T-1 ATM	No		4.95 Kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset		Qwest	Aggregates to Cheyenne - Only user
WEN	WDE Summer Wasson	2300 Capitol Ave, Room 241	LAN		N/A (LAN Connection)						LAN Connected
WEN	Wheatland High School	1207 12th Street Room 13	DS-3 ATM	Yes	100/380/10	5.38 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset	45 Mbps	10 Mbps	Qwest
WEN	Worland - Wyoming Boys' School	1550 Hwy 20 South Room 103	T-1 ATM	No		330 Kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			RT Communications
WEN	Worland High School	801 South 17th St	4 X T-1 ATM IMA	Yes	100/380/10	2.08 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			RT Communications
WEN	Wright Jr/Sr High School	220 Wright Boulevard	T-1 ATM	Yes	100/380/10	1.34 Mbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Qwest
WEN	Yoder Southeast High School	Lacy Avenue	T-1 ATM	Yes	500/1900/50	767 Kbps	WDE - Greg Lundvall	Solar Winds Orion Toolset			Embarq
WHH	Casper PHN	475 S. Spruce	DSL	no			WDH-IT	A&I	1.5 Meg		Qwest-A&I
Wind River HS	Wind River HS	Cougar Dr, Pavilion	ATM	Yes			MAI	Ping Utility	3 mbps	3 mbps	WEN
WWCC	Green River (Polycom FX)	1 College Way, Green River	fiber back to WWCC Rock Springs	yes	N/A	N/A	WWCC on local network	Managed by WWCC on local netwo	1 GB	1 GB	Qwest
WWCC Outreach	Afton/Star Valley (Polycom PVX)	247 N. Washington, Afton	?	?	N/A	N/A	?	?	?	?	Silver Star Tel ?
WWCC Outreach	Baggs (Polycom PVX and FX)	360 Whippoorwill, Baggs	to Rawlins CCHC	?	N/A	N/A	Rawlins CCHC	Managed by Rawlins	?	1.5 MB bandwidth ?	?
WWCC Outreach	Big Piney (Polycom VSX7000)	650 Piney Dr. Big Piney	Sublette #9 district network (not c	?	N/A	N/A	?	?	?	?	Century Tel ?
WWCC Outreach	Bridger Valley (Polycom PVX)	1305 E. Clark St., Lyman	Unita #6 district network, 3 T1's	yes	N/A	N/A	WEN	SolarWinds	100 Full	4.5 MB bandwidth	?
WWCC Outreach	Evanston (two Polycom FX, PVX)	1013 Cheyenne Dr., Evanston	Fiber back to Uinta #1 district, DS:	yes	N/A	N/A	WEN	SolarWinds	N/A	20 MB bandwidth, shared w/	Qwest ?
WWCC Outreach	Hannah/Elk Mountain (Polycom PVX)	Highway 72, Hannah	Carbon #2 district, T1 to Saratoga	yes	N/A	N/A	WEN	SolarWinds	100 Full or Auto/1.5 MB bandwidth	?	?
WWCC Outreach	Kemmerer (Polycom FX)	1525 3rd St., Kemmerer	Lincoln #1 district, 3xT1	yes	N/A	N/A	WEN	SolarWinds	100 Full	4.5 MB bandwidth	?
WWCC Outreach	Kemmerer (Polycom ViaVideo)	20 Adaville, Kemmerer	?	?	N/A	N/A	?	?	?	?	Hamsfork Dot Net ?
WWCC Outreach	Pinedale (Polycom FX and ViaVideo)	101 E. Henrick St., Pinedale	Sublette #1 district, 2xT1	yes	N/A	N/A	WEN	SolarWinds	100 Full	3.0 MB bandwidth	?
WWCC Outreach	Rawlins (Polycom FX)	705 Rodeo, Rawlins	CCHC connection	?	N/A	N/A	Rawlins CCHC	Managed by Rawlins	?	6.0 MB bandwidth	?
WWCC Outreach	Rawlins (Polycom PVX)	812 E. Murry, Rawlins	CCHC connection	?	N/A	N/A	Rawlins CCHC	Managed by Rawlins	?	?	?
WWCC Outreach	Saratoga (Polycom PVX)	801 W. Elm	Carbon #2 district, 3xT1	yes	N/A	N/A	WEN	SolarWinds	?	4.5 MB bandwidth	?

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
Aggregation Router	Wind River HS	10.101.0.16	CISCO	2800 Router	Version 12.4(10)	Ethernet, Serial			
Basin Retirement Center	Basin Retirement Center		Checkpoint	UTM-1 Edge X	Ver.7.0.24	10/100 Copper	0	0	Security Devices
BigPiney	BigPiney		Checkpoint	UTM-1 Edge X	Ver. 7.5.51	10/100 Copper	0	0	Security Devices
Buffalo	Buffalo		Checkpoint	UTM-1 Edge X	Ver. 7.5.51	10/100 Copper	0	0	Security Devices
CFA Floor 1	Jackson CFA	10.101.1.250	CISCO	Catalyst 3650	Version 12.2(35)SE5	Ethernet and Fiber			
CFA Floor 2	Jackson CFA	10.101.1.246	CISCO	Catalyst 3650	Version 12.2(35)SE5	Ethernet and Fiber			
CFA Router	Jackson CFA	10.101.10	CISCO	3800 Router	12.3(11r)T2	Ethernet, Serial			
cole_2950_1	Lander LRC	8204 HWY 789 Lander	Cisco	Layer 2 Switch-2950SX	12.1	GIG-Fiber and Copper	19	0	Workgroup Switch
CWC	CWC, Riverton	10.101.0.2	CISCO	7200 Router	Version 12.4(11)T2	Ethernet, Serial			
Douglas	Douglas		Checkpoint	UTM-1 Edge X	Ver. 7.5.51	10/100 Copper	0	0	Security Devices
emer_2950_1	Lander LRC	8205 HWY 789 Lander	Cisco	Layer 2 Switch-2950SX	12.1	GIG-Fiber and Copper	19	0	Workgroup Switch
Evanston 0 1	Evanston WSH	831 S HWY 150	HP	Layer 2 Switch-J4887A	G.07.107	GIG-Fiber and Copper	34	0	Workgroup Switch
Fremont Hall Switch	Sinks Canyon Center	10.101.0.34	CISCO	Catalyst 3650	Version 12.2(35)SE5	Ethernet and Fiber			
Glenrock:	Glenrock:		Checkpoint	UTM-1 Edge X	Ver. 7.5.51	10/100 Copper	0	0	Security Devices
Green River:	Green River:		Checkpoint	UTM-1 Edge X	Ver. 7.5.51	10/100 Copper	0	0	Security Devices
Greybull	Greybull		Checkpoint	UTM-1 Edge X	Ver. 7.5.51	10/100 Copper	0	0	Security Devices
Hathaway 01	Cheyenne, WY	Hathaway Basement	HP	Layer 2 Switch-J4904A	I.10.67	GIG-Fiber and Copper	9	0	Workgroup Switch
Hathaway 02	Cheyenne, WY	Hathaway Basement	HP	Layer 2 Switch-J4904A	I.10.67	GIG-Fiber and Copper	28	0	Workgroup Switch
Hathaway 11	Cheyenne, WY	Hathaway First Floor	HP	Layer 2 Switch-J4904A	I.10.67	GIG-Fiber and Copper	23	0	Workgroup Switch
Hathaway 4 1	Cheyenne, WY	Hathaway 4th floor	HP	Layer 2 Switch-J4904A	I.10.67	GIG-Fiber and Copper	13	0	Workgroup Switch
Hathaway 4 2	Cheyenne, WY	Hathaway 4th floor	HP	Layer 2 Switch-J4887A	G.07.107	GIG-Fiber and Copper	30	1	Workgroup Switch
Hathaway 4 3	Cheyenne, WY	Hathaway 4th floor	HP	Layer 2 Switch-J4904A	I.10.67	GIG-Fiber and Copper	33	0	Workgroup Switch
Hathaway 4 3	Cheyenne, WY	Hathaway 4th floor	HP	Layer 2 Switch-J8165A	H.10.67	GIG-Fiber and Copper	22	0	Workgroup Switch-POE
Hathaway 5 1	Cheyenne, WY	Hathaway 5th floor	HP	Layer 2 Switch-J4887A	G.07.109	GIG-Fiber and Copper	40	0	Workgroup Switch
hcc_2950_1	Lander LRC	8206 HWY 789 Lander	Cisco	Layer 2 Switch-2950SX	12.1	GIG-Fiber and Copper	15	0	Workgroup Switch
HP Procurve	Lander LRC	8219 HWY 789 Lander	HP						
HP Procurve			HP						
Lander Router	SJMC	10.101.0.14	CISCO	3800 Router	12.3(11r)T2	Ethernet, Serial and Fiber	2		
Lander Switch	CWC Lander Center	10.101.0.18	CISCO	3800 Router	12.3(11r)T2	Ethernet, Serial			
lane_2950_1	Lander LRC	8207 HWY 789 Lander	Cisco	Layer 2 Switch-2950SX	12.1	GIG-Fiber and Copper	11	0	Workgroup Switch
Lovell	Lovell		Checkpoint	UTM-1 Edge X	Ver. 7.5.51	10/100 Copper	0	0	Security Devices
LRC-BR-Chapel-Non-Roo	Lander LRC	8212 HWY 789 Lander	Cisco	Cisco Aironet 1300	12.4	10/100 Copper	0	0	Wireless Bridge
LRC-BR-Lane-Root	Lander LRC	8213 HWY 789 Lander	Cisco	Cisco Aironet 1300	12.4	10/100 Copper	0	0	Wireless Bridge
LRC-Omni-Admin-AP	Lander LRC	8214 HWY 789 Lander	Cisco	Cisco Aironet 1300	12.4	10/100 Copper	0	0	Omni Point AP
LRC-OMNI-HCC-AP	Lander LRC	8215 HWY 789 Lander	Cisco	Cisco Aironet 1300	12.4	10/100 Copper	0	0	Omni Point AP
LRC-OMNI-Lones-AP	Lander LRC	8216 HWY 789 Lander	Cisco	Cisco Aironet 1300	12.4	10/100 Copper	0	0	Omni Point AP
LRC-OMNI-MAGHEE-AP	Lander LRC	8217 HWY 789 Lander	Cisco	Cisco Aironet 1300	12.4	10/100 Copper	0	0	Omni Point AP
LRC-OMNI-ROTHWELL-A	Lander LRC	8218 HWY 789 Lander	Cisco	Cisco Aironet 1300	12.4	10/100 Copper	0	0	Omni Point AP
Lusk:	Lusk:		Checkpoint	UTM-1 Edge X	Ver. 7.5.51	10/100 Copper	0	0	Security Devices
Newcastle	Newcastle		Checkpoint	UTM-1 Edge X	Ver.7.0.17	10/100 Copper	0	0	Security Devices
Orchard House Switch	Sinks Canyon Center	10.101.0.22	CISCO	2800 Router	Version 12.4(10)	Ethernet, Serial			
OVN	?		Cisco	CISCO2611XM					
OVN	?		Cisco	CISCO2611XM					
OVN	?		Cisco	CISCO2821-V/K9					
OVN	?		Cisco	CISCO2821-V/K9					
OVN	?		Cisco	CISCO2611XM					
OVN	?		Cisco	CISCO2611XM					
OVN	?		Cisco	CISCO2821-V/K9					
OVN	??		Cisco	CISCO1721-ADSL					
OVN	??		Cisco	CISCO1721-ADSL					

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
OVN	Afton/OVN 1	Afton Lincoln Civic Center Room 105	Cisco	CISCO1841-ADSL	12.4(16B)	2FE/1DSL	1FE		307-886-5637 DSL
OVN	Afton/OVN 1	Afton Lincoln Civic Center Room 105	Cisco	CISCO1841-ADSL	12.4(16B)	2FE/1DSL	1FE		307-886-5637 DSL
OVN	Casper/OVN 1	Outreach Building Room 106	Cisco	CISCO3745	12.4.(4)T	16FE/4T1/1AIM			T-1 Bresnan 74/HCGS/912717,
OVN	Casper/OVN 1	Outreach Building Room 106	Cisco	CISCO3745	12.4.(4)T	16FE/4T1/1AIM			T-1 Bresnan 74/HCGS/912717,
OVN	Casper/OVN 7	UW Casper College Room AD 4	Cisco	CISCO3725	12.4.(4)T4	2FE/1SER/1ATM/1AIM	0		T-1 74.HCGJ.534486 ATM &
OVN	Casper/OVN 7	UW Casper College Room AD 4	Cisco	CISCO3725	12.4.(4)T4	2FE/1SER/1ATM/1AIM	0		T-1 74.HCGJ.534486 ATM &
OVN	Cheyenne/OVN 1	Laramie County Community College AB 208	Cisco	CISCO2821	12.4.(16)	2GE/1T1ATM/1AIM/4FXS	4FXS		Bresnan Metronet
OVN	Cheyenne/OVN 1	Laramie County Community College AB 208	Cisco	CISCO2821	12.4.(16)	2GE/1T1ATM/1AIM/4FXS	4FXS		Bresnan Metronet
OVN	Cody/OVN 1	Park County Building Suite 2011 Rm 1	Cisco	CISCO1841-ADSL	12.4(1c)	2FE/1DSL	1FE		DSL w/VoIP
OVN	Cody/OVN 1	Park County Building Suite 2011 Rm 1	Cisco	CISCO1841-ADSL	12.4(1c)	2FE/1DSL	1FE		DSL w/VoIP
OVN	Cody/OVN 2	Park County Building Suite 2011 Rm 2	Cisco	CISCO1721-ADSL	12.3(22)	1FE/1DSL	0		307-527-5216 DSL
OVN	Cody/OVN 2	Park County Building Suite 2011 Rm 2	Cisco	CISCO1721-ADSL	12.3(22)	1FE/1DSL	0		307-527-5216 DSL
OVN	Douglas/OVN 1	Eastern Wyoming College Branch Campus Rm 11	Cisco	CISCO1841-ADSL	12.3.(22)	1FE/1DSL	0		307-358-1666 DSL
OVN	Douglas/OVN 1	Eastern Wyoming College Branch Campus Rm 11	Cisco	CISCO1841-ADSL	12.3.(22)	1FE/1DSL	0		307-358-1666 DSL
OVN	Evanston/OVN 1	Uinta Boces Higher Ed Center Rm 114	Cisco	CISCO1841-ADSL2	12.4.(4)T7	2FE/1DSL	1FE		307-783-7614 DSL w VoIP
OVN	Evanston/OVN 1	Uinta Boces Higher Ed Center Rm 114	Cisco	CISCO1841-ADSL2	12.4.(4)T7	2FE/1DSL	1FE		307-783-7614 DSL w VoIP
OVN	Evanston/OVN 2	Uinta Boces Higher Ed Center Rm 126	Cisco	CISCO1721-ADSL	12.2.(15)T17	1FE/1DSL	0		307-783-7082 DSL
OVN	Evanston/OVN 2	Uinta Boces Higher Ed Center Rm 126	Cisco	CISCO1721-ADSL	12.2.(15)T17	1FE/1DSL	0		307-783-7082 DSL
OVN	Gillette/OVN 1	Gillette Campus, NW Regional Office 171G	Cisco	CISCO2821-V/K9	12.3(8)T6	2GE/1T1ATM/1AIM/4FXS	4FXS		T-1 74HCGJ552436 w/VoIP
OVN	Gillette/OVN 1	Gillette Campus, NW Regional Office 171G	Cisco	CISCO2821-V/K9	12.3(8)T6	2GE/1T1ATM/1AIM/4FXS	4FXS		T-1 74HCGJ552436 w/VoIP
OVN	Gillette/OVN 2	Gillette Campus, NW Regional Office 171N	Cisco	CISCO2610XM	12.3.(21)	2FE/4T1(ATM)/1AIM	3T1		T-1 74.HCGJ.977842
OVN	Gillette/OVN 2	Gillette Campus, NW Regional Office 171N	Cisco	CISCO2610XM	12.3.(21)	2FE/4T1(ATM)/1AIM	3T1		T-1 74.HCGJ.977842
OVN	Green River/OVN 1	Western Wyoming College Green River Campus Rm 201	Cisco	CISCO1841-ADSL2	12.4.(1c)	2FE/1DSL	1FE		307-875-3715 DSL
OVN	Green River/OVN 1	Western Wyoming College Green River Campus Rm 201	Cisco	CISCO1841-ADSL2	12.4.(1c)	2FE/1DSL	1FE		307-875-3715 DSL
OVN	Jackson/OVN 1	Center for the Arts, Rm 120	Cisco	CISCO1841-ADSL2	12.4.(4)T4	2FE/1DSL	1FE		307-734-6538 DSL w VoIP
OVN	Jackson/OVN 1	Center for the Arts, Rm 120	Cisco	CISCO1841-ADSL2	12.4.(4)T4	2FE/1DSL	1FE		307-734-6538 DSL w VoIP
OVN	Jackson/OVN 2	Center for the Arts, Rm 118	Cisco	CISCO1721-ADSL	12.2.(15)T17	1FE/1DSL	0		307-732-1489 DSL
OVN	Jackson/OVN 2	Center for the Arts, Rm 118	Cisco	CISCO1721-ADSL	12.2.(15)T17	1FE/1DSL	0		307-732-1489 DSL
OVN	Lander/OVN 1	Fremont County Library	Cisco	CISCO1841-ADSL	12.4(16B)				307-732-1489 DSL
OVN	Lander/OVN 1	Fremont County Library	Cisco	CISCO1841-ADSL	12.4(16B)				307-732-1489 DSL
OVN	Laramie	UW Centrex	Cisco	CISCO7206VXR					

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
OVN	Laramie	UW Centrex	Cisco	IPVC-3545-CHAS=		Ethernet		no	MCU
OVN	Laramie	UW Centrex	Cisco	IPVC-3545-EMP=	5.6.1	Ethernet		no	MCU
OVN	Laramie	UW Centrex	Cisco	IPVC-3545-EMP=	5.6.1	Ethernet		no	MCU
OVN	Laramie	UW Centrex	Cisco	IPVC-3545-EMP=	5.6.1	Ethernet		no	MCU
OVN	Laramie	UW Centrex	Cisco	IPVC-3545-MCU=	5.6.1	Ethernet		no	MCU
OVN	Laramie	UW Centrex	Cisco	CISCO7206VXR					
OVN	Laramie	UW Centrex	Cisco	IPVC-3545-CHAS=		Ethernet		no	MCU
OVN	Laramie	UW Centrex	Cisco	IPVC-3545-EMP=	5.6.1	Ethernet		no	MCU
OVN	Laramie	UW Centrex	Cisco	IPVC-3545-EMP=	5.6.1	Ethernet		no	MCU
OVN	Laramie	UW Centrex	Cisco	IPVC-3545-EMP=	5.6.1	Ethernet		no	MCU
OVN	Laramie	UW Centrex	Cisco	IPVC-3545-MCU=	5.6.1	Ethernet		no	MCU
OVN	Lusk/OVN 1	Niobrara County School District Board Room	Cisco	CISCO1841-ADSL	12.3.(22)	1FE/1DSL	0		307-334-0132 DSL
OVN	Lusk/OVN 1	Niobrara County School District Board Room	Cisco	CISCO1841-ADSL	12.3.(22)	1FE/1DSL	0		307-334-0132 DSL
OVN	Newcastle/OVN 1	Newcastle Community Education Rm 120	Cisco	CISCO1841-ADSL					746-1281 RT Comm DSL
OVN	Newcastle/OVN 1	Newcastle Community Education Rm 120	Cisco	CISCO1841-ADSL					746-1281 RT Comm DSL
OVN	Powell /OVN 1	Northwest College ORB 137	Cisco	CISCO2821-V/K9	12.3(8r)T7	2GE/1T1ATM/1AIM/4FXS	4FXS		T-1 74HCGJ551646 w/VoIP
OVN	Powell /OVN 1	Northwest College ORB 137	Cisco	CISCO2821-V/K9	12.3(8r)T7	2GE/1T1ATM/1AIM/4FXS	4FXS		T-1 74HCGJ551646 w/VoIP
OVN	Powell/ OVN 2	Northwest College ORB 122	Cisco	CISCO1721-ADSL	12.3.(22)	1FE/1DSL	0		307-754-9153 DSL
OVN	Powell/ OVN 2	Northwest College ORB 122	Cisco	CISCO1721-ADSL	12.3.(22)	1FE/1DSL	0		307-754-9153 DSL
OVN	Rawlins/OVN 1	Carbon County Higher Education Center Rm 2	Cisco	CISCO1841-ADSL	12.4.(4)T6	2FE/1DSL	1FE		307-324-3503 DSL w VoIP
OVN	Rawlins/OVN 1	Carbon County Higher Education Center Rm 2	Cisco	CISCO1841-ADSL	12.4.(4)T6	2FE/1DSL	1FE		307-324-3503 DSL w VoIP
OVN	Rawlins/OVN 2	Carbon County Higher Education Center Rm 1	Cisco	CISCO1721-ADSL	12.2.(15)T17	1FE/1DSL	0		328-4666 DSL
OVN	Rawlins/OVN 2	Carbon County Higher Education Center Rm 1	Cisco	CISCO1721-ADSL	12.2.(15)T17	1FE/1DSL	0		328-4666 DSL
OVN	Removed from Casper		Cisco	CISCO1721-ADSL					Removed from Casper
OVN	Removed from Casper		Cisco	CISCO1721-ADSL					Removed from Casper
OVN	Removed from Casper		Cisco	CISCO1721-ADSL					Removed from Casper
OVN	Removed from Casper		Cisco	CISCO1721-ADSL					Removed from Casper
OVN	Removed from Lander		Cisco	CISCO2610XM					Removed from service
OVN	Removed from Lander		Cisco	CISCO2610XM					Removed from service
OVN	Removed riverton		Cisco	CISCO1721-ADSL					Removed from Riverton
OVN	Removed riverton		Cisco	CISCO1721-ADSL					Removed from Riverton
OVN	Riverton/OVN 1	Central Wyoming College Classwing 133	Cisco	CISCO2821-V/K9	12.3.(8)T6	2GE/1T1ATM/1AIM/4FXS	4FXS		T-1 74HCGJ549998
OVN	Riverton/OVN 1	Central Wyoming College Classwing 133	Cisco	CISCO2821-V/K9	12.3.(8)T6	2GE/1T1ATM/1AIM/4FXS	4FXS		T-1 74HCGJ549998

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
OVN	Riverton/OVN 3	Riverton Outreach Building Office Area	Cisco	CISCO1841-ADSL	12.3.(22)	2FE/1DSL	1FE		307-856-8651 DSL w VoIP
OVN	Riverton/OVN 3	Riverton Outreach Building Office Area	Cisco	CISCO1841-ADSL	12.3.(22)	2FE/1DSL	1FE		307-856-8651 DSL w VoIP
OVN	Rock Springs/OVN 1	Western Wyoming College Rm 1229C	Cisco	CISCO2821-V/K9	12.3.(8)T6	2GE/1T1ATM/1AIM/4FXS	4FXS		T-1 74HCGJ552100 w VoIP
OVN	Rock Springs/OVN 1	Western Wyoming College Rm 1229C	Cisco	CISCO2821-V/K9	12.3.(8)T6	2GE/1T1ATM/1AIM/4FXS	4FXS		T-1 74HCGJ552100 w VoIP
OVN	Rock Springs/OVN 2		Cisco	CISCO2610XM	12.3.(21)	1FE/4T1ATM	3T1ATM		
OVN	Rock Springs/OVN 2		Cisco	CISCO2610XM	12.3.(21)	1FE/4T1ATM	3T1ATM		
OVN	Sheridan/OVN 1	Sheridan College Whitney 158	Cisco	CISCO2821-V/K9	12.3.(8)T6	2GE/1T1ATM/1AIM/4FXS	1GE/4FXS		T-1 74HCGJ547856
OVN	Sheridan/OVN 1	Sheridan College Whitney 158	Cisco	CISCO2821-V/K9	12.3.(8)T6	2GE/1T1ATM/1AIM/4FXS	1GE/4FXS		T-1 74HCGJ547856
OVN	Sheridan/OVN 2	Sheridan College Griffith Bldg Rm 11	Cisco	CISCO2610XM	12.3.21	2FE/4T1(ATM)/1AIM	3T1		T-1 74HCGJ904816
OVN	Sheridan/OVN 2	Sheridan College Griffith Bldg Rm 11	Cisco	CISCO2610XM	12.3.21	2FE/4T1(ATM)/1AIM	3T1		T-1 74HCGJ904816
OVN	Torrington/OVN 1	Eastern Wyoming College, Tebbet 270	Cisco	CISCO1841-ADSL					307-532-1158 Embarq DSL
OVN	Torrington/OVN 1	Eastern Wyoming College, Tebbet 270	Cisco	CISCO1841-ADSL					307-532-1158 Embarq DSL
OVN	Torrington/OVN 2	Eastern Wyoming College, Tebbet 252	Cisco	CISCO1841-ADSL					
OVN	Torrington/OVN 2	Eastern Wyoming College, Tebbet 252	Cisco	CISCO1841-ADSL					
OVN			Cisco						
OVN			Cisco						
Qwest 0 2	Cheyenne, WY	Qwest Basement	HP	Layer 2 Switch-J4887A	G.07.109	GIG-Fiber and Copper	51	0	Workgroup Switch
Qwest 0 3	Cheyenne, WY	Qwest Basement	HP	Layer 2 Switch-J4904A	I.10.67	GIG-Fiber and Copper	24	0	Workgroup Switch
Qwest 007	Cheyenne, WY	Qwest Basement	HP	Layer 2 Switch-J4903A	I.10.67	GIG-Fiber and Copper	18	0	Workgroup Switch
Qwest 1 1	Cheyenne, WY	Qwest First Floor	HP	Layer 2 Switch-J4904A	I.10.67	GIG-Fiber and Copper	14	0	Workgroup Switch
Qwest 2 1	Cheyenne, WY	Qwest Second Floor	HP	Layer 2 Switch-J4903A	I.10.67	GIG-Fiber and Copper	15	0	Workgroup Switch
Qwest 2 10	Cheyenne, WY	Qwest Second Floor	HP	Layer 2 Switch-J9022A	N.11.15	GIG-Fiber and Copper	35	0	Workgroup Switch
Qwest 2 2	Cheyenne, WY	Qwest Second Floor	HP	Layer 2 Switch-J4887A	G.07.109	GIG-Fiber and Copper	27	2	Workgroup Switch
Qwest 2 3	Cheyenne, WY	Qwest Second Floor	HP	Layer 2 Switch-J4904A	I.10.67	GIG-Fiber and Copper	31	0	Workgroup Switch
Qwest 2 4	Cheyenne, WY	Qwest Second Floor	HP	Layer 2 Switch-J4903A	I.10.67	GIG-Fiber and Copper	21	0	Workgroup Switch
Qwest 2 5	Cheyenne, WY	Qwest Second Floor	HP	Layer 2 Switch-J9022A	N.11.15	GIG-Fiber and Copper	43	0	Workgroup Switch
Qwest 2 7	Cheyenne, WY	Qwest Second Floor	HP	Layer 2 Switch-J4887A	G.07.109	GIG-Fiber and Copper	58	0	Workgroup Switch
Qwest 2 8	Cheyenne, WY	Qwest Second Floor	HP	Layer 2 Switch-J4904A	I.10.67	GIG-Fiber and Copper	11	0	Workgroup Switch
Qwest 2 9	Cheyenne, WY	Qwest Second Floor	HP	Layer 2 Switch-J4887A	G.07.109	GIG-Fiber and Copper	33	0	Workgroup Switch
Qwest 4 1	Cheyenne, WY	Qwest Fourth Floor	HP	Layer 2 Switch-J4887A	G.07.109	GIG-Fiber and Copper	23	1	Workgroup Switch
Qwest 4 2	Cheyenne, WY	Qwest Fourth Floor	HP	Layer 2 Switch-J4904A	I.10.67	GIG-Fiber and Copper	18	0	Workgroup Switch
Qwest 4 3	Cheyenne, WY	Qwest Fourth Floor	HP	Layer 2 Switch-J4904A	I.10.67	GIG-Fiber and Copper	24	0	Workgroup Switch
Qwest 5 1	Cheyenne, WY	Qwest Fifth Floor	HP	Layer 2 Switch-J4887A	G.07.109	GIG-Fiber and Copper	53	1	Workgroup Switch
Qwest 5 10	Cheyenne, WY	Qwest Fifth Floor	HP	Layer 2 Switch-J4887A	G.07.107	GIG-Fiber and Copper	16	2	Workgroup Switch
Qwest 5 2	Cheyenne, WY	Qwest Fifth Floor	HP	Layer 2 Switch-J4887A	G.07.109	GIG-Fiber and Copper	38	0	Workgroup Switch
Qwest 5 3	Cheyenne, WY	Qwest Fifth Floor	HP	Layer 2 Switch-J4887A	G.07.109	GIG-Fiber and Copper	27	2	Workgroup Switch
Qwest 5 4	Cheyenne, WY	Qwest Fifth Floor	HP	Layer 2 Switch-J4903A	I.10.67	GIG-Fiber and Copper	18	0	Workgroup Switch
Qwest 5 6	Cheyenne, WY	Qwest Fifth Floor	HP	Layer 2 Switch-J4887A	G.07.109	GIG-Fiber and Copper	23	1	Workgroup Switch
Qwest 5 7	Cheyenne, WY	Qwest Fifth Floor	HP	Layer 2 Switch-J4887A	G.07.107	GIG-Fiber and Copper	16	2	Workgroup Switch
Qwest 5 8	Cheyenne, WY	Qwest Fifth Floor	HP	Layer 2 Switch-J4887A	G.07.107	GIG-Fiber and Copper	19	2	Workgroup Switch
Qwest 5 9	Cheyenne, WY	Qwest Fifth Floor	HP	Layer 2 Switch-J4887A	G.07.107	GIG-Fiber and Copper	18	2	Workgroup Switch

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
Retirement 0 1	Basin, Wy	Retirement Home	HP	Layer 2 Switch-J4903A	I.10.67	GIG-Fiber and Copper	26	0	Workgroup Switch
roth_2950_1	Lander LRC	8208 HWY 789 Lander	Cisco	Layer 2 Switch-2950SX	12.1	GIG-Fiber and Copper	20	0	Workgroup Switch
roth_2950_2	Lander LRC	8209 HWY 789 Lander	Cisco	Layer 2 Switch-2950SX	12.1	GIG-Fiber and Copper	16	0	Workgroup Switch
Router	Hotsprings HS	10.101.0.30	CISCO	2800 Router	Version 12.4(10)	Ethernet, Serial			
Router	Sinks Canyon Center	10.101.0.38	CISCO	Catalyst 3650	Version 12.2(35)SE5	Ethernet and Fiber			
rtr_chey_qwe_5_01	Qwest 5th floor	6101 Yellowstone Road	Cisco	Layer 3 Switch-6509	12.2	GIG-Fiber and Copper	55	3	Core Switch for health
Saratoga	Saratoga		Checkpoint	UTM-1 Edge X	Ver. 7.5.51	10/100 Copper	0	0	Security Devices
Sinks Router	CWC Lander Center	10.100.0.6	Foundry	FES2402-PREM	03.5.00Tc3	Ethernet and Fiber	20		
SJMC	SJMC	Layer 2 Only	CISCO	Catalyst 3650		Ethernet and Fiber			
swt_eva_sth_0_1	Evanston WSH	831 S HWY 150	Cisco	Layer 2 Switch-3560G	12.2	GIG-Fiber and Copper	25	0	Evanston core Switch
swt_lan_sts_0_1	Lander LRC	8204 HWY 789 Lander	Cisco	Layer 2 Switch-3560G	12.2	GIG-Fiber and Copper	20	0	Lander core Switch
Thermop Pioneer Home	Thermop Pioneer Home		Checkpoint	UTM-1 Edge X	Ver.7.0.27	10/100 Copper	0	0	Security Devices
Thermopolis:	Thermopolis:		Checkpoint	UTM-1 Edge X	Ver. 7.5.51	10/100 Copper	0	0	Security Devices
Tom Henry-worland	Tom Henry-worland		Checkpoint	UTM-1 Edge X	Ver. 7.5.51	10/100 Copper	0	0	Security Devices
Veterans 0 1	Buffalo, WY	Veternans Home	HP	Layer 2 Switch-J4903A	I.10.67	GIG-Fiber and Copper	28	0	Workgroup Switch
						1 Enhanced FlexWAN controller (1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces			
WEN	Afton - Star Valley High School	446 West Swift Creek Lane - Roor	Cisco	Cisco 3825	12.4(3b)	1 Channelized T3 port 2 Gigabit Ethernet interfaces			District Aggregation - Outside F
WEN	Afton - Star Valley High School	445 West Swift Creek Lane - Roor	Cisco	cisco 7604	12.2(18)SXF8	1 ATM interface 2 Gigabit Ethernet interfaces			District Aggregation - Inside Ro
WEN	Afton - Star Valley High School	445 West Swift Creek Lane - Roor	Cisco	cisco 7604	12.2(18)SXF8	1 ATM interface			
						1 Enhanced FlexWAN controller (1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces			
WEN	Afton - Star Valley High School	446 West Swift Creek Lane - Roor	Cisco	Cisco 3825	12.4(3b)	1 Channelized T3 port			
						Processor board ID FTX1008C0Q2 2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports 2 Voice FXO interfaces			
WEN	Afton - Swift Creek Learning (222 East 4th Avenue		Cisco	Cisco 2811	12.4(19)	2 Channelized T1/PRI ports 2 Voice FXO interfaces			
						Processor board ID FTX1008C0Q2 2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports 2 Voice FXO interfaces			
WEN	Afton - Swift Creek Learning (222 East 4th Avenue		Cisco	Cisco 2811	12.4(19)	2 Channelized T1/PRI ports 2 Voice FXO interfaces			
						2 FastEthernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Arapahoe HS	189 Left Hand Ditch Road	Cisco	Cisco 2811	12.4(3e)				

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Arapahoe HS	189 Left Hand Ditch Road	Cisco	Cisco 2811	12.4(17a)	2 FastEthernet interfaces 2 Serial interfaces 2 Serial(sync/async) interfaces 2 Channelized T1/PRI ports			District Aggregation - Inside F
WEN	Arapahoe HS	189 Left Hand Ditch Road	Cisco	Cisco 2811	12.4(3e)	2 FastEthernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Arapahoe HS	190 Left Hand Ditch Road	Cisco	Cisco 2811	12.4(17a)	2 FastEthernet interfaces 2 Serial interfaces 2 Serial(sync/async) interfaces 2 Channelized T1/PRI ports			
WEN	Arvada Clearmont High Scho	1601 Meade Avenue	Cisco	Cisco 2811	12.4(3e)	2 FastEthernet interfaces 3 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Arvada Clearmont High Scho	1602 Meade Avenue	Cisco	Cisco 2811	12.4(3e)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Arvada Clearmont High Scho	1601 Meade Avenue	Cisco	Cisco 2811	12.4(3e)	2 FastEthernet interfaces 3 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Arvada Clearmont High Scho	1602 Meade Avenue	Cisco	Cisco 2811	12.4(3e)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports			
WEN	Baggs - Little Snake River HS	100 Meeker Street	Cisco	Cisco 2811	12.4(3c)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Baggs - Little Snake River HS	100 Meeker Street	Cisco	Cisco 2811	12.4(3c)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Basin - Riverside High Schoo	919 West B Room 111	Cisco	Cisco 3825	12.4(3b)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Basin - Riverside High Schoo	919 West B Room 111	Cisco	Cisco 3825	12.4(3b)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Basin - Riverside High Schoo	920 West B Room 111	Cisco	Cisco 3825	12.4(2)T1	2 Gigabit Ethernet interfaces 10 Serial interfaces 5 Channelized T1/PRI ports			
WEN	Big Horn High School	333 Highway 335 RM 109	Cisco	Cisco 2811	12.4(7)	2 FastEthernet interfaces 1 Serial interface 4 Channelized T1/PRI ports			
WEN	Big Horn High School	333 Highway 335 RM 109	Cisco	Cisco 2811	12.4(7)	2 FastEthernet interfaces 1 Serial interface 4 Channelized T1/PRI ports			
WEN	Big Piney High School	650 Piney Drive - Room 140	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Big Piney High School	651 Piney Drive - Room 140	Cisco	Cisco 2811	12.4(3d)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Big Piney High School	650 Piney Drive - Room 140	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Big Piney High School	651 Piney Drive - Room 140	Cisco	Cisco 2811	12.4(3d)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports			
WEN	Buffalo High School/The Lear	300 S. Spruce St. Room 110	Cisco	Cisco 3825	12.4(15)T	2 Gigabit Ethernet interfaces 1 ATM interface 2 ATM/Voice AIMS			District Aggregation - Outside F
WEN	Buffalo High School/The Lear	301 S. Spruce St. Room 110	Cisco	Cisco 7604 VXR	12.2(18)SXE4	1 Enhanced FlexWAN controller (1 FastEthernet)(1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 1 FastEthernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces 1 Channelized T3 port			District Aggregation - Inside Ro
WEN	Buffalo High School/The Lear	300 S. Spruce St. Room 110	Cisco	Cisco 3825	12.4(15)T	2 Gigabit Ethernet interfaces 1 ATM interface 2 ATM/Voice AIMS			
WEN	Buffalo High School/The Lear	301 S. Spruce St. Room 110	Cisco	Cisco 7604 VXR	12.2(18)SXE4	1 Enhanced FlexWAN controller (1 FastEthernet)(1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 1 FastEthernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces 1 Channelized T3 port			
WEN	Buffalo HS	29891 Old Highway 87	Cisco	Cisco 2811	12.4(19)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Buffalo HS	29891 Old Highway 87	Cisco	Cisco 2811	12.4(19)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Burlington High School	109 N. School Ave.	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Burlington High School	109 N. School Ave.	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Burns High School	305 East Country Road 213	Cisco	Cisco 2811	12.4(9)T1	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports 2 Voice FXO interfaces			

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Burns High School	305 East Country Road 213	Cisco	Cisco 2811	12.4(9)T1	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports 2 Voice FXO interfaces			
WEN	Byron Rocky Mountain High	530 East Main Street	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 4 Serial interfaces 5 ATM interfaces 8 Channelized T1/PRI ports 2 ATM/Voice AImS			District Aggregation - Outside P
WEN	Byron Rocky Mountain High	531 East Main Street	Cisco	Cisco 2811	12.4(3c)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Byron Rocky Mountain High	530 East Main Street	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 4 Serial interfaces 5 ATM interfaces 8 Channelized T1/PRI ports 2 ATM/Voice AImS			
WEN	Byron Rocky Mountain High	531 East Main Street	Cisco	Cisco 2811	12.4(3c)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Casper - Kelly Walsh High Sc	3500 E. 12th Room 136	Cisco	Cisco 3825	12.4(15)T	3 Gigabit Ethernet interfaces 24 Serial interfaces 1 Channelized T1/PRI port 4 Voice FXO interfaces			
WEN	Casper - Kelly Walsh High Sc	3500 E. 12th Room 136	Cisco	Cisco 3825	12.4(15)T	3 Gigabit Ethernet interfaces 24 Serial interfaces 1 Channelized T1/PRI port 4 Voice FXO interfaces			
WEN	Casper - Natrona County High	1930 S Elm Room 40	Cisco	Cisco 3825	12.4(15)T	3 Gigabit Ethernet interfaces 24 Serial interfaces 1 Channelized T1/PRI port 4 Voice FXO interfaces			
WEN	Casper - Natrona County High	1930 S Elm Room 40	Cisco	Cisco 3825	12.4(15)T	3 Gigabit Ethernet interfaces 24 Serial interfaces 1 Channelized T1/PRI port 4 Voice FXO interfaces			
WEN	Casper - Roosevelt High Sch	1140 East K Street	Cisco	Cisco 2811	12.4(17)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports 4 Voice FXO interfaces			
WEN	Casper - Roosevelt High Sch	1140 East K Street	Cisco	Cisco 2811	12.4(17)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports 4 Voice FXO interfaces			
WEN	Casper College	125 College Drive - Werner Tech	Cisco	cisco 7206VXR	12.3(2)T4	2 FastEthernet/IEEE 802.3 interface(s) 3 Gigabit Ethernet/IEEE 802.3 interface(s) 4 Serial network interface(s) 1 ATM network interface(s)			

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Casper College	125 College Drive - Werner Tech	Cisco	cisco 7206VXR	12.3(2)T4	2 FastEthernet/IEEE 802.3 interface(s) 3 Gigabit Ethernet/IEEE 802.3 interface(s) 4 Serial network interface(s) 1 ATM network interface(s)			
WEN	Cheyenne - Central High Sch	5500 Education Drive - Follow Sig	Extreme Networks	Extreme Networks Alpine 3808	7.4.2 (Build 6)	District Owned			
WEN	Cheyenne - Central High Sch	5500 Education Drive - Follow Sig	Extreme Networks	Extreme Networks Alpine 3808	7.4.2 (Build 6)	District Owned			
WEN	Cheyenne - East High School	2800 East pershing - Room 39	Extreme Networks	Extreme Networks Alpine 3808	7.4.2 (Build 6)	District Owned			
WEN	Cheyenne - East High School	2800 East pershing - Room 39	Extreme Networks	Extreme Networks Alpine 3808	7.4.2 (Build 6)	District Owned			
WEN	Cheyenne - Laramie County C	1400 east College Drive - EEC 13	Cisco	cisco 7206VXR	12.3(1a)	2 FastEthernet/IEEE 802.3 interface(s) 3 Gigabit Ethernet/IEEE 802.3 interface(s) 4 Serial network interface(s) 1 ATM network interface(s)			
WEN	Cheyenne - Laramie County C	1400 east College Drive - EEC 13	Cisco	cisco 7206VXR	12.3(1a)	2 FastEthernet/IEEE 802.3 interface(s) 3 Gigabit Ethernet/IEEE 802.3 interface(s) 4 Serial network interface(s) 1 ATM network interface(s)			
WEN	Cheyenne - School District Bt	2810 House Avenue Room 316	Cisco	cisco 7206VXR	12.3(2)T4	4 FastEthernet/IEEE 802.3 interface(s) 1 ATM network interface(s)			District Aggregation - Outside F
WEN	Cheyenne - School District Bt	2811 House Avenue Room 316	Cisco	cisco CISCO7604	12.2(18)SXE5	1 Enhanced FlexWAN controller (4 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 50 Gigabit Ethernet/IEEE 802.3 interfaces 112 Serial network interfaces 4 Channelized T3 ports			District Aggregation - Inside Ro
WEN	Cheyenne - School District Bt	2810 House Avenue Room 316	Cisco	cisco 7206VXR	12.3(2)T4	4 FastEthernet/IEEE 802.3 interface(s) 1 ATM network interface(s)			
WEN	Cheyenne - School District Bt	2811 House Avenue Room 316	Cisco	cisco CISCO7604	12.2(18)SXE5	1 Enhanced FlexWAN controller (4 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 50 Gigabit Ethernet/IEEE 802.3 interfaces 112 Serial network interfaces 4 Channelized T3 ports			
WEN	Cheyenne - Wyoming Depart	Check in at Reception		Connected via Fiber					
WEN	Cheyenne - Wyoming Depart	Check in at Reception		Connected via Fiber					
WEN	Cheyenne Triumph HS	College Drive	Not available to me						
WEN	Cheyenne Triumph HS	College Drive	Not available to me						
WEN	Chugwater High School	306 5th St. Room 135	Cisco	Cisco 2811	12.3(11)T10	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Chugwater High School	306 5th St. Room 135	Cisco	Cisco 2811	12.3(11)T10	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			
WEN	Cody High School	1225 Tenth St	Cisco	Cisco 3845	12.4(3b)	2 Gigabit Ethernet interfaces 1 ATM interface			District Aggregation - Outside F
WEN	Cody High School	1226 Tenth St	Cisco	Cisco 2811	12.4(3c)	2 FastEthernet interfaces 2 Serial interfaces 4 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Cody High School	1225 Tenth St	Cisco	Cisco 3845	12.4(3b)	2 Gigabit Ethernet interfaces 1 ATM interface			
WEN	Cody High School	1226 Tenth St	Cisco	Cisco 2811	12.4(3c)	2 FastEthernet interfaces 2 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Cokeville Jr/Sr High School	300 Pine	Cisco	Cisco 2811	12.4(19)	2 FastEthernet interfaces 3 Serial interfaces 4 Channelized T1/PRI ports 6 Voice FXO interfaces			
WEN	Cokeville Jr/Sr High School	300 Pine	Cisco	Cisco 2811	12.4(19)	2 FastEthernet interfaces 3 Serial interfaces 4 Channelized T1/PRI ports 6 Voice FXO interfaces			
WEN	Converse 1 Admin	615 Hamilton Street	Cisco	Cisco 3845	12.4(3f)	2 Gigabit Ethernet interfaces 1 ATM interface			District Aggregation - Outside F
WEN	Converse 1 Admin	615 Hamilton Street	Cisco	cisco 7604	12.2(18)SX14	1 Enhanced FlexWAN controller (1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces 1 Channelized T3 port			District Aggregation - Inside Ro
WEN	Converse 2 Admin	120 Boxelder Trail	Cisco	Cisco 2811	12.4(3d)	2 FastEthernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Converse 2 Admin	120 Boxelder Trail	Cisco	Cisco 2811	12.4(7f)	6 FastEthernet interfaces 3 Serial interfaces 4 Channelized T1/PRI ports 1 Virtual Private Network (VPN) Module			District Aggregation - Inside Ro
WEN	Dayton - Tongue River High	1100 US Highway 14	Cisco	Cisco 2811	12.4(17)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Dayton - Tongue River High	1100 US Highway 14	Cisco	Cisco 2811	12.4(17)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Douglas High School	1701 Hamilton St. / in the DHS m	Cisco	Cisco 3825	12.4(5b)	2 Gigabit Ethernet interfaces 8 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Douglas High School	1701 Hamilton St. / in the DHS m	Cisco	Cisco 3825	12.4(5b)	2 Gigabit Ethernet interfaces 8 Serial interfaces 4 Channelized T1/PRI ports			

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Dubois High School	314 Helmer Room 1	Cisco	Cisco 2811	12.4(7a)	2 FastEthernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Dubois High School	314 Helmer Room 1	Cisco	Cisco 2811	12.4(7a)	2 FastEthernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Encampment HS	514 Rankin, Library Media Center	Cisco	Cisco 2811	12.4(7b)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports			
WEN	Encampment HS	514 Rankin, Library Media Center	Cisco	Cisco 2811	12.4(7b)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports			
WEN	Ethete - Wyoming Indian High School	636 Blue Sky Highway Room 300	Cisco	Cisco 2811	12.4(17)	2 FastEthernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Ethete - Wyoming Indian High School	636 Blue Sky Highway Room 300	Cisco	Cisco 2811	12.4(17)	2 FastEthernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Evanston High School	701 West Cheyenne Dr - Seminar	Cisco	cisco CISCO7604	12.2(18)SXF8	1 Enhanced FlexWAN controller (1 FastEthernet)(1 ATM). 1 Virtual Ethernet/IEEE 802.3 interface 1 FastEthernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 1 ATM network interface			District Aggregation - Outside F
WEN	Evanston High School	701 West Cheyenne Dr - Seminar	Cisco	cisco CISCO7604	12.2(18)SXF8	1 Enhanced FlexWAN controller (1 FastEthernet)(1 ATM). 1 Virtual Ethernet/IEEE 802.3 interface 1 FastEthernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 1 ATM network interface			
WEN	Evanston Horizon	1013 W. Cheyenne Drive	District provided fiber						
WEN	Evanston Horizon	1013 W. Cheyenne Drive	District provided fiber						
WEN	Farson/Eden High School	30 US Highway 28	Cisco	Cisco 2811	12.4(3e)	2 FastEthernet interfaces 2 Serial interfaces 1 Serial(sync/async) interface 2 Channelized T1/PRI ports			
WEN	Farson/Eden High School	30 US Highway 28	Cisco	Cisco 2811	12.4(3e)	Processor board ID FTX1028F04A 2 FastEthernet interfaces 2 Serial interfaces 1 Serial(sync/async) interface 2 Channelized T1/PRI ports			

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Fort Washakie HS	90 Ethete Road	Cisco	Cisco 2811	12.4(10)	2 FastEthernet interfaces 1 Serial interface 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Fort Washakie HS	90 Ethete Road	Cisco	Cisco 2811	12.4(10)	2 FastEthernet interfaces 1 Serial interface 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Gillette - Campbell County Hi	1000 Camel Driver Room 302. U	Cisco	Cisco 3825	12.4(5)	2 Gigabit Ethernet interfaces 12 Serial interfaces 1 Serial(sync/async) interface 6 Channelized T1/PRI ports 1 Virtual Private Network (VPN) Module			
WEN	Gillette - Campbell County Hi	1000 Camel Driver Room 302. U	Cisco	Cisco 3825	12.4(5)	2 Gigabit Ethernet interfaces 12 Serial interfaces 1 Serial(sync/async) interface 6 Channelized T1/PRI ports 1 Virtual Private Network (VPN) Module			
WEN	Gillette - South Campus		Cisco	Cisco 3825	12.4(5)	2 Gigabit Ethernet interfaces 12 Serial interfaces 1 Serial(sync/async) interface 6 Channelized T1/PRI ports 1 Virtual Private Network (VPN) Module			
WEN	Gillette - South Campus		Cisco	Cisco 3825	12.4(5)	2 Gigabit Ethernet interfaces 12 Serial interfaces 1 Serial(sync/async) interface 6 Channelized T1/PRI ports 1 Virtual Private Network (VPN) Module			
WEN	Gillette - Westwood High Sch	601 Rohan Ave Room 149	Cisco	Cisco 2811	12.4(1c)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports 1 Virtual Private Network (VPN) Module			
WEN	Gillette - Westwood High Sch	601 Rohan Ave Room 149	Cisco	Cisco 2811	12.4(1c)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports 1 Virtual Private Network (VPN) Module			
WEN	Glendo High School	305 Paige Street	Cisco	Cisco 2811	12.3(11)T10	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			
WEN	Glendo High School	305 Paige Street	Cisco	Cisco 2811	12.3(11)T10	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			
WEN	Glenrock High School	225 Oregon Trail							District fiber back to aggregati

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Glenrock High School	225 Oregon Trail	Cisco	Cisco 2811	12.4(3d)	2 FastEthernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Glenrock High School	226 Oregon Trail	Cisco	Cisco 2811	12.4(7f)	6 FastEthernet interfaces 3 Serial interfaces 4 Channelized T1/PRI ports 1 Virtual Private Network (VPN) Module			
WEN	Green River Expedition Acad	351 Monroe Avenue				District provided Fiber			
WEN	Green River Expedition Acad	351 Monroe Avenue				District provided Fiber			
WEN	Green River High School	1615 Hitching Post	Cisco	Cisco 3845	12.4(10)	2 Gigabit Ethernet interfaces 1 ATM interface			District Aggregation - Outside F
WEN	Green River High School	1615 Hitching Post	Cisco	Cisco 3845	12.4(10)	2 Gigabit Ethernet interfaces 1 ATM interface			
WEN	Greybull High School	600 N. 6th Street	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Greybull High School	600 N. 6th Street	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Guernsey-Sunrise High	172 west Burlington	Cisco	Cisco 2811	12.4(7b)	2 FastEthernet interfaces 1 Serial interface 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Guernsey-Sunrise High	172 west Burlington	Cisco	Cisco 2811	12.4(7b)	2 FastEthernet interfaces 1 Serial interface 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Hanna Elk Mountain High Sch	US Highway 72	Cisco	Cisco 2811	12.4(7b)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports			
WEN	Hanna Elk Mountain High Sch	US Highway 72	Cisco	Cisco 2811	12.4(7b)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports			
WEN	Hulett High School	401 Sager St.	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 2 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Hulett High School	401 Sager St.	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 2 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Hulett HS	429 Sager	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 2 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Hulett HS	429 Sager	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 2 Serial interfaces 4 Channelized T1/PRI ports			

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Jackson Hole High School	1910 West High School Road	Cisco	Cisco 7604	12.2(18)SXE6	1 Enhanced FlexWAN controller (1 ATM)(1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces 1 ATM network interface 1 Channelized T3 port			District Aggregation - Outside F
WEN	Jackson Hole High School	1911 West High School Road	Cisco	Cisco 7604	12.2(18)SXE6	1 Enhanced FlexWAN controller (1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces 1 Channelized T3 port			District Aggregation - Inside Ro
WEN	Jackson Hole High School	1910 West High School Road	Cisco	Cisco 7604	12.2(18)SXE6	1 Enhanced FlexWAN controller (1 ATM)(1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces 1 ATM network interface 1 Channelized T3 port			
WEN	Jackson Hole High School	1911 West High School Road	Cisco	Cisco 7604	12.2(18)SXE6	1 Enhanced FlexWAN controller (1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces 1 Channelized T3 port			
WEN	Jackson Hole Summit High S	100 Middle School Road				District provided Fiber			
WEN	Jackson Hole Summit High S	100 Middle School Road				District provided Fiber			
WEN	Kaycee High School	235 Holt	Cisco	Cisco 2811	12.4(3c)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Kaycee High School	235 Holt	Cisco	Cisco 2811	12.4(3c)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Kemmerer Alt HS	1004 Elk Street				District provided fiber			
WEN	Kemmerer Alt HS	1004 Elk Street				District provided fiber			
WEN	Kemmerer High School	1525 Third West	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 8 Channelized T1/PRI ports 2 ATM/Voice AIMS			
WEN	Kemmerer High School	1525 Third West	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 8 Channelized T1/PRI ports 2 ATM/Voice AIMS			

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Lakeway Learning Center	525 W. Lakeway Dr.	Cisco	Cisco 7204VXR	12.4(15)T3	2 FastEthernet interfaces 4 Serial interfaces 1 ATM interface			District Aggregation - Outside F
WEN	Lakeway Learning Center	526 W. Lakeway Dr.	Cisco	Cisco 7604	12.2(18)SXE5	2 Enhanced FlexWAN controllers (3 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 84 Serial network interfaces 3 Channelized T3 ports			District Aggregation - Inside Ro
WEN	Lander - Pathfinder High Sch	WSTS, Smith Cottage 98	Cisco	Cisco 2811	12.4(1c)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			
WEN	Lander - Pathfinder High Sch	WSTS, Smith Cottage 98	Cisco	Cisco 2811	12.4(1c)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			
WEN	Lander - Valley High School	350 Baldwin Creek Rd Room W2	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 1 ATM interface			District Aggregation - Outside F
WEN	Lander - Valley High School	350 Baldwin Creek Rd Room W2	Cisco	Cisco 7604	12.2(18)SXE4	1 Enhanced FlexWAN controller (1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces 1 Channelized T3 port			District Aggregation - Inside Ro
WEN	Lander - Valley High School	350 Baldwin Creek Rd Room W2	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 1 ATM interface			
WEN	Lander - Valley High School	351 Baldwin Creek Rd Room W2	Cisco	Cisco 7604	12.2(18)SXE4	1 Enhanced FlexWAN controller (1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces 1 Channelized T3 port			
WEN	Laramie - High School	1275 North 11th Room 209	Cisco	Cisco 3825	12.4(3b)	2 Gigabit Ethernet interfaces 8 Serial interfaces 6 Channelized T1/PRI ports			
WEN	Laramie - High School	1275 North 11th Room 209	Cisco	Cisco 3825	12.4(3b)	2 Gigabit Ethernet interfaces 8 Serial interfaces 6 Channelized T1/PRI ports			
WEN	Laramie - University of Wyom	College of Education Bldg., Room #1		UW Network					
WEN	Laramie - University of Wyom	College of Education Bldg., Room #1		UW Network					
WEN	Laramie - Whiting High Schoc	509 South 9th Room 103	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			
WEN	Laramie - Whiting High Schoc	509 South 9th Room 103	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Lingle Fort Laramie High Sch	3rd Street	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 1 Serial interface 4 Channelized T1/PRI ports			
WEN	Lingle Fort Laramie High Sch	3rd Street	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 1 Serial interface 4 Channelized T1/PRI ports			
WEN	Lovell High School	502 Hampshire Avenue	Cisco	Cisco 3825	12.4(3e)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Lovell High School	502 Hampshire Avenue	Cisco	Cisco 3825	12.4(3e)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Lusk - Niobrara County High	1702 West 5th - Room 100	Cisco	Cisco 3825	12.4(21)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Lusk - Niobrara County High	1703 West 5th - Room 100	Cisco	Cisco 2811	12.4(7f)	2 FastEthernet interfaces 1 Virtual Private Network (VPN) Module			District Aggregation - Inside Ro
WEN	Lusk - Niobrara County High	1702 West 5th - Room 100	Cisco	Cisco 3825	12.4(21)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Lusk - Niobrara County High	1703 West 5th - Room 100	Cisco	Cisco 2811	12.4(7f)	2 FastEthernet interfaces 1 Virtual Private Network (VPN) Module			
WEN	Lyman High School	1305 E Clark St C-303	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Lyman High School	1306 E Clark St C-303	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 8 Serial interfaces 4 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Lyman High School	1305 E Clark St C-303	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Lyman High School	1306 E Clark St C-303	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 8 Serial interfaces 4 Channelized T1/PRI ports			
WEN	M&O (District Aggregation Point)	1804 Skyline Drive	Cisco	Cisco 7604	12.2(18)SXE6b	2 Enhanced FlexWAN controllers (1 FastEthernet)(2 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 1 FastEthernet/IEEE 802.3 interface 50 Gigabit Ethernet/IEEE 802.3 interfaces			District Aggregation - Inside Ro
WEN	M&O (District Aggregation Point)	1804 Skyline Drive	Cisco	Cisco 7204VXR	12.3(14)T5	2 FastEthernet interfaces 1 ATM interface			District Aggregation - Outside F

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Meeteetse School	2107 Idaho	Cisco	Cisco 2811	12.3(14)T7	2 FastEthernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Meeteetse School	2107 Idaho	Cisco	Cisco 2811	12.3(14)T7	2 FastEthernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Midwest High School	245 Lewis	Cisco	Cisco 2811	12.4(3g)	2 FastEthernet interfaces 2 Serial interfaces 4 Channelized T1/PRI ports 8 Voice FXO interfaces			
WEN	Midwest High School	245 Lewis	Cisco	Cisco 2811	12.4(3g)	2 FastEthernet interfaces 2 Serial interfaces 4 Channelized T1/PRI ports 8 Voice FXO interfaces			
WEN	Moorcroft High School	2 Country Lane	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 3 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Moorcroft High School	2 Country Lane	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 3 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Mountain View High School	330 Seventh St	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Mountain View High School	331 Seventh St	Cisco	Cisco 3825	12.4(3c)	4 FastEthernet interfaces 2 Gigabit Ethernet interfaces 4 Serial interfaces 2 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Mountain View High School	330 Seventh St	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Mountain View High School	331 Seventh St	Cisco	Cisco 3825	12.4(3c)	4 FastEthernet interfaces 2 Gigabit Ethernet interfaces 4 Serial interfaces 2 Channelized T1/PRI ports			
WEN	Newcastle High School	111 Casper Avenue - Room 103	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Newcastle High School	112 Casper Avenue - Room 103	Cisco	Cisco 2811	12.4(3d)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Newcastle High School	111 Casper Avenue - Room 103	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Newcastle High School	112 Casper Avenue - Room 103	Cisco	Cisco 2811	12.4(3d)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Pavillion - Wind River High School	1994 North Cougar Dr	Cisco	Cisco 2811	12.4(7b)	2 FastEthernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside Facility
WEN	Pavillion - Wind River High School	1995 North Cougar Dr	Cisco	Cisco 2811	12.4(7b)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			District Aggregation - Inside Room
WEN	Pavillion - Wind River High School	1994 North Cougar Dr	Cisco	Cisco 2811	12.4(7b)	2 FastEthernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Pavillion - Wind River High School	1995 North Cougar Dr	Cisco	Cisco 2811	12.4(7b)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			
WEN	Pine Bluffs High School	512 Maple St - Room 113 (north v	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside Facility
WEN	Pine Bluffs High School	513 Maple St - Room 113 (north v	Cisco	Cisco 3845	12.4(9)T1	2 Gigabit Ethernet interfaces 12 Serial interfaces 6 Channelized T1/PRI ports			District Aggregation - Inside Room
WEN	Pine Bluffs High School	512 Maple St - Room 113 (north v	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Pine Bluffs High School	513 Maple St - Room 113 (north v	Cisco	Cisco 3845	12.4(9)T1	2 Gigabit Ethernet interfaces 12 Serial interfaces 6 Channelized T1/PRI ports			
WEN	Pinedale High School	101 E Hennick Room 100	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside Facility
WEN	Pinedale High School	102 E Hennick Room 100	Cisco	Cisco 2811	12.4(1c)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			District Aggregation - Inside Room
WEN	Pinedale High School	101 E Hennick Room 100	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Pinedale High School	102 E Hennick Room 100	Cisco	Cisco 2811	12.4(1c)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			
WEN	Powell - Northwest College	231 West 6th Street Room MB111	Cisco	cisco 7206VXR	12.3(2)T4	2 FastEthernet/IEEE 802.3 interface(s) 3 Gigabit Ethernet/IEEE 802.3 interface(s) 4 Serial network interface(s) 1 ATM network interface(s) 4 Channelized T1/PRI port(s)			

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Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
						2 FastEthernet/IEEE 802.3 interface(s) 3 Gigabit Ethernet/IEEE 802.3 interface(s) 4 Serial network interface(s) 1 ATM network interface(s) 4 Channelized T1/PRI port(s)			
WEN	Powell - Northwest College	231 West 6th Street Room MB111	Cisco	cisco 7206VXR	12.3(2)T4				
WEN	Powell High School		District provided fiber						
WEN	Powell High School	245 North Evarts St - Room 218	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 1 ATM interface			
WEN	Powell Shoshone LC	140 North Ferris	District provided fiber						
WEN	Powell Shoshone LC	140 North Ferris	District provided fiber						
						2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Ranchester - School District C	1127 Dayton Street	Cisco	Cisco 3825	12.4(3b)				District Aggregation - Outside F
						1 Enhanced FlexWAN controller (1 FastEthernet)(8 T1). 1 Virtual Ethernet/IEEE 802.3 interface 1 FastEthernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces			
WEN	Ranchester - School District C	1127 Dayton Street	Cisco	Cisco 7604	12.2(18)SXF8				District Aggregation - Inside Ro
						2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Ranchester - School District C	1127 Dayton Street	Cisco	Cisco 3825	12.4(3b)				
						1 Enhanced FlexWAN controller (1 FastEthernet)(8 T1). 1 Virtual Ethernet/IEEE 802.3 interface 1 FastEthernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces			
WEN	Ranchester - School District C	1128 Dayton Street	Cisco	Cisco 7604	12.2(18)SXF8				
						2 FastEthernet interfaces 2 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Rawlins Cooperative School	615 Rodeo Street	Cisco	Cisco 2811	12.4(3c)				
						2 FastEthernet interfaces 2 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Rawlins Cooperative School	615 Rodeo Street	Cisco	Cisco 2811	12.4(3c)				
						4 Ethernet interfaces 2 FastEthernet interfaces 1 ATM interface			
WEN	Rawlins High School	1401 Colorado Room 105	Cisco	cisco 7206VXR	12.4(10)				District Aggregation - Outside F
						1 Enhanced FlexWAN controller (1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces			
WEN	Rawlins High School	1402 Colorado Room 105	Cisco	Cisco 7604	12.2(18)SXF8	1 Channelized T3 port			District Aggregation - Inside Ro

State of Wyoming  
WAN Hardware Inventory

Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Rawlins High School	1401 Colorado Room 105	Cisco	cisco 7206VXR	12.4(10)	4 Ethernet interfaces 2 FastEthernet interfaces 1 ATM interface			
WEN	Rawlins High School	1402 Colorado Room 105	Cisco	Cisco 7604	12.2(18)SXF8	1 Enhanced FlexWAN controller (1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces			
WEN	Riverton - Central Wyoming	C 2660 Peck Avenue CW 133	Cisco	cisco 7206VXR	12.4(10)	1 Channelized T3 port 2 FastEthernet interfaces 3 Gigabit Ethernet interfaces 4 Serial interfaces			
WEN	Riverton - Central Wyoming	C 2660 Peck Avenue CW 133	Cisco	cisco 7206VXR	12.4(10)	1 ATM interface 2 FastEthernet interfaces 3 Gigabit Ethernet interfaces 4 Serial interfaces			
WEN	Riverton High School	2001 West Sunset Dr	Cisco	Cisco 3845	12.4(3e)	2 Gigabit Ethernet interfaces 1 ATM interface			District Aggregation - Outside F
WEN	Riverton High School	2002 West Sunset Dr	Cisco	Cisco 3825	12.4(23)	2 Gigabit Ethernet interfaces 8 Serial interfaces 8 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Riverton High School	2001 West Sunset Dr	Cisco	Cisco 3845	12.4(3e)	2 Gigabit Ethernet interfaces 1 ATM interface			
WEN	Riverton High School	2002 West Sunset Dr	Cisco	Cisco 3825	12.4(23)	2 Gigabit Ethernet interfaces 8 Serial interfaces 8 Channelized T1/PRI ports			
WEN	Rock River High School	262 N. Morris	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Rock River High School	262 N. Morris	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 4 Serial interfaces 4 Channelized T1/PRI ports			
WEN	Rock Springs - Independence	1300 Lowell Avenue	Cisco	Cisco 2811	12.4(3e)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			
WEN	Rock Springs - Independence	1300 Lowell Avenue	Cisco	Cisco 2811	12.4(3e)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports			
WEN	Rock Springs - Western Wyo	2500 College Drive Room A101	Cisco	cisco 7206VXR	12.3(2)T4	3 Gigabit Ethernet/IEEE 802.3 interface(s) 4 Serial network interface(s) 1 ATM network interface(s)			
WEN	Rock Springs - Western Wyo	2500 College Drive Room A101	Cisco	cisco 7206VXR	12.3(2)T4	3 Gigabit Ethernet/IEEE 802.3 interface(s) 4 Serial network interface(s) 1 ATM network interface(s)			
WEN	Rock Springs (Polycom VSX7000	2500 College Dr., Rock Springs	Cisco	ASA 5510		100 MB Ethernet	5	0 ?	
WEN	Rock Springs High School	1375 James Drive	Cisco	Cisco 3845	12.4(3e)	2 Gigabit Ethernet interfaces 12 Serial interfaces 6 Channelized T1/PRI ports			

State of Wyoming  
WAN Hardware Inventory

Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Rock Springs High School	1375 James Drive	Cisco	Cisco 3845	12.4(3e)	2 Gigabit Ethernet interfaces 12 Serial interfaces 6 Channelized T1/PRI ports			
WEN	Saratoga High School	801 West Elm	Cisco	Cisco 3825	12.4(12)	2 Gigabit Ethernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Saratoga High School	802 West Elm	Cisco	Cisco 3825	12.4(5b)	2 Gigabit Ethernet interfaces 12 Serial interfaces 8 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Saratoga High School	801 West Elm	Cisco	Cisco 3825	12.4(12)	2 Gigabit Ethernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Saratoga High School	802 West Elm	Cisco	Cisco 3825	12.4(5b)	2 Gigabit Ethernet interfaces 12 Serial interfaces 8 Channelized T1/PRI ports			
WEN	Sheridan - Fort Mackenzie Hi	620 Lewis Street - Library				District provided Fiber			
WEN	Sheridan - Fort Mackenzie Hi	620 Lewis Street - Library				District provided Fiber			
WEN	Sheridan - Wyoming Girls Scl	3500 Big Horn Avenue	Cisco	Cisco 2811	12.4(3c)	2 FastEthernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Sheridan - Wyoming Girls Scl	3500 Big Horn Avenue	Cisco	Cisco 2811	12.4(3c)	2 FastEthernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Sheridan College	3059 Coffeen Ave Griffith Memori	Cisco	cisco 7206VXR	12.3(2)T4	4 Ethernet/IEEE 802.3 interface(s) 3 Gigabit Ethernet/IEEE 802.3 interface(s) 4 Serial network interface(s) 1 ATM network interface(s)			
WEN	Sheridan College	3059 Coffeen Ave Griffith Memori	Cisco	cisco 7206VXR	12.3(2)T4	4 Ethernet/IEEE 802.3 interface(s) 3 Gigabit Ethernet/IEEE 802.3 interface(s) 4 Serial network interface(s) 1 ATM network interface(s)			
WEN	Sheridan High School	1056 Long Drive C163	Cisco	Cisco 7204VXR	12.4(15)T3	2 FastEthernet interfaces 1 ATM interface			District Aggregation - Outside F
WEN	Sheridan High School	1057 Long Drive C163	Cisco	Cisco 7604	12.2(18)SXF3	1 Enhanced FlexWAN controller (2 FastEthernet)(1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 FastEthernet/IEEE 802.3 interfaces 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces			District Aggregation - Inside Ro
WEN	Sheridan High School	1056 Long Drive C163	Cisco	Cisco 7204VXR	12.4(15)T3	2 FastEthernet interfaces 1 ATM interface			

State of Wyoming  
WAN Hardware Inventory

Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Sheridan High School	1057 Long Drive C163	Cisco	Cisco 7604	12.2(18)SXF3	1 Enhanced FlexWAN controller (2 FastEthernet)(1 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 FastEthernet/IEEE 802.3 interfaces 2 Gigabit Ethernet/IEEE 802.3 interfaces 28 Serial network interfaces			
WEN	Shoshoni High School	112 West 3rd WEN Video Room	Cisco	Cisco 2811	12.4(3d)	1 Channelized T3 port 2 FastEthernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside P
WEN	Shoshoni High School	112 West 3rd WEN Video Room	Cisco	Cisco 2811	12.4(3d)	2 FastEthernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Subscribed: Wamsutter Desert	235 Bugas	Cisco	Cisco 2811	12.4(3e)	2 FastEthernet interfaces 2 Serial interfaces			
WEN	Subscribed: Wamsutter Desert	235 Bugas	Cisco	Cisco 2811	12.4(3e)	2 Channelized T1/PRI ports 2 FastEthernet interfaces 2 Serial interfaces			
WEN	Subscribed: Big Horn SD #1	District Office, Cowley WY	District Provided 54 Mbps Wireless						
WEN	Subscribed: Big Horn SD #1	District Office, Cowley WY	District Provided 54 Mbps Wireless						
WEN	Subscribed: Casper Central Servi	970 North Glenn Road	Cisco	Cisco 7604	12.2(18)SXE6a	1 Enhanced FlexWAN controller (1 ATM). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 1 ATM network interface			District Aggregation - Outside P
WEN	Subscribed: Casper Central Servi	970 North Glenn Road	Cisco	cisco 7206VXR	12.4(17a)	3 FastEthernet interfaces 1 Gigabit Ethernet interface 28 Serial interfaces 1 Channelized T3 port			District Aggregation - Inside Ro
WEN	Subscribed: Casper Central Servi	970 North Glenn Road	Cisco	Cisco 7604	12.2(18)SXE6a	1 Enhanced FlexWAN controller (1 ATM). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 1 ATM network interface			
WEN	Subscribed: Casper Central Servi	970 North Glenn Road	Cisco	cisco 7206VXR	12.4(17a)	3 FastEthernet interfaces 1 Gigabit Ethernet interface 28 Serial interfaces 1 Channelized T3 port			
WEN	Subscribed: Ethete WY Indian El	23 Coolidge Dr	Cisco	Cisco 2811	12.4(17)	2 FastEthernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Subscribed: Evanston HS Portab	mobile, varying locations	District provided fiber						
WEN	Subscribed: Evanston HS Portab	mobile, varying locations	District provided fiber						

State of Wyoming  
WAN Hardware Inventory

Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Subscribed: Powell HS Admin	160 North Everts	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 1 ATM interface			
WEN	Subscribed: Powell HS Admin	160 North Everts	Cisco	Cisco 3825	12.4(3c)	2 Gigabit Ethernet interfaces 1 ATM interface			
WEN	Subscribed: Powell HS Admin	161 North Everts	Cisco	Cisco 3825	12.4(3c)				
WEN	Subscribed: Powell HS Main	160 North Everts	District provided fiber						
WEN	Subscribed: Powell HS Main	160 North Everts	District provided fiber						
WEN	Subscribed: Ranchester Board R District Connected LAN								
WEN	Subscribed: Ranchester Board R District Connected LAN								
WEN	Subscribed: Ranchester Board R 1127 Dayton Street		Cisco	Cisco 3825	12.4(3b)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Subscribed: Ranchester Board R 1128 Dayton Street		Cisco	Cisco 7604	12.2(18)SXF8	1 Enhanced FlexWAN controller (1 FastEthernet)(8 T1). 1 Virtual Ethernet/IEEE 802.3 interface 1 FastEthernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces			
WEN	Subscribed: Ranchester Training District Connected LAN								
WEN	Subscribed: Ranchester Training 1127 Dayton Street		District connected						
WEN	Subscribed: Wheatland HS Portz 1207 13th Street		Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 1 ATM interface			
WEN	Subscribed: Wheatland HS Portz 1207 13th Street		Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 1 ATM interface			
WEN	Sundance Bear Lodge High S 406 E Main								
WEN	Sundance Bear Lodge High S 406 E Main								
WEN	Sundance High School	8th and Cleveland - Room 2002	Cisco	Cisco 3845	12.4(8)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 2 ATM/Voice AIMS			District Aggregation - Outside F
WEN	Sundance High School	9th and Cleveland - Room 2002	Cisco	Cisco 3845	12.4(8)	2 Gigabit Ethernet interfaces 10 Serial interfaces 8 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Sundance High School	8th and Cleveland - Room 2002	Cisco	Cisco 3845	12.4(8)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 2 ATM/Voice AIMS			
WEN	Sundance High School	9th and Cleveland - Room 2002	Cisco	Cisco 3846	12.4(8)	2 Gigabit Ethernet interfaces 10 Serial interfaces 8 Channelized T1/PRI ports			
WEN	Sweetwater 1 Admin Building 3550 Foothill Blvd								
WEN	Sweetwater 1 Admin Building 3550 Foothill Blvd								
WEN	Sweetwater 1 Admin Building 3550 Foothill Blvd		Cisco	Cisco 7604	12.2(18)SXE6	1 Enhanced FlexWAN controller (2 Channelized T3). 1 Virtual Ethernet/IEEE 802.3 interface 2 Gigabit Ethernet/IEEE 802.3 interfaces 56 Serial network interfaces 2 Channelized T3 ports			District Aggregation - Inside Ro

State of Wyoming  
WAN Hardware Inventory

Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Ten Sleep High School	242 Cedar Street	Cisco	Cisco 2811	12.4(3d)	2 FastEthernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Ten Sleep High School	242 Cedar Street	Cisco	Cisco 2811	12.4(3d)	2 FastEthernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Thermopolis Hot Springs High School	331 Park - Room 111	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Thermopolis Hot Springs High School	331 Park - Room 111	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Torrington - Eastern Wyoming	3200 West C Street -Tebbet 117	Cisco	cisco 7206VXR	12.1(5c)E9	4 FastEthernet/IEEE 802.3 interface(s) 17 Serial network interface(s)			
WEN	Torrington - Eastern Wyoming	3200 West C Street -Tebbet 117	Cisco	cisco 7206VXR	12.1(5c)E9	4 FastEthernet/IEEE 802.3 interface(s) 17 Serial network interface(s)			
WEN	Torrington High School	2400 West C Street	Cisco	Cisco 3825	12.4(3f)	2 Gigabit Ethernet interfaces 12 Serial interfaces 6 Channelized T1/PRI ports			District Aggregation - Outside F
WEN	Torrington High School	2400 West C Street	Cisco	Cisco 3825	12.4(3f)	2 Gigabit Ethernet interfaces 14 Serial interfaces 8 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Torrington High School	2400 West C Street	Cisco	Cisco 3825	12.4(3f)	2 Gigabit Ethernet interfaces 12 Serial interfaces 6 Channelized T1/PRI ports			
WEN	Torrington High School	2400 West C Street	Cisco	Cisco 3825	12.4(3f)	2 Gigabit Ethernet interfaces 14 Serial interfaces 8 Channelized T1/PRI ports			
WEN	Upton High School	610 Poplar Street	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 3 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			District Aggregation - Outside F
WEN	Upton High School	611 Poplar Street	Cisco	Cisco 2811	12.4(7b)	6 FastEthernet interfaces			District Aggregation - Inside Ro
WEN	Upton High School	610 Poplar Street	Cisco	Cisco 2811	12.4(5)	2 FastEthernet interfaces 3 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Upton High School	611 Poplar Street	Cisco	Cisco 2811	12.4(7b)	6 FastEthernet interfaces			
WEN	WDE 181	2300 Capitol Ave, Room 181	LAN Connected						
WEN	WDE 181	2300 Capitol Ave, Room 181	LAN Connected						
WEN	WDE 281	2300 Capitol Ave, Room 281	LAN Connected						
WEN	WDE 281	2300 Capitol Ave, Room 281	LAN Connected						
WEN	WDE Dale.Meyer	2300 Capitol Ave, Room 268	LAN Connected						
WEN	WDE Dale.Meyer	2300 Capitol Ave, Room 268	LAN Connected						

State of Wyoming  
WAN Hardware Inventory

Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	WDE Greg.Lundvall	Laramie Outreach Office	Cisco	Cisco 2811	12.3(14)T7	6 FastEthernet interfaces 1 ATM interface 1 terminal line 1 Channelized T1/PRI port 1 ATM/Voice AIM 2 Voice FXO interfaces 2 Voice FXS interfaces 1 cisco service engine(s)			
WEN	WDE Greg.Lundvall	Laramie Outreach Office	Cisco	Cisco 2811	12.3(14)T7	6 FastEthernet interfaces 1 ATM interface 1 terminal line 1 Channelized T1/PRI port 1 ATM/Voice AIM 2 Voice FXO interfaces 2 Voice FXS interfaces 1 cisco service engine(s)			
WEN	WDE Ken.Hert	2300 Capitol Ave, Room 265	LAN Connected						
WEN	WDE Ken.Hert	2300 Capitol Ave, Room 265	LAN Connected						
WEN	WDE Laramie	2020 Grand Avenue, Suite 500	Cisco	Cisco 1601	11.2(12)P	1 Ethernet/IEEE 802.3 interface(s) 1 Serial network interface(s) 1 serial(sync/async) network interface(s) WIC T1-DSU			
WEN	WDE Laramie	2020 Grand Avenue, Suite 500	Cisco	Cisco 1601	11.2(12)P	1 Ethernet/IEEE 802.3 interface(s) 1 Serial network interface(s) 1 serial(sync/async) network interface(s) WIC T1-DSU			
WEN	WDE MAIN WEN Room	2300 Capitol Ave, Room 236B	LAN Connected						
WEN	WDE MAIN WEN Room	2300 Capitol Ave, Room 236B	LAN Connected						
WEN	WDE Riverton	320 West Main, 3rd Floor	Cisco	Cisco 2811	12.4(3e)	2 FastEthernet interfaces 2 Serial interfaces 1 Serial(sync/async) interface 2 Channelized T1/PRI ports 2 Voice FXO interfaces			
WEN	WDE Riverton	320 West Main, 3rd Floor	Cisco	Cisco 2811	12.4(3e)	2 FastEthernet interfaces 2 Serial interfaces 1 Serial(sync/async) interface 2 Channelized T1/PRI ports 2 Voice FXO interfaces			
WEN	WDE Summer.Wasson	2300 Capitol Ave, Room 241	LAN Connected						
WEN	WDE Summer.Wasson	2300 Capitol Ave, Room 241	LAN Connected						
WEN	Wheatland High School	1207 12th Street Room 13	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 1 ATM interface			District Aggregation - Outside F
WEN	Wheatland High School	1208 12th Street Room 13	Cisco	Cisco 3845	12.4(15)T7	4 FastEthernet interfaces 3 Gigabit Ethernet interfaces 7 Serial interfaces 8 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Wheatland High School	1208 12th Street Room 13	Cisco	Cisco 3845	12.4(15)T7	4 FastEthernet interfaces 3 Gigabit Ethernet interfaces 7 Serial interfaces 8 Channelized T1/PRI ports			

State of Wyoming  
WAN Hardware Inventory

Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WEN	Wheatland High School	1207 12th Street Room 13	Cisco	Cisco 3825	12.4(3d)	2 Gigabit Ethernet interfaces 1 ATM interface			
WEN	Wheatland High School	1208 12th Street Room 13	Cisco	Cisco 3845	12.4(15)T7	4 FastEthernet interfaces 3 Gigabit Ethernet interfaces 7 Serial interfaces 8 Channelized T1/PRI ports			
WEN	Wheatland High School	1208 12th Street Room 13	Cisco	Cisco 3845	12.4(15)T7	4 FastEthernet interfaces 3 Gigabit Ethernet interfaces 7 Serial interfaces 8 Channelized T1/PRI ports			
WEN	Worland - Wyoming Boys' Sc	1550 Hwy 20 South Room 103	Cisco	Cisco 2811	12.4(7)	2 FastEthernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Worland - Wyoming Boys' Sc	1550 Hwy 20 South Room 103	Cisco	Cisco 2811	12.4(7)	2 FastEthernet interfaces 4 ATM interfaces 4 Channelized T1/PRI ports 1 ATM/Voice AIM			
WEN	Worland High School	801 South 17th St	Cisco	Cisco 3825	12.4(19)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 2 ATM/Voice AIMS			District Aggregation - Outside F
WEN	Worland High School	802 South 17th St	Cisco	Cisco 3825	12.4(8a)	2 Gigabit Ethernet interfaces 12 Serial interfaces 6 Channelized T1/PRI ports			District Aggregation - Inside Ro
WEN	Worland High School	801 South 17th St	Cisco	Cisco 3825	12.4(19)	2 Gigabit Ethernet interfaces 5 ATM interfaces 4 Channelized T1/PRI ports 2 ATM/Voice AIMS			
WEN	Worland High School	802 South 17th St	Cisco	Cisco 3825	12.4(8a)	2 Gigabit Ethernet interfaces 12 Serial interfaces 6 Channelized T1/PRI ports			
WEN	Wright Jr/Sr High School	220 Wright Boulevard	Cisco	Cisco 2811	12.4(1c)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports 1 Virtual Private Network (VPN) Module			
WEN	Wright Jr/Sr High School	220 Wright Boulevard	Cisco	Cisco 2811	12.4(1c)	2 FastEthernet interfaces 2 Serial interfaces 2 Channelized T1/PRI ports 1 Virtual Private Network (VPN) Module			
WEN	Yoder Southeast High School	Lacy Avenue	Cisco	Cisco 2811	12.4(3f)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports			
WEN	Yoder Southeast High School	Lacy Avenue	Cisco	Cisco 2811	12.4(3f)	2 FastEthernet interfaces 1 Serial interface 2 Channelized T1/PRI ports			
WIC Afton	WIC Afton		Checkpoint	UTM-1 Edge X	Ver.7.0.17	10/100 Copper	0	0	Security Devices
WIC Worland	WIC Worland		Checkpoint	UTM-1 Edge X	Ver.7.0.17	10/100 Copper	0	0	Security Devices
wsts_3750	Lander LRC	8210 HWY 789 Lander	Cisco	Layer 2 Switch-3750	12.1	GIG-Fiber and Copper	7	0	Workgroup Switch
wsts_3750 G	Lander LRC	8211 HWY 789 Lander	Cisco	Layer 2 Switch-3750G	12.1	GIG-Fiber and Copper	16	0	Workgroup Switch
WWCC	Green River (Polycom FX)	1 College Way, Green River	Foundry	FESX424-PREM (layer 3)	04.0.00T3e5	Gig Ethernet	26	0	

State of Wyoming  
WAN Hardware Inventory

Network Name	Location / Site2	Address	Manufacturer	Device Type	OS Version	Type of Interfaces Avail.	Qty of Interfaces Avail.	Expansion Slots Avail.	Comments
WWCC Outreach	Afton/Star Valley (Polycom PVX)	247 N. Washington, Afton	?	?	?	?	?	?	
WWCC Outreach	Baggs (Polycom PVX and FX)	360 Whippoorwill, Baggs	?	?	?	?	?	?	
WWCC Outreach	Big Piney (Polycom VSX7000)	650 Piney Dr. Big Piney	?	?	?	?	?	?	
WWCC Outreach	Bridger Valley (Polycom PVX)	1305 E. Clark St., Lyman	?	?	?	?	?	?	
WWCC Outreach	Evanston (two Polycom FX, PVX)	1013 Cheyenne Dr., Evanston	SonicWall	TZ 170	SonicOS Std 3.1.0.7-77	WAN (100MB), LAN (100MB), OPT	3	?	
WWCC Outreach	Hannah (Polycom PVX)	Highway 72, Hannah	?	?	?	?	?	?	
WWCC Outreach	Kemmerer (Polycom FX)	1525 3rd St., Kemmerer	?	?	?	?	?	?	
WWCC Outreach	Kemmerer (Polycom ViaVideo)	20 Adaville, Kemmerer	?	?	?	?	?	?	
WWCC Outreach	Pinedale (Polycom FX and ViaVic)	101 E. Hennick St., Pinedale	?	?	?	?	?	?	
WWCC Outreach	Rawlins (Polycom FX)	705 Rodeo, Rawlins	?	?	?	?	?	?	
WWCC Outreach	Rawlins (Polycom PVX)	?	?	?	?	?	?	?	
WWCC Outreach	Saratoga (Polycom PVX)	801 W. Elm	?	?	?	?	?	?	

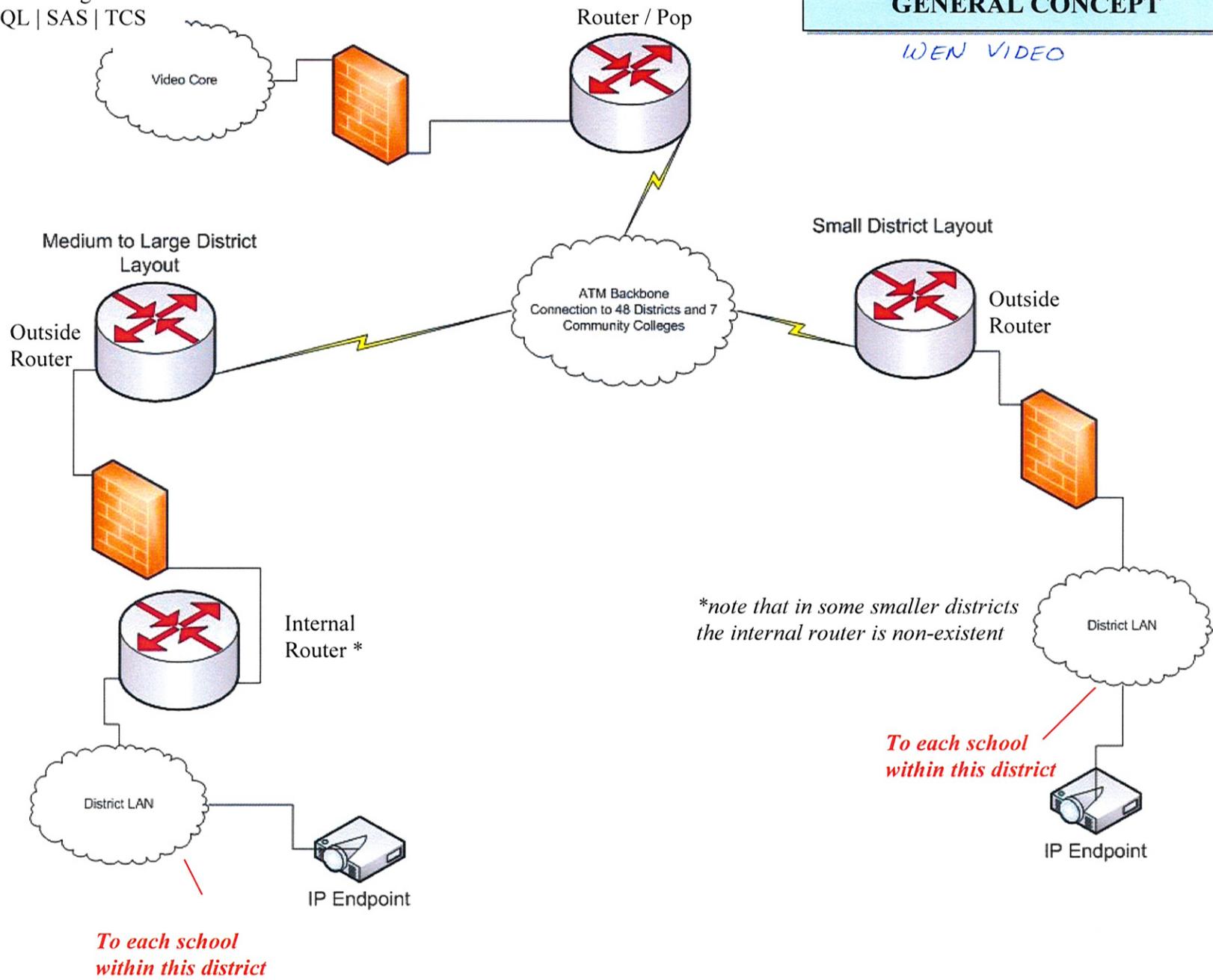
## 11.6 STAKEHOLDER NETWORK DIAGRAMS

- WEN Video Network Diagram
- WEN Video Core Network Diagram
- WEN Video Infrastructure
- WEN Sample School District Video Network Diagram
- WEN Typical Small District Design
- WEN Typical Medium District Design
- WEN Typical Large District Design
- UW Data Network Diagram
- WVCS Video Network Diagram

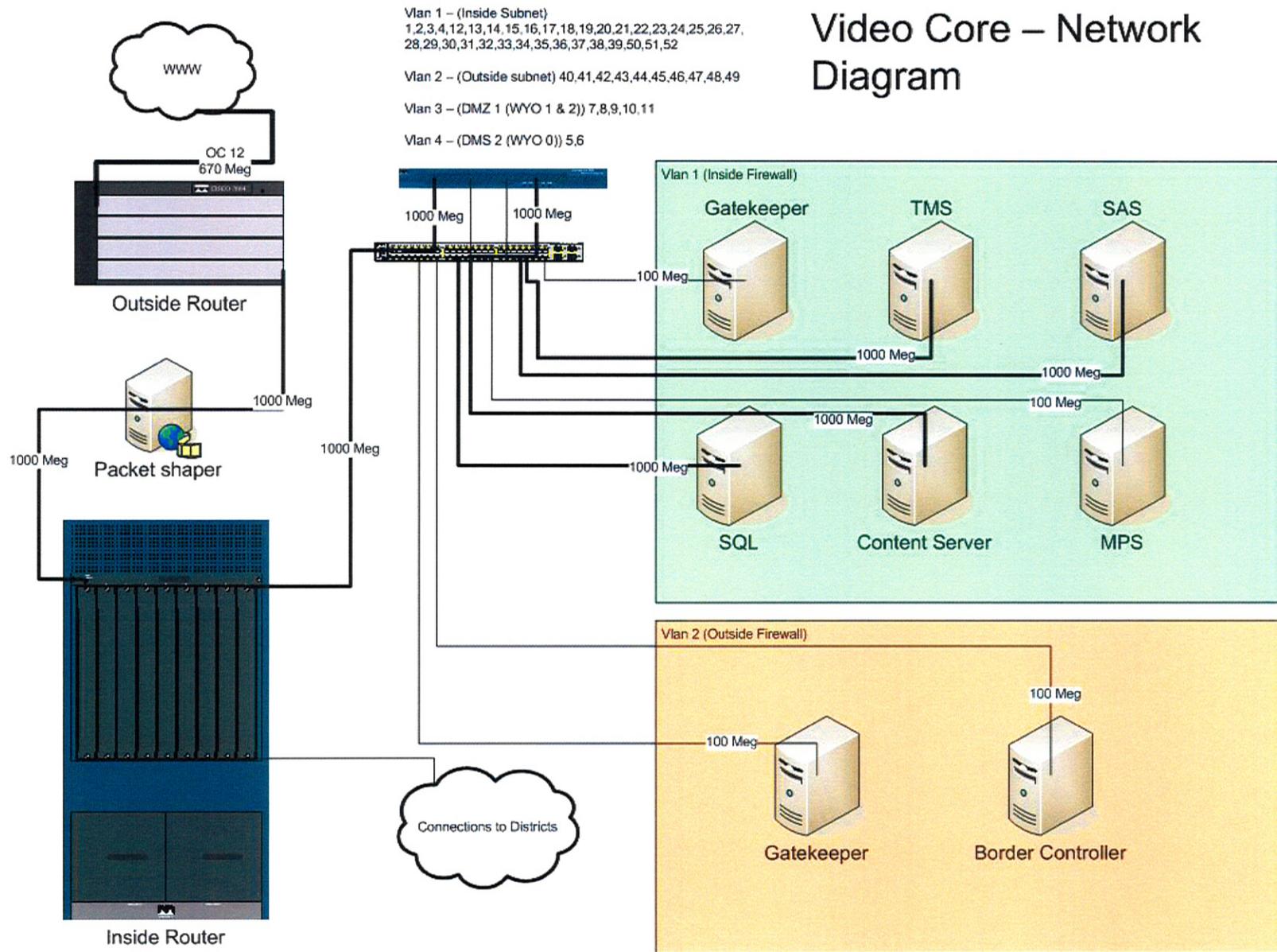
**Video Core**  
Emerson Building  
TMS | SQL | SAS | TCS

**GENERAL CONCEPT**

*WEN VIDEO*



**Emerson (video core) is the central connectivity point for the video network and is located in Cheyenne, WY**



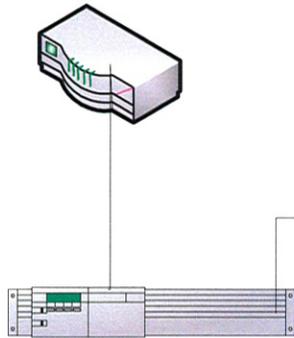
## Public Gatekeeper (Tandberg v N5.1)

Settings: Direct, Allow Calls from Unregistered Users

Zones: External Border Controller

Links: External Border Controller

Licensing: 125 Registrations, 25 Non-traversal calls, 15 Active Traversal Calls



## External Border Controller (Tandberg v Q5.1)

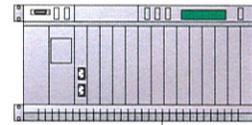
Settings: Call Routed, Indirect, Allow Calls from Unregistered Callers, Allow Forwarding of Location Requests, Allow Call Transfer.

Zones: External Gatekeeper

Traversal Zones: Internal Gatekeeper

Links: Public Gatekeeper, Internal Gatekeeper, Traversal Internal Gatekeeper Link

Licensing: 125 Registrations, 25 Active Traversal Calls



Bridge  
Tandberg  
MPS 800

*Registered to internal gatekeeper*

## Internal Gatekeeper (Tandberg v N5.1)

Settings: Direct, Allow Calls from Unregistered Users

Zones: WACS Gatekeeper

Traversal Zone: External Border Controller

Subzones: Intranet 146.166.150.0

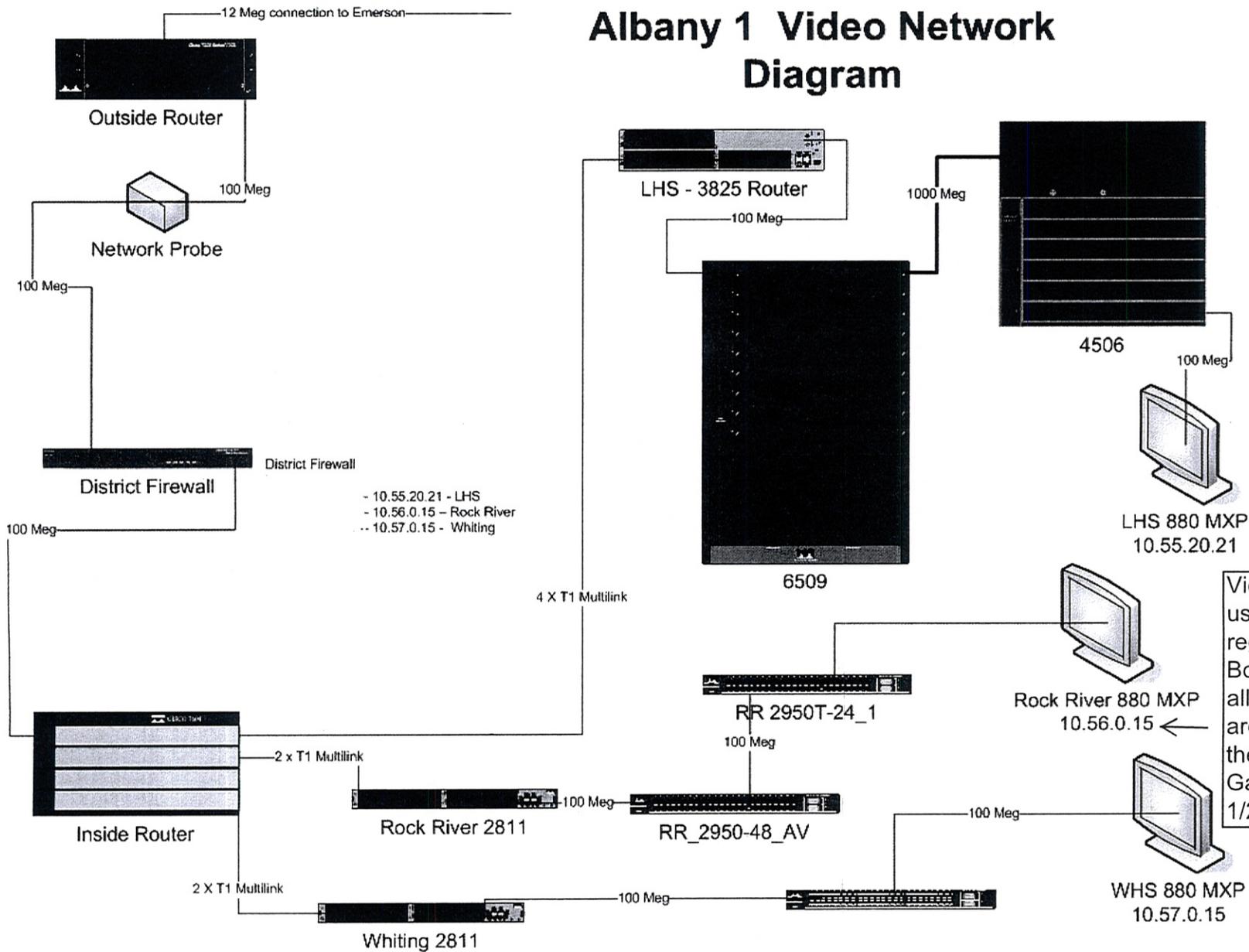
Links: External Border Controller, WACS Gatekeeper, Intranet

Licensing: 375 Registrations, 75 Active Non-traversal Calls, 20 Active traversal calls

All WEN Video endpoints which use NAT must register to the Border Controller to traverse their local firewalls and allow for calling within the district in addition to outside of the district video calls.

All other WEN Video endpoints to include the bridge shall register to the Internal Gatekeeper

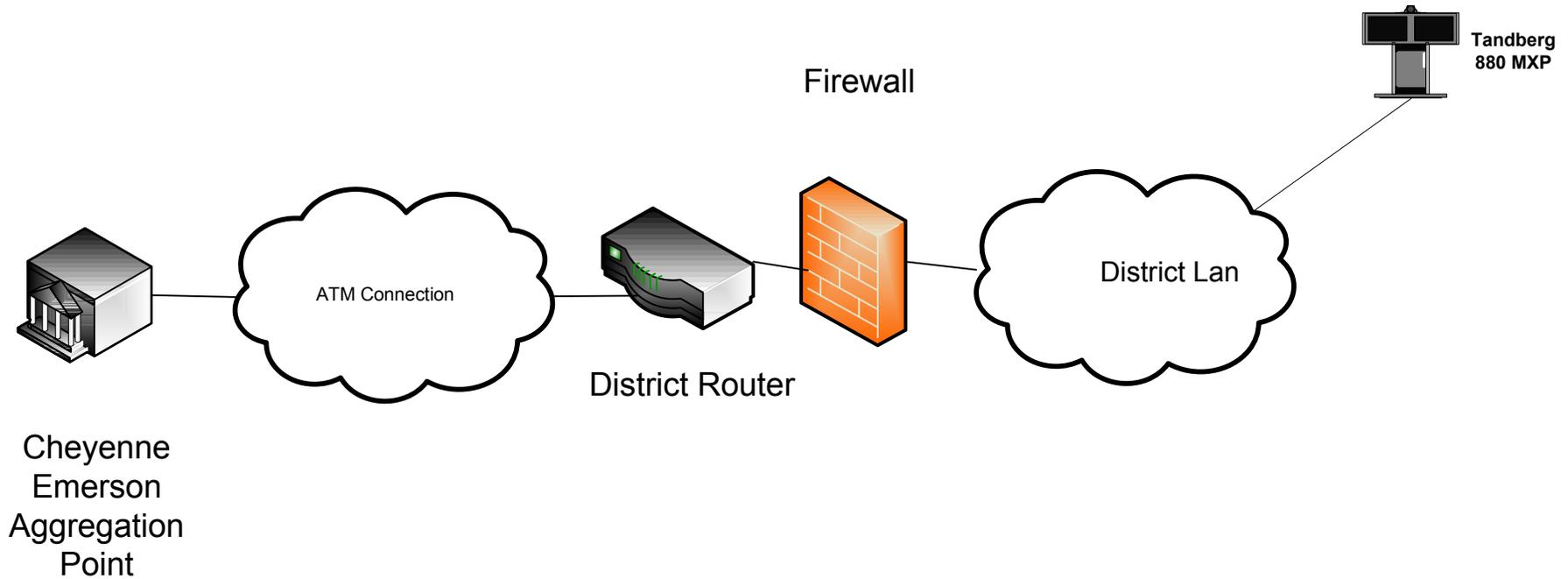
# Albany 1 Video Network Diagram



Video units which use NAT are registered to the Border Controller - all other video units are registered to the internal Gatekeeper. As of 1/29/09

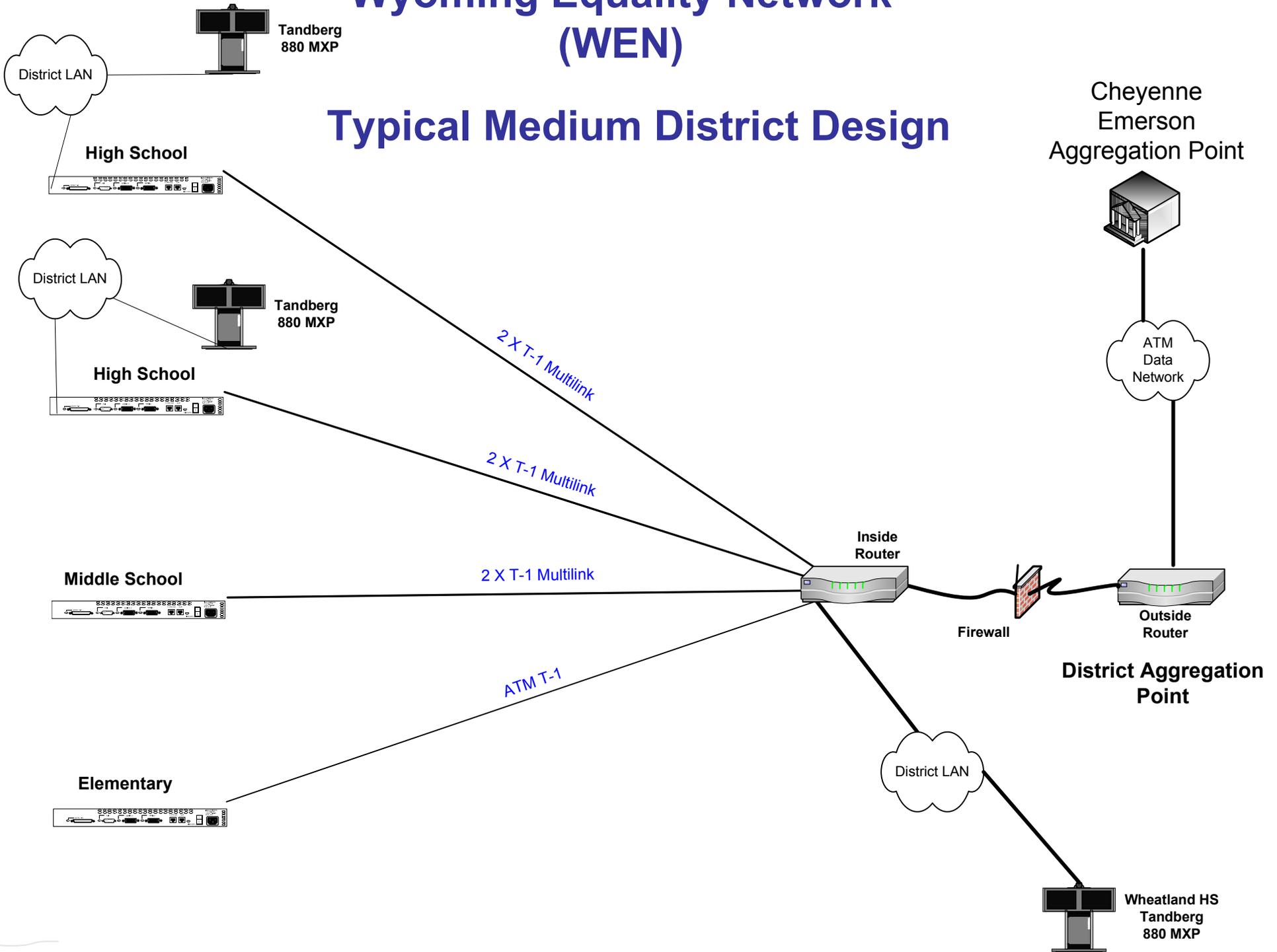
# Wyoming Equality Network (WEN)

## Typical Small District Design

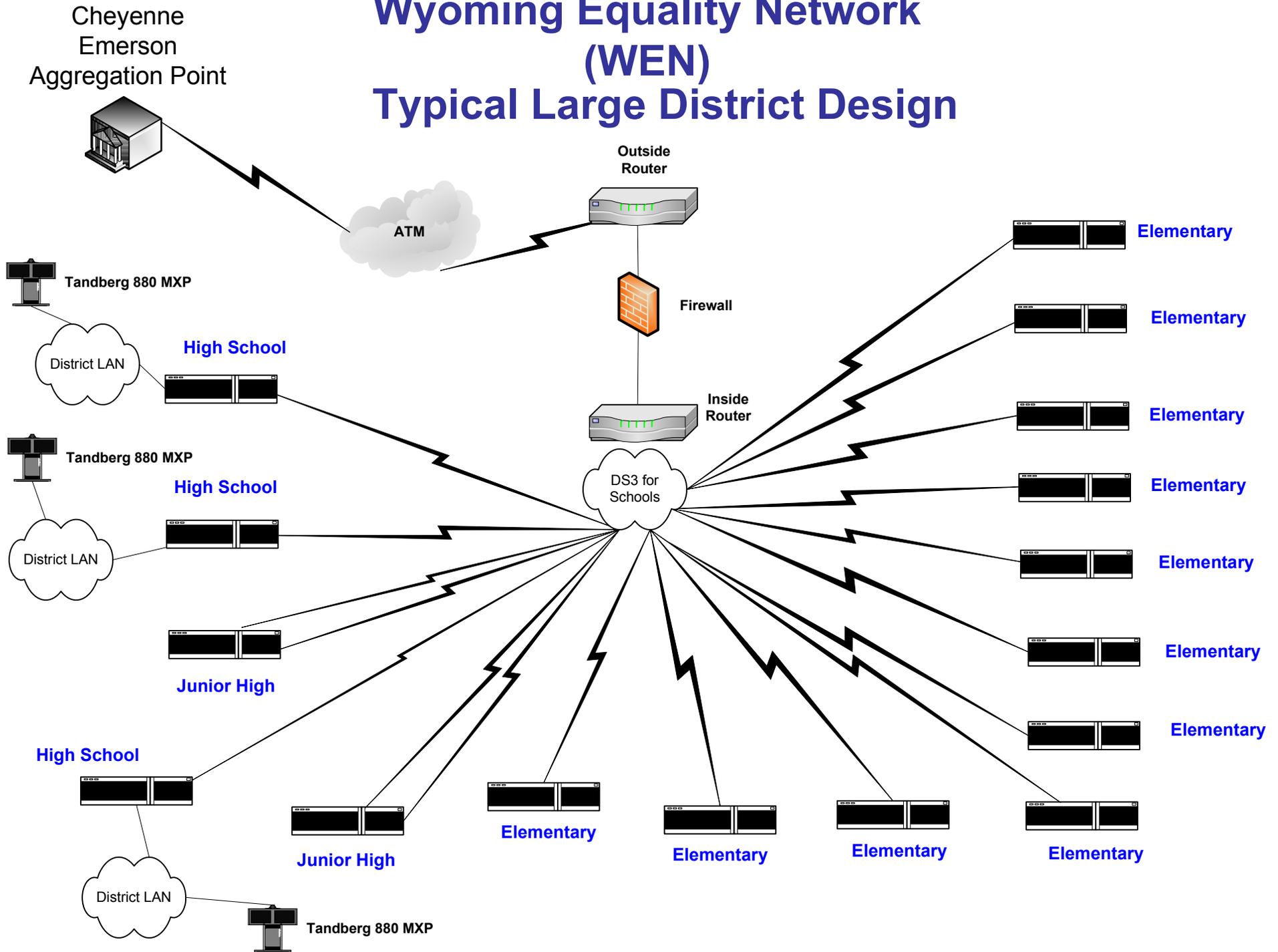


# Wyoming Equality Network (WEN)

## Typical Medium District Design



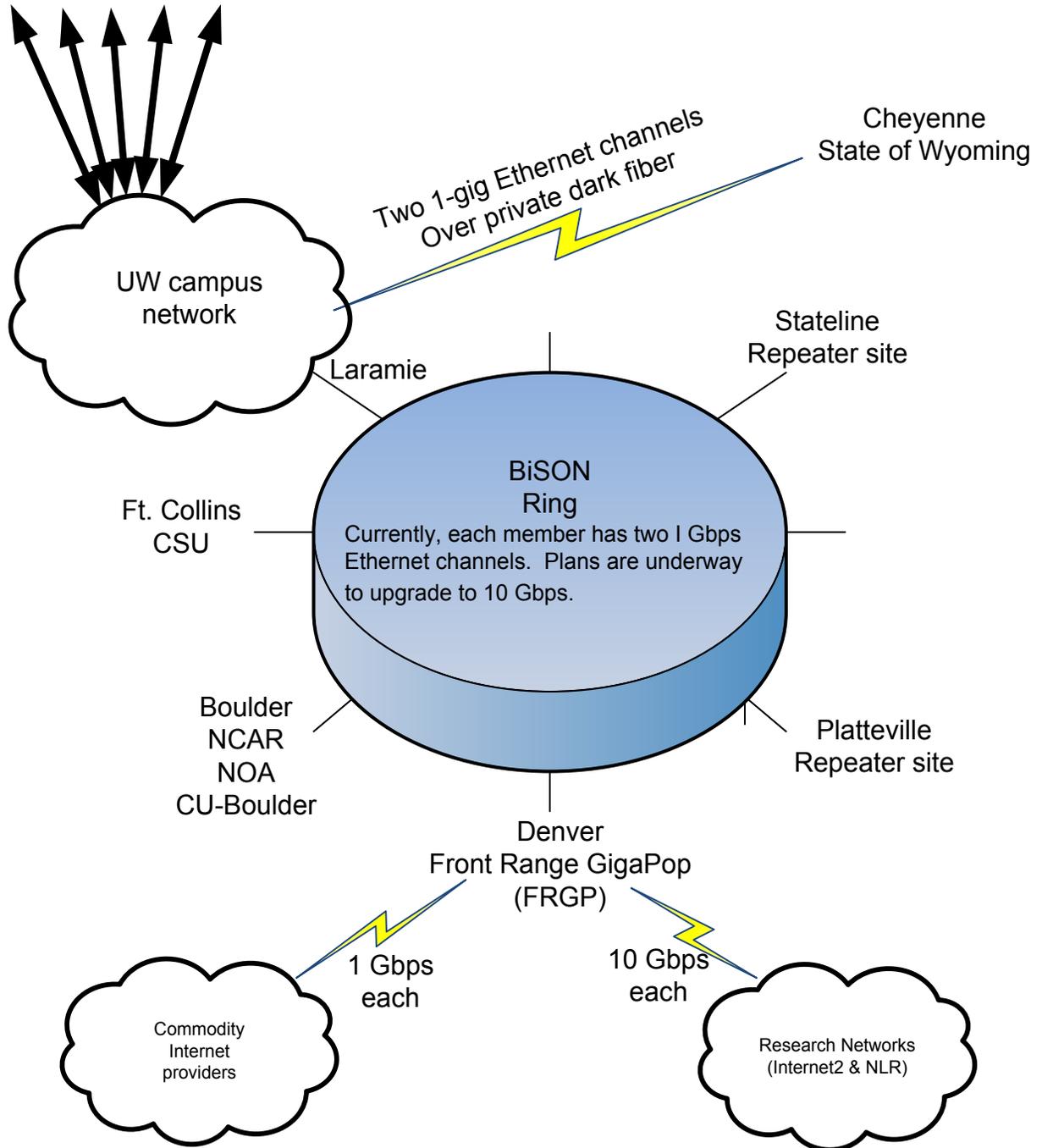
# Wyoming Equality Network (WEN) Typical Large District Design



# University of Wyoming Data Network

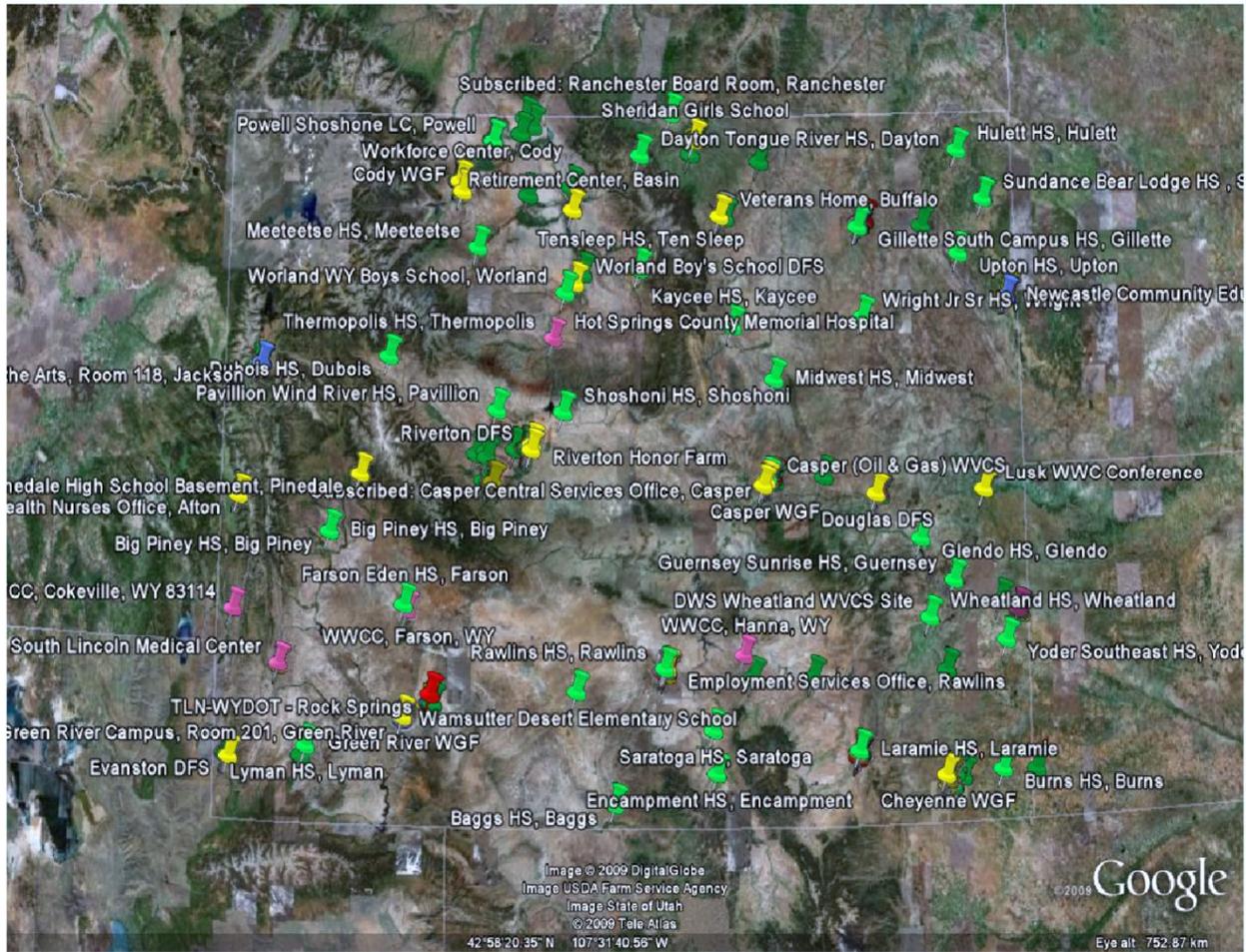
## UW Outreach Video Network (OVN)

(All links are point to point from remote site to UW campus network using ATM, Frame Relay, DSL, or cable modem)





### 11.7 ENDPOINT MAP

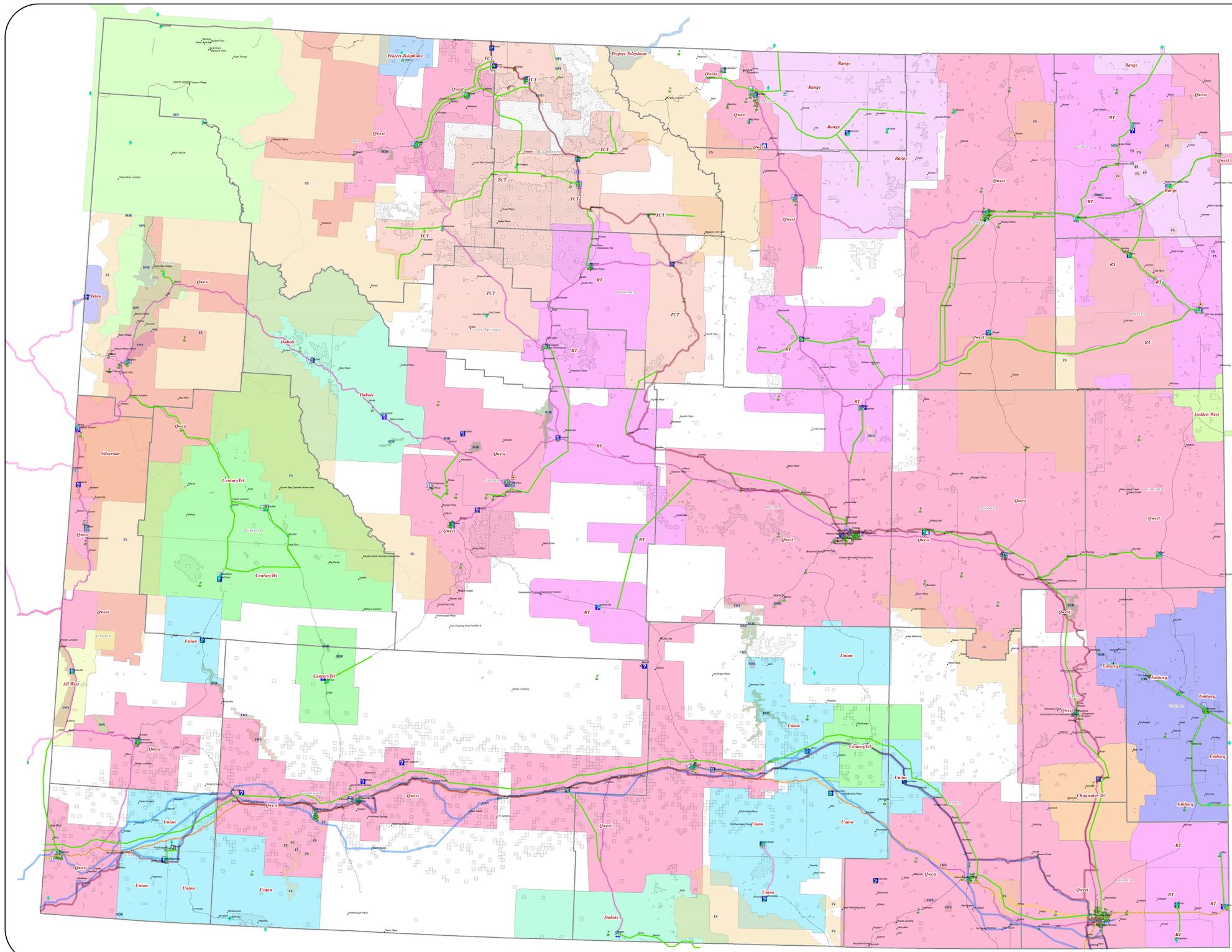
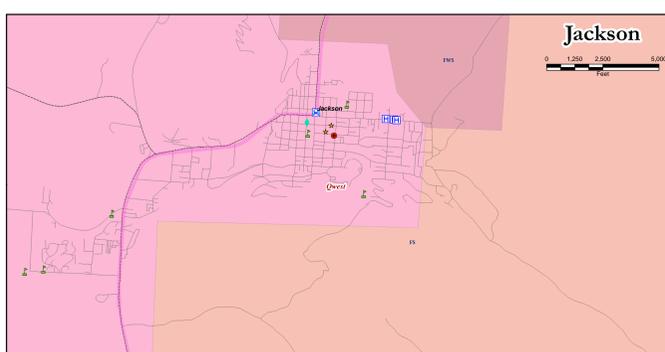
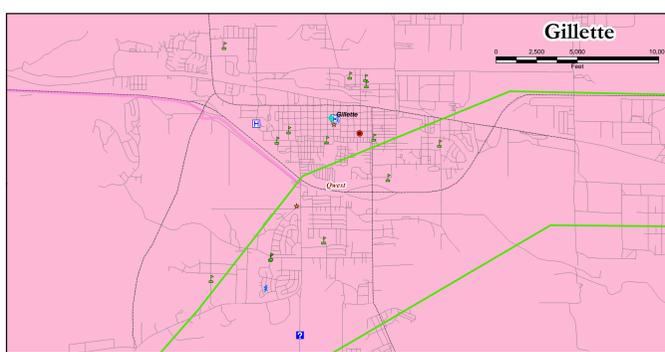
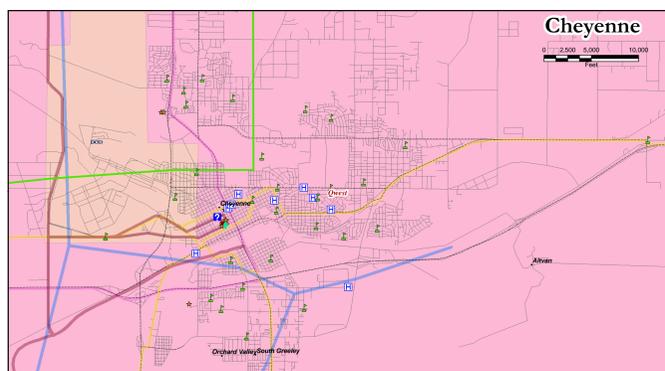
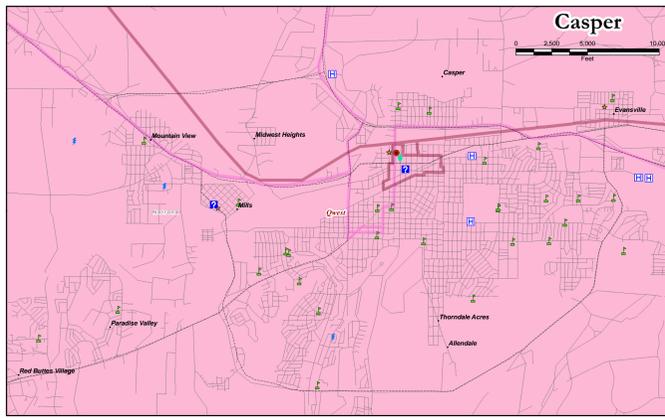


	<b>OVN</b>
	<b>TELE-HEALTH</b>
	<b>TLN - WYDOT</b>
	<b>WEN</b>
	<b>WVCS</b>

### 11.8 STATE OF WYOMING FIBER AND TELECOMMUNICATIONS MAP

# State of Wyoming

Office of the Chief Information Officer  
2 June 2009



Prepared by: Kenneth F. Gilroy, Contract GIS Analyst

## Legend

- Highways
  - 360networks
  - Level 3 Fiber
  - Interstate Fiber
  - Wy Inter Office Fiber
  - WTA Add Fiber
  - Central Offices
  - Schools
  - Hospital / Clinic
  - Nursing Home
  - Libraries
  - Sheriff / Police Dept
  - Correction Facilities
  - County Seat
  - Places
  - Counties
- ### Federal Lands
- Bureau of Reclamation (BOR)
  - Department of Defense (DOD)
  - Forest Service (FS)
  - Fish and Wildlife Service (FWS)
  - National Park Service (NPS)
  - Bureau of Land Management (BLM)
- ### LEC Boundaries
- All West
  - CenturyTel
  - Chugwater Tel
  - Dubois
  - Embarq
  - Golden West
  - Project Telephone
  - Qwest
  - RT
  - Range
  - Silverstar
  - TCT
  - Teton
  - Union

Sources: Wyoming Broadband Cap. Analysis - Resource Data  
ComQuest Associates, Inc., June 2008  
Metel Super Networks, 360networks  
King Regions, Level 3

