

ARIZONA TELEMEDICINE PROGRAM



Video Conferencing within the Arizona Telemedicine Program

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ATP Map



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Common terms used in Video Conferencing

- Video Conferencing System(CODECS)
- Multipoint (MCU's)
- Gatekeepers
- H.239 – Dual Video Stream

Video CODEC (Coder Decoder)

- Encodes Video and Audio signals from Analog (sounds that we can hear and sights that we can see) to Digital (0s and 1s)
- Transmits and Receives digital video and audio data via a network
- Decodes Video and Audio signals from Digital to Analog so that the receiver can see and hear the message being transmitted
- Every site participating in a video conference has one of these

Types of CODEC's

- Telephones (Audio CODEC)
- Videophones (A/V CODEC)
- Polycom RealPresence, Jabber (PC based A/V CODEC)
- Hardware Video CODEC's (Polycom, Tandberg, Cisco, Lifesize, Sony)

Hardware Video Equipment



Tandberg MXP CODEC



Cisco C90 CODEC



Multipoint Control Unit (MCU) aka Bridge

- Manage multipoint conferences (2 or more endpoint engaged in a conference)
- Manages call signaling to handle media mixing, switching or other media processing.
- Bridges audio and video to/from different types of networks(ISDN, IP)

Multipoint Conference Call



Bridged Conference



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Digital Video Bridges



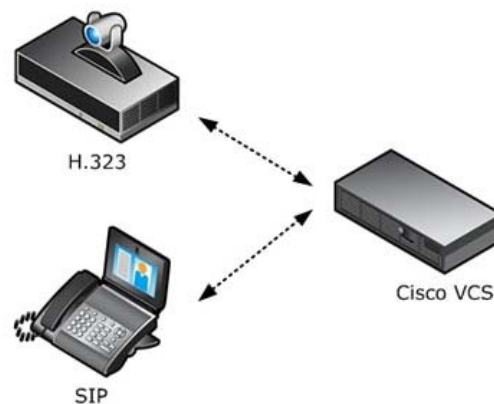
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Gatekeepers

- An infrastructure device that manages domains and provides call control
- User names are translated into IP addresses, to authenticate users
- They are used to provide call authorization and to manage network resources
- Acts as a gateway to allow H.323 and SIP endpoints to connect to each other

Endpoints registered to Gatekeeper



H.239 (Dual Video stream)

- A Protocol designed for splitting the video bandwidth in a videoconference into a conferencing channel and a media channel
- It enables participants to share their computer screens or some other video source with all conferees

Duo Video (H.239)



Software-based Cloud Video Technology



Cloud Benefits



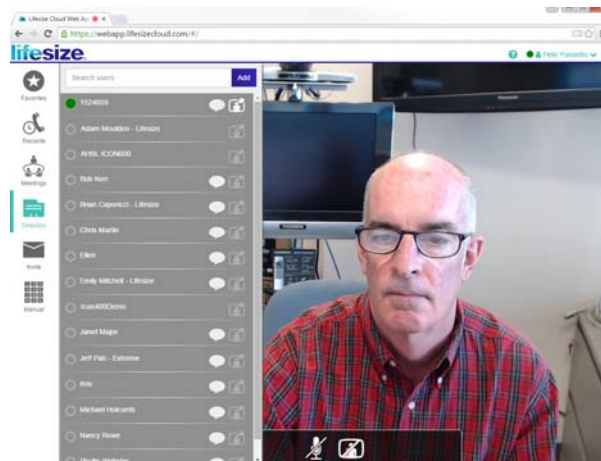
WebRTC



- Free, open architecture project to provide Real-Time Communications (RTC) utilities via API's (Application Program Interface).
- This technology allows the browser, mobile platforms and IoT devices all to communicate with a standard set of protocols.
- Allows customers to makes calls right from their web browsers *without* any software installation.

WebRTC Video Conferencing

Browser based video.



Zoom Cloud Video Conferencing

Platforms supporting Zoom Downloads or Apps

PC's, laptops – Windows or Mac

Ipad, Android notebooks/tablets

Iphone, Android phones



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Zoom Features



Meetings

Video Webinar

Zoom Rooms

H.323/SIP Connector

Developer Platform



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Zoom Meeting with Logitech CC3000e

Equipment/Software

- Laptop
- USB Logitech cc3000e Camera includes Echo Cancelling Microphone/Speaker
- Tripod for camera
- Zoom for cloud video/audio



Zoom meeting using Logitech CC3000e



USB Cameras/mics



Logitech C920



Logitech CC3000e



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AVER-520 USB Camera/mic



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USB/Bluetooth Mic/Speaker



Jabra Speak 410



Revolabs FLX UC 500



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SAMS Project Supervised Asthma Medication in Schools

Equipment Used

Zoom for video/audio

Verizon Jetpack for internet

3M Littmann Bluetooth Stethoscopes

3M Littmann Telesteth Software

Jabra mic/speaker

Battery backup



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SAMS – Provider Side



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ATP Calendar

<p>12</p> <p>09:00 - 16:00 Developing a Telemedicine Program Training (4)</p> <p>10:45 - 12:45 CHD Diabetes (Lit. Marco, PC Conf) (2)</p>	<p>13</p> <p>08:00 - 09:00 MCHC (Telemed Run) - AHSC/WSC (IP 768); Behav High Case Management Meeting (3)</p> <p>10:00 - 12:00 AHSC/WSC-TTC (room reservation); Site Visit/Tour RIMQ/Trilena (2)</p> <p>11:00 - 16:30 TCRHCC (delisted rm) - JHCC (delisted rm); Surgery Clinic (3)</p> <p>11:30 - 12:00 Test Time NGR - (326), PRMC, StarCardioHS (4)</p> <p>ATP / UAHN Nursing Grand Rounds 12:00 - 13:00 Insulin Pumps *** Speaker: Janine Levenson, RN, Brenda Duarte, RN, and Virginia Phillips, RN (4)</p> <p>12:30 - 14:00 CHD Diabetes Clinic (St. Marco/Mesa) (2)</p>	<p>14</p> <p>07:15 - 09:15 Class with St. Jans (7 North/Country CHC sites) (3)</p> <p>07:30 - 08:00 Test Time SGR, PRMC (4)</p> <p>08:00 - 14:00 TCRHCC (15,180,161,23) - Grey Hills HS Meeting HSH (15,180,210,23) - Urology - Interscan Clinic (3)</p> <p>Surgery Grand Rounds 08:00 - 09:00 Chief, Tai - The Quiet Life of Silent D *** Dr. Derek Stephenson, Chief Resident, General Surgery/Residency Program (4)</p> <p>09:00 - 11:00 AUC - AHSC/WSC/UA Tucson (IP 768); Infectious Diseases (AADC sites, TBA) (1)</p> <p>11:30 - 12:00 Test Time NGR, PRMC, StarCardioHS (4)</p> <p>Medicine Grand Rounds 12:00 - 13:00 Medicine Education Office - Vannerter *** Speaker: TBA (4)</p> <p>13:30 - 14:00 Test Time Psych, PRMC, NARRHA (4)</p> <p>Psychiatry Grand Rounds</p>	<p>15</p> <p>08:30 - 11:30 ADC - AHSC/WSC/UA Tucson (IP 768); Rheumatology Clinic (AADC sites, TBA) (1)</p>	<p>16</p> <p>CHD Diabetes (Lit. Marco, PC Conf) (3)</p> <p>11:30 - 12:00 Test Time Advances in Aging, PRMC (4)</p> <p>Advances in Aging Lecture Series 12:00 - 13:00 Mental Health Services in the Geriatric Population: How to Access Resources for a Patient or Family Member in Need *** Speaker: Sandra Combs, PhD, Psychiatric Resident POYU, University of Arizona (4)</p>	<p>17</p>
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ATP On-line Network Tool

The screenshot displays the ATP On-line Network Tool interface. At the top, there is a navigation menu with options like HOME, NETWORK, and VIRTUALIZATION. Below the menu, there are several news items and a main dashboard area. The dashboard includes:

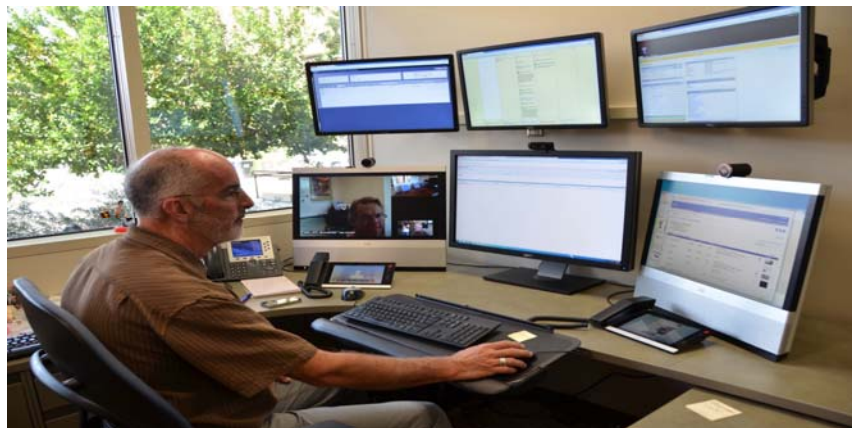
- Nodes with Problems:** A table listing nodes with their descriptions, current response times, and percent loss. For example, node ADCTMC_55020 has a response time of 60ms and 0.5% loss.
- Down Interfaces:** A section for monitoring down interfaces.
- Top 10 Interfaces by Percent Utilization:** A table showing the top 10 interfaces with their receive and transmit percentages. For instance, PROCTMC_55020 has 57% receive and 27.5% transmit utilization.
- Telecom Carriers Contact:** A table listing various telecom carriers and their contact information, including phone numbers and websites.
- All Nodes - Tree (AJAX):** A tree view of nodes grouped by status (Up, Down, Unmanaged).
- All Nodes - Tree (AJAX):** A tree view of nodes grouped by machine type (e.g., American Power Conversion Corp., Automatic Switch, Catalyst 2950).



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Office Displays



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HTTP access for bridge

The screenshot shows a web-based interface for managing a telemedicine conference. At the top, there are navigation tabs: Overview, My Phonobook, System Status, System Configuration, and MCU Configuration. The main area is titled "Conference 1: Class" and displays various conference settings such as "Conference Status", "Numbers (DND / PP)", "H323/JSP URI", "Call Duration", "Video Out", "Dual Video Stream Out", "Conference Layout", "Encryption / Password", "Participants", and "Conference Mode". A "Conference Snapshot" window is visible on the right, showing a message: "Optimal Voice Switch on, Snapshot unavailable". Below the settings, there are control buttons: "Add Participants", "Conference Configuration", "Deact Dial in Configuration", "Disconnec All", "End Conference", and "Select: Conference 1 Class Show".

Rank	Advanced	Terminal List	Change	Participant	Status	Net	Audio	Video	Dual Video Stream	In Picture	Actions	Audio Input Level
1				1 LG_1	Connected, 384 kbps	H323						<input type="text"/>
2				2 EDWARDS	Connected, 384 kbps	H323						<input type="text"/>
3				3 JENNIFER CANCER CENTER	Connected, 384 kbps	H323						<input type="text"/>
4				4 SOUND VALLEY	Connected, 384 kbps	H323						<input type="text"/>
5				5 AARON	Connected, 384 kbps	H323						<input type="text"/>
6				6 DARRIN	Connected, 384 kbps	H323						<input type="text"/>
7				7 SHARON LEWIS	Connected, 384 kbps	H323						<input type="text"/>
8				8 BULLHEAD CITY	Connected, 384 kbps	H323						<input type="text"/>
9				9 KRISTINA	Connected, 384 kbps	H323						<input type="text"/>
10				10 ST. JAMES	Connected, 384 kbps	H323						<input type="text"/>



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Thank you!

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