

# ARIZONA TELEMEDICINE PROGRAM



## Video Conferencing within the Arizona Telemicine Program

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Video Conferencing Administrator

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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



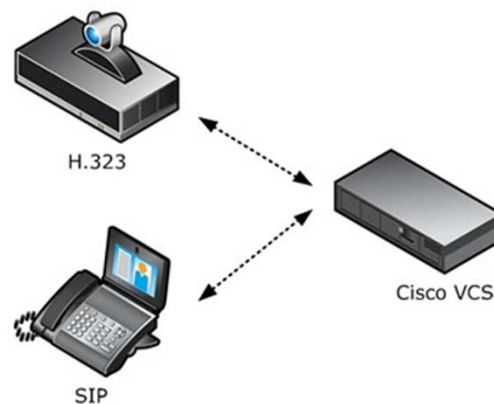
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## Gatekeepers

- 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.

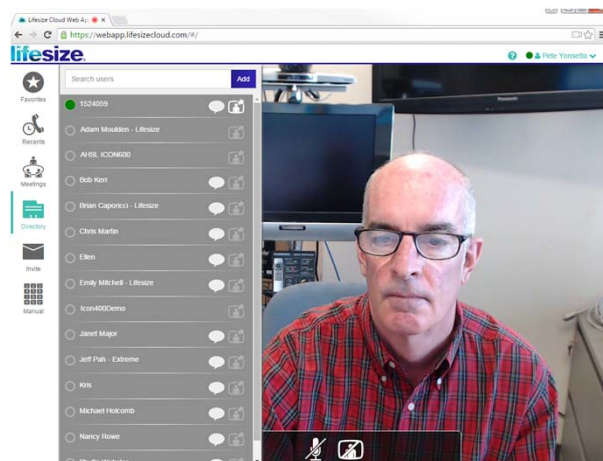


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## WebRTC Video Conferencing

Browser based video.



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# Zoom Cloud Video Conferencing

## Platforms supporting Zoom Downloads or Apps

PC's, laptops – Windows or Mac

Ipad, Android notebooks/tablets

Iphone, Android phones



## Zoom Features



Meetings

Video Webinar

Zoom Rooms

H.323/SIP Connector

Developer Platform

## 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

## 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





# SAMS – Provider Side



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# ATP Calendar

<p><b>12</b></p> <p>09:00 - 16:00 Developing a Telemedicine Program Training (4)</p> <p>10:45 - 12:45 CHD Diabetes (St. Marco, PC Conf) (2)</p>	<p><b>13</b></p> <p>08:00 - 09:00 MCHC (Telemed Rm) - AHSC/WSC (IP 768): Behav Hlth Case Management Meeting (3)</p> <p>10:00 - 12:00 AHSC/WSC-TTC (room reservation): Site Visit/Tour KPMG/Telma (2)</p> <p>11:00 - 16:30 TCRHCC (telemed rm) - HHCC (telemed rm), Tucson, AZ (3)</p> <p>11:30 - 12:00 Test Time NGR: (3230), PRMC, SanCarlos/HIS (4)</p> <p><b>ATP / UAHN Nursing Grand Rounds</b> 12:00 - 13:00 Bonnie Pumps *** Speaker, Jeanne Lavereng, RN, Brenda Duarte, RN, and Virginia Phillips, RN (4)</p> <p>12:30 - 16:00 CHN Dominican Clinic(St. Marco/Mariposa) (2)</p>	<p><b>14</b></p> <p>07:15 - 09:15 Class with St. Jose (7 North/Country CHC sites) (2)</p> <p>07:30 - 08:00 Test Time SGR - PRMC (4)</p> <p>08:00 - 14:00 TCRHCC (10.100.101.25) - Greg Hill, HS Mental Hlth (10.100.250.25) Quidley, Telepsych, Clinic (3)</p> <p><b>Surgery Grand Rounds</b> 08:00 - 09:00 Chief's Talk - The Quiet Life of Silent D *** Dr. Derek Stephenson, Chief Resident, General Surgery/Residency Program (4)</p> <p>09:30 - 11:00 ADC - AHSC/WSC/UA Tucson (IP 768): Rheumatology Clinic (ADC sites TBA) (1)</p> <p>11:30 - 12:00 Test Time NGR - PRMC, SanCarlos/HIS (4)</p> <p><b>Medicine Grand Rounds</b> 12:00 - 13:00 Medicine Education Office - Vianettes *** Speaker: TBA (4)</p> <p>13:30 - 16:00 Test Time Psych: PRMC, NARBHA (4)</p> <p><b>Psychiatry Grand Rounds</b></p>	<p><b>15</b></p> <p>09:30 - 11:30 ADC - AHSC/WSC/UA Tucson (IP 768): Rheumatology Clinic (ADC sites TBA) (1)</p>	<p><b>16</b></p> <p>CHN Diabetes (St. Marco, PC Conf) (3)</p> <p>11:30 - 12:00 Test Time Advances in Aging: PRMC (4)</p> <p><b>Advances in Aging Lecture Series</b> 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, MEd, Psychiatric Resident POYTL, University of Arizona (4)</p>	<p><b>17</b></p> <p><b>18</b></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 informational banners, including one about a new blog post and another about a network performance monitor update. The main content area is divided into several sections:

- OrionNetworkOverview**: A central dashboard with multiple sub-sections.
  - Nodes with Problems**: A table listing nodes with their descriptions, current response times, and percent loss.
 

NODE	DESCRIPTION	CURRENT RESPONSE TIME	PERCENT LOSS
ADCTVC_SSG20	Node is Up One or more interfaces have state: Unknown.	68ms	0.5%
ABCFMC_SSG20	Node is Up One or more interfaces have state: Unknown.	18ms	0.5%
  - Down interfaces**: A section for monitoring down interfaces.
  - Top 10 Interfaces by Percent Utilization**: A table showing the top 10 interfaces by their receive and transmit utilization percentages.
 

NODE	INTERFACE	RECEIVE	TRANSMIT
PHCVPMC_SSG20	sernet0	57%	27%
TUCOPT_SSG20	sernet0	15%	4%
TUCBET_SSG140_2	sernet01_TUCOPT_GuestDS1	4%	14%
AMSC2002_HP	1_AMSC2002_CP90_TV	1%	6%
PHCVPMC_SSG20_2	sernet0	1%	1%
  - Telecom Carriers Contact**: A table listing various telecom carriers and their contact information.
 

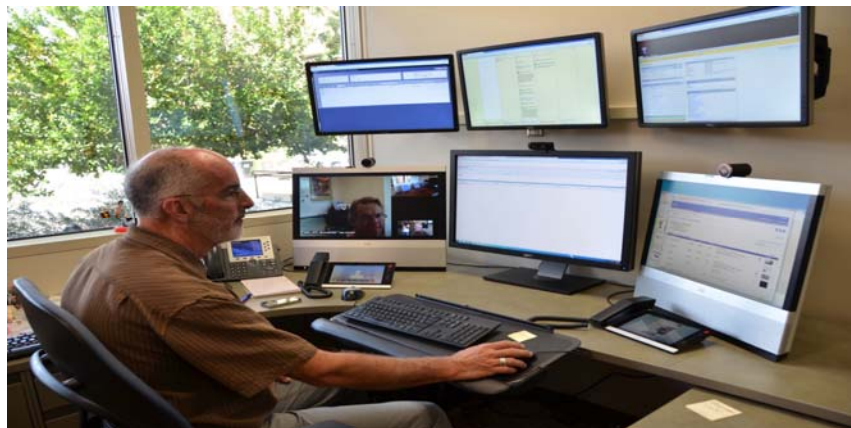
Carrier	Phone/Webpage
AT&T	1-800-222-1000/ www.businessdirect.att.com
Integra Telecom	1-800-622-4354
Cox Business	1-877-207-0398
Century Link/Cwest	1-800-533-9125
TimeWarner	1-800-829-0420
Verizon	1-800-483-2000, opt 2.1.1 for escalation 888-857-5350
Vigniton Networks	1-206-574-5495, noc@vigniton.com
  - 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 (American Power Conversion Corp., automaticSwitch, Catalyst 2500, HP Switch, Juniper Networks/NetScreen, Juniper SSG20, ProCurve Switch 2524 J4813A, ProCurve Switch 2910al-24G, Sargant Computer, Inc., smartIPS 450, Tenbergen S800XP).



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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, Phonebook, System Status, System Configuration, and MCU Configuration. The main area is titled "Conference 1: Class" and includes a "Conference Snapshot" window on the right. Below this is a table of participants.

Participant	Status	Net	Audio	Video	Dual Video Stream	In Picture	Actions	Audio Input Level
1 LC_1	Connected, 354 kbps	H323						<input type="text"/>
2 Wilslow	Connected, 354 kbps	H323						<input type="text"/>
3 Grand Cancer Center	Connected, 354 kbps	H323						<input type="text"/>
4 Round Valley	Connected, 354 kbps	H323						<input type="text"/>
5 Ashlock	Connected, 354 kbps	H323						<input type="text"/>
6 Hiltzsch	Connected, 354 kbps	H323						<input type="text"/>
7 Shovel Lox	Connected, 354 kbps	H323						<input type="text"/>
8 Bullhead Ctr	Connected, 354 kbps	H323						<input type="text"/>
9 Kinaman	Connected, 354 kbps	H323						<input type="text"/>
10 SLJasha	Connected, 354 kbps	H323						<input type="text"/>



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# Thank you!

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