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</thead>
</table>
| 3100     | Cable Plant      | Category 6, unshielded twisted pair (UTP) copper cable up to a maximum of 295-feet; OR 8.3/125 micron single mode fiber cable; OR 50/125 micron multimode fiber optic cable LC connectors | I02.003.302 | Network > Infrastructure > Transmission Medium | Transmission medium is the material and/or technology that carries signal from one location to another. | Systimax products with Corning fiber: Systimax products with Corning fiber: • Category 6, unshielded twisted pair (UTP) copper cable; • OR 8.3/125 Single mode fiber cable; • OR 50/125 Multimode fiber optic cable. | Effective: 7/1/1997
<p>|          |                  |          |                     |                               |                 | Revised: 12/1/2008 | Reviewed: 6/17/2015 |</p>
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</table>
| 3110    | Cable Plant Installation           | Cable plant installation based on current industry standards. The following are applicable:  
• TIA/EIA-568-B.1-7 Commercial Building Telecommunications Wiring Standard and its appendix and all addendums  
• TIA/EIA-568-B.2-11 Commercial Building Telecommunications Wiring Standard and its appendix and all addendums  
• TIA/EIA-569-B Commercial Building Standard for Telecommunications Pathways and Spaces  
• TIA/EIA-570-B Residential and Light Commercial Telecommunications Wiring Standard  
• TIA/EIA-606 Administrative Standard for the Telecommunications Infrastructure of Commercial Building  
• J-STD-607-A Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications  
• TIA/EIA-758-A Customer Owned Outside Plant Telecommunications Infrastructure Standard  
• TIA/EIA-526-7 Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant  
• TIA/EIA-526-14-A Optical Power Loss Measurements of Install Multimode fiber Cable Plant  
• TIA/EIA-568-3-3.1 Optical Fiber Cabling Components Standard  
• TIA/EIA-598-C Optical Fiber Cable Color Code  
• TIA-758-A Customer Owned Outside Plant Telecommunications Infrastructure  
• National Electric Code  
• National Electric Safety Code  
• ASTM E814 Fire Stopping  
• ISO/IEC 11801: 2002/AMD 1  
• TSB 162 Telecommunications Cabling Guidelines for Wireless Access Points  
• TIA-942 Telecommunications Infrastructure Standard for Data Centers | I02.003.302                  | Network > Infrastructure > Transmission Medium | Transmission medium is the material and/or technology that carries signal from one location to another. |                                                                                  |                     |            |

Effective: 7/7/1997  
Revised:  
Reviewed: 6/17/2015
### Network Protocols

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>3200</td>
<td>Network Protocols</td>
<td>TCP/IP</td>
<td>I02.004.409</td>
<td>Transmission Protocol is a category that allows grouping and identification of various transmission standards, at a basic level in the OSI stack.</td>
<td></td>
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</tr>
</tbody>
</table>

TCP/IP - the only protocol supported by the Commonwealth Office of Technology after December 31, 1998. For details, see the Agency Contact Memo at Agency Contact Memo 9707-01 Ethernet - LAN topology.

### Network Hardware

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</tr>
</thead>
<tbody>
<tr>
<td>3300</td>
<td>Network Hardware Components: Routers, Hubs, Remote Access, CSU/DSU, NICS, Modems</td>
<td>SNMP compliant, Modems: 56 Kbps v.92, International Telecommunications Union (ITU) data transmission standard, Ethernet NIC cards at 100Mbps/1Gbps/10Gbps, Wireless LAN installations must adhere to Enterprise IT Policy CIO-078 (Wireless LAN Policy).</td>
<td>I02.003.301</td>
<td>Specifically for Networks, Hardware and Software refers to many different kinds of devices and their firmware. These devices provide many things including routing, security, etc. The software included here is the firmware and/or Operating System (OS) associated with specific network devices.</td>
<td>Routers/Switches: Avaya Networks, Wireless Data Networking: Avaya Networks, Virtual Private Networks: Avaya Networks, NetMotion, Load Balancing: FS Networks</td>
<td></td>
</tr>
</tbody>
</table>
3440 Video Conferencing

ITU-T Standards supported:

Video Standards and Protocols, Algorithms and resolutions (pixels x lines):
- ITU-T H.261
- QCIF
- 4CIF
- SVGA
- UXGA
- ITU-T H.263++
- CIF
- FCIF
- SXGA
- 720p
- ITU-T H.264
- CIF
- VGA
- UXGA/+ 
- 1080p
- Frame rate: 5-30 frames per second

Audio Resolution:
- G.711, G.722, G.722.1, 64 bit & 128 bit MPEG4 AAC-LD, AAC-LD Stereo

Monitor Outputs:
- S-Video, Composite, HD15, HDMI, DVI-I, Component

Camera Inputs:
- S-Video, Composite, HD15, HDMI, DVI-I, Component

Video format: NTSC

Broadcast Standards:
- NTSC

Audio Conferencing:
- Omnidirectional pickup; push-to-talk (cardoid/super-cardoid) or omnidirectional, automatic microphone level adjustment; full duplex audio, full duplex, adaptive acoustic echo canceling

Communications Protocols:
- ITU-T H.221

Interfaces:
- 10/100/1000 Full Duplex Ethernet

Transmission Rates:

Videoconferencing is the conduct of a videoconference (also known as a video conference or video teleconference) by a set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-way video and audio transmissions. It has also been called 'visual collaboration' and is a type of groupware.

Approved Products:
- Cisco TelePresence (formerly Tandberg)
  - DX80 23" monitor desktop
    - BFCP dual stream WIFI
    - Android OS
    - 1080p cam
    - Touch screen interface
  - SX80 1080P@60 fps 4x or 20x camera. Avail w/ speaker tracking dual cameras and 10" touch screen control
  - SX20 1080p with 3 camera options
  - SX10 economy unit with 5x camera
- Polycom
  - RealPresence Group system
  - 300/500 Small Room system
  - HDX7000 720p with 12x Camera

See also Category for Desktop Video Conferencing.
<table>
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<tr>
<td>3440</td>
<td></td>
<td>• 384 Kbps</td>
<td></td>
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<tr>
<td>3450</td>
<td>Desktop Video Conferencing</td>
<td>ITU-T Standards supported: • G.711, G.722, G.729, H221, H261, H263 Video Standards and Protocols, Algorithms and resolutions (pixels x lines): • T.120 standard for data collaboration Video Decoding: • up to 30 fps (frames per second) Video Encoding: • up to 22 fps Interfaces: • ISDN or IP (H.323 or SIP)</td>
<td>I02.004.405</td>
<td>Network &gt; Transmission Type &gt; Video Conferencing</td>
<td>Videoconferencing is the conduct of a videoconference (also known as a video conference or video teleconference) by a set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-way video and audio transmissions. It has also been called 'visual collaboration' and is a type of groupware.</td>
<td>Cisco TelePresence (formerly Tandberg): • Movi Microsoft Lync - 2010 Version: Mainstream support slated to end 4/12/2016; Extended support slated to end 4/13/2021. Office Communications Server (OCS) 2007 Mainstream support slated to end 1/8/2013; Extended support slated to end 1/9/2018.</td>
<td>Effective: 7/1/1997 Revised: 6/17/2015 Reviewed: 6/17/2015</td>
</tr>
<tr>
<td>3460</td>
<td>Web Video / Audio Conferencing / Collaboration</td>
<td>I02.004.404</td>
<td>Network &gt; Transmission Type &gt; Web Conferencing</td>
<td>Web conferencing refers to a service that allows conferencing events to be shared with remote locations. In general the service is made possible by Internet technologies, particularly on TCP/IP connections. The service allows real-time point-to-point communications as well as multicast communications from one sender to many receivers. It offers information of text-based messages, voice and video chat to be shared simultaneously, across geographically dispersed locations. Applications for web conferencing include meetings, training events, lectures, or short presentations from any computer.</td>
<td>• Citrix (GoToMeeting, GoToWebinar, GoToTraining) • Elluminate • iLinc • Microsoft Lync 2010 version: Mainstream support slated to end 4/12/2016; Extended support slated to end 4/13/2021. • Office Communications Server (OCS) 2007 • Adobe Connect • Zoom • BlueJeans Video Conferencing</td>
<td>Effective: 12/11/2009 Revised: 6/2/2017 Reviewed: 6/2/2017</td>
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<tr>
<td>3505</td>
<td>Network Services – Electronic Commerce and Payments</td>
<td>eMARS ePay (via the Link-to-Gov contract) is the approved enterprise</td>
<td>A01.004.021</td>
<td>System &gt; Financial Management &gt; Accounts Receivable</td>
<td>Software that supports collections and receivables, including deposits, fund transfers, and receipts for sales or service.</td>
<td>All approved web browser products that support SSL encryption</td>
<td>Effective: 6/1/1999</td>
</tr>
</tbody>
</table>
| 3510    | Network Services – Internet/Intranet Web Server                                   | World Wide Web Consortium (W3C) standards                                | I01.002.202         | Platform > Operating System > Server – Midrange | A midrange computer operating system is, in simplest terms, a collection of programs that manage a computer system’s internal workings - its memory, processors, devices, and file system. Midrange computers are almost universally known as servers to recognize that they often “serve” applications to end users at “client” computers, that they use a client/server computing model.                                                                                                                                                             | • Apache HTTP Server  
• Apache Tomcat  
• Microsoft Internet Information Server (version 7 or later)  
• WebSphere Web Server (both z/OS and UNIX) | Effective: 7/1/1997 | Revised: 8/31/2016 | Reviewed: 8/31/2016 |
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</table>
| 3511    | Network –  Internet/ Intranet - Web Browser | World Wide Web Consortium (W3C) standards        | A02.032.402        | Application Components > Web Access > Web Browser | Software used to locate, retrieve and also display content on the World Wide Web, including web pages, images, video and other files.                                                                 |  • Microsoft Internet Explorer:  
  - IE 11  
  - Microsoft Edge:  
  - On Windows 10 Devices.  
  • Mozilla Firefox:  
  - For maximum security, and to take advantage of advanced client software and web site functions and features, the latest browser release should be installed and used. Selecting the setting to automatically install updates is recommended.  
  • Google Chrome  
  - For maximum security, and to take advantage of advanced client software and web site functions and features, the latest browser release should be installed and used. Selecting the setting to automatically install updates is recommended. | Effective: 7/1/1997  
Revised: 3/27/2017  
Reviewed: 3/27/2017 |
| 3520    | Network Services – Mainframe Access      | A03.040.010                                      | Interface > Application Interface > API | Source code based specification intended to be used as an interface by software components to communicate with each other. An application programming interface (API) may include specifications for routines, data structures, object classes, and variables (e.g., per Wikipedia). | DOS and Windows workstations:  
  • BlueZone by Rocket Software  
  • MochaSoft  
  • IBM Personal Communications  
  • IBM WebSphere Host On-Demand  

Mainframe File Transfer:  
  • BlueZone by Rocket Software  
  • MochaSoft  

NOTE: AttachMate is no longer supported. | Effective: 7/1/1997  
Revised: 6/17/2015  
Reviewed: 6/17/2015 |
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</table>
| 3550     | Network Services – Storage Area Networks | 3550     | I01.005.503       | Platform > Virtualization > Storage | Storage virtualization applies virtualization concepts to enable better functionality and more advanced features within the storage system. Storage systems use special hardware and software along with disk drives in order to provide very fast and reliable storage for computing and data processing. | • EMC  
• HP  
• IBM  
• Netapp  
• EMC Xtremio - SSD Storage array  
• Pure Storage - SSD Storage array | Effective: 12/20/1999  
Revised: 1/28/2016  
Reviewed: 4/8/2016 |
| 3600     | Network Management | 3600     | A01.012.080       | System > Systems Management > Fault management | Software that detects, isolates, and corrects malfunctions in a telecommunications network and compensates for environmental changes. This includes maintaining and examining error logs, accepting and acting on error detection notifications, tracing and identifying faults, carrying out sequences of diagnostics tests, correcting faults, reporting error conditions, and localizing and tracing faults by examining and manipulating database information. | For UNIX and Windows:  
• Avaya Unified Communications Management (UCM)  
• BMC ProactiveNet Performance Management Solution  
• Cacti  
• HP Network Management System  
• Microsoft System Center Operations Manager (SCOM)  
• Nagios  
• What’s Up Gold (Ipswitch) | Effective: 7/1/1997  
Revised: 2/15/2012  
Reviewed: 6/17/2015 |
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<tr>
<td>3650</td>
<td>Content Delivery Network</td>
<td>Support forward and reverse proxy of the following IP protocols:</td>
<td>I01.003.301</td>
<td>Platform &gt; Communications Hardware &gt; Network Interface Device</td>
<td>For the purposes of the IRM, a Network Interface Device is a broad term that includes devices that serve as a demarcation point between the carrier's local loop and the customer's on-premises wiring, where the data wires end and a customer's premise wiring starts, and network interface controllers (also known as a network interface card, network adapter, LAN adapter and by similar terms) which may be internal or external to a piece of computer hardware.</td>
<td>- Network Appliance - Microsoft Forefront Threat Management Gateway (formerly Microsoft Internet Security and Acceleration (ISA) Server) – replaces Microsoft Proxy Server. A software-based solution that runs on approved Microsoft server OS platforms only.</td>
</tr>
</tbody>
</table>

Support for a variety of streaming media formats including MMS (Microsoft Windows Media) and RTSP (RealNetworks Media streaming)

Authentication using Active Directory

Flexibility that offers server-based or appliance solutions

Effective: 10/1/2003

Revised: 1/19/2011

Reviewed: 6/17/2015