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Firewall setting for Videoconferencing

Introduction

The function of a "Firewall" is to protect a private network from unauthorized traffic entering from the Internet. A "Firewall" is software that resides on a server. The firewall is electronically between the "Edge Router" and the rest of the private network. The firewall allows access to the local network by opening "Ports".

Port Assignments

While communicating over an Internet Protocol (IP) network using either Transport Control Protocol (TCP) or User Datagram Protocol (UDP), the originating device assigns a Port Number to be used for the communication session.

The available ports numbers are 0 to 65535. They are divided into three categories. Port numbers 0 through 1023 are known as "Well Known Port Numbers". They have been assigned by the Internet Corporation for Assigned Names and Numbers (ICANN) to be used for well know applications such as File Transfer Protocol (FTP).

Numbers from 1024 to 49151 can be registered by organizations for specific applications. If an entity registers a port number or numbers for an application, the organization will use that number and advise end users to open the port or ports on their firewall to allow the use of this application. Companies can allow their products to dynamically select available ports from a range of numbers in this category. The entity must then instruct end users to allow communication on these ports to traverse their firewall.

Numbers from 49152 through 65535 can be dynamically assigned by end points, but can not be reserved for any specific application. Once again, an organization that uses ports from this group must advise the end user of the range of ports the firewall should hold open.

TCP vs. UDP

TCP is a transport layer (Layer 4) protocol that incorporates the acknowledgement of received packets and the retransmission of lost packets. This adds latency to the end-to-end communication, but insures the integrity of the transaction. UDP does not provide for either packet acknowledgement or retransmission within the transaction layer. The application can make provision for verification and retransmission. UDP, while less reliable, is faster.

The ports discussed above can be used for either TCP or UDP packet transmissions.

Well Known Port Numbers Used in Videoconferencing

Port	Type	Protocol	Application	Manufacturer
21	Static	TCP	File Transfer Protocol for endpoint software upgrades (must be bi-directional)	Polycom and Tandberg
23	Static	TCP & UDP	Telnet (must be bi-directional)	Polycom, Sony, Tandberg
80	Static	TCP	Hypertext Transfer Protocol (HTTP) - web browser interface for codec control and menus	Polycom, Sony, Tandberg
161	Static	UDP	Simple Network Management Protocol (SNMP) Queries	Tandberg
389	Static	TCP	Lightweight Directory Access Protocol (LDAP) – ILS registration	Polycom
962	Static	UDP	Simple Network Management Protocol (SNMP) Traps	Tandberg
963	Static	TCP	This port is not assigned, but Tandberg uses it for Netlog	Tandberg
964	Static	TCP	This port is not assigned, but Tandberg uses it for FTP/data	Tandberg
965	Static	TCP	This port is not assigned, but Tandberg uses it for VNC	Tandberg
970	Static	UDP	This port is not assigned, but Tandberg uses it for Real-time Transport Protocol (RTP) for streaming video	Tandberg
971	Static	UDP	This port is not assigned, but Tandberg uses it for Real-time Transport Control Protocol (RTCP) for streaming video	Tandberg
972	Static	UDP	This port is not assigned, but Tandberg uses it for Real-time Transport Protocol (RTP) for streaming audio	Tandberg
973	Static	UDP	This port is not assigned, but Tandberg uses it for Real-time Transport Control Protocol (RTCP) for streaming audio	Tandberg
974	Static	UDP	This port is not assigned, but Tandberg uses it for SAP	Tandberg
1002	Static	UDP	This port is not assigned, but Vcon uses it for Lightweight Directory Access Protocol (LDAP) – ILS registration	Vcon

Registered Port Numbers Used in Videoconferencing

Range	Type	Protocol	Application	Manufacturer
1300	Static	TCP & UDP	This port is registered to Intel and is used to secure a H.323 host call – h 323hostcsllsc (must be bi-directional)	Polycom
1503	Static	TCP	This port is registered to Databeam and is used for T.120 file sharing	Polycom, Sony, Tandberg and Vcon
1718	Static	TCP & UDP	This port is registered to Intel and is used to secure a H.323 host call – h 323gatedisc (must be bi-directional)	Polycom, Sony, and Vcon

1719	**Static**	**TCP & UDP**	**This port is registered to Intel and is used foe gatekeeper RAS – h 323gatestat (must be bi-directional)**	**Polycom, Sony, Tandberg and Vcon**
1720	**Static**	**TCP & UDP**	**This port is registered to Intel and is used to establish a H.323 host call using Q.931 call setup – h 323hostcall (must be bi-directional)**	**Polycom, Sony, Tandberg and Vcon**
1731	**Static**	**TCP & UDP**	**Audio call control –msiccp – for VoIP**	**Polycom**
1024 - 65535				**Vcon**
1024 - 65535				
2253 - 2255	**Dynamic**		**Sony uses an available port in this range for the exchange of H.245 call parameters. (Also known as RTCP)**	**Sony**
2326 - 2373	**Dynamic**	**UDP**	**Tandberg uses an available port in this range for video data streams**	**Tandberg**
2326 - 2373	**Dynamic**	**UDP**	**Tandberg uses an available port in this range for audio data streams**	**Tandberg**
2326 - 2373	**Dynamic**	**UDP**	**Tandberg uses an available port in this range for data transfers and Far End Camera Control - FECC**	**Tandberg**
2979	**Static**	**TCP & UDP**	**This port is registered to ACM for H.263 Video Streaming**	**Polycom**
3230 - 3247	**Dynamic**	**UDP**	**Polycom uses an available ports in this range for audio and video**	**Polycom**
3230 - 3235	**Dynamic**	**UDP**	**Polycom uses an available port in this range for the exchange of H.245 call parameters. (Also known as RTCP)**	**Polycom**
5004 - 6004	**Dynamic**	**TCP**	**There is no registered port for this application, Vcon uses an available port for H.245 (Call Parameters)**	**Vcon**
5004 - 6004	**Dynamic**	**UDP**	**There is no registered port for this application, Vcon uses an available port for Real-time Transport Protocol (RTP) for streaming video.**	**Vcon**
5004 - 6004	**Dynamic**	**UDP**	**There is no registered port for this application, Vcon uses an available port for Real-time Transport Protocol (RTP) for streaming audio.**	**Vcon**
5004 - 6004	**Dynamic**	**UDP**	**There is no registered port for this application, Vcon uses an available port for Real-time Transport Control Protocol (RTCP) for streaming video and audio.**	**Vcon**
5555-5556	**Dynamic**	**TCP**	**Q.931 Call setup**	**Tandberg**
11720	**Static**	**TCP & UDP**	**This port is registered to Cisco and is used as an alternative for call set-up – h 323hostcallsigalt (must be bi-directional)**	**Polycom**
22136	**Static**	**TCP**	**There is no registered port for this application, Vcon uses an available port for remote Vcon endpoint administration**	**Vcon**
26505	**Static**	**TCP**	**There is no registered port for this application, Vcon uses an available port for**	**Vcon**

			Remote Console	

Other Port Numbers Used in Videoconferencing

Range	Type	Protocol	Application	Man.
49152 - 49159	**Dynamic**	**UDP**	**Sony uses this range of ports for audio and video data streams**	**Sony**
49152 - 49239	**Dynamic**	**UDP**	**Sony uses this range of ports for multipoint**	**Sony**

Polycom

PORT	TYPE	PROTOCOL	DESCRIPTION
224.0.1.41:1718	Static	TCP & UDP	h323gatedisc (must be bi-directional)
1719	Static	TCP & UDP	h323gatestat Gatekeeper RAS (must be bi-directional)
1720	Static	TCP & UDP	h323hostcall Q.931 (Call Setup) (must be bi-directional)
1731	Static	TCP & UDP	msiccp Audio Call Control (VoIP)
3230 - 3247	Dynamic	UDP	Audio and Video (must be bidirectional)
3230 - 3235	Dynamic	TCP	H.245 call control: aka RTCP (must be bidirectional)
Other:			
PORT	**TYPE**	**PROTOCOL**	**DESCRIPTION**
21	Static	TCP	FTP allows upgrade of endpoint software (must be bidirectional)
23	Static	TCP	Telnet (must be bidirectional)
80	Static	TCP	Web browser interface to codec controls and menus
389	Static	TCP	ILS Registration (LDAP)
1300	Static	TCP & UDP	h323hostcsllsc H323 Host Call Secure
1503	Static	TCP & UDP	T.120 (Data Channel in a multipoint)
2979	Static	TCP & UDP	H.263 Video Streaming
11720	Static	TCP & UDP	h323callsigalt H.323 Call Signal Alternate

Sony PCS – X

PORT	TYPE	PROTOCOL	DESCRIPTION
1718	Static	TCP	h323gatedisc (must be bi-directional)
1719	Static	TCP	h323gatestat
1720	Static	TCP	H323hostcall
2253 - 2255	Dynamic	TCP	H.245(Call Parameters)
49152- 49159	Dynamic	UDP (RTP/RTCP)	Audio & Video Data Streams
49152 - 49239	Dynamic	UDP	Multipoint

Tandberg

PORT	TYPE	PROTOCOL	DESCRIPTION
1719	Static	UDP	Gatekeeper RAS
1720	Static	TCP	Q.931 (Call Setup)
5555 - 5556	Dynamic	TCP	H.245(Call Parameters)
2326- 2373	Dynamic	UDP	Video Data Streams
2326- 2373	Dynamic	UDP	Audio Data Streams
2326- 2373	Dynamic	UDP	Data/FECC
21	Static	TCP	FTP

23	Static	TCP & UDP	Telnet & NTP listening socket
80	Static	TCP	HTTP
123	Static	UDP	NTP
161	Static	UDP	SNMP (Queries)
962	Static	UDP	SNMP (Traps)
963	Static	TCP	Netlog
964	Static	TCP	FTP/data
965	Static	TCP	VNC
970	Static	UDP	Streaming/RTP Video
971	Static	UDP	Streaming/RTCP Video
972	Static	UDP	Streaming/RTP Audio
973	Static	UDP	Streaming/RTCP Audio
974	Static	UDP	SAP (Stream is directed to 224.2.127.254:9875)

Vcon

PORT	**TYPE**	**PROTOCOL**	**DESCRIPTION**
1718	Static	UDP	h323gatedisc (must be bi-directional)
1719	Static	UDP	Gatekeeper RAS
1720	Static	TCP	Q.931 (Call Setup)
5004 - 6004	Dynamic	TCP	H.245(Call Parameters)
5004 - 6004	Dynamic	UDP (RTP)	Video Data Streams
5004 - 6004	Dynamic	UDP (RTP)	Audio Data Streams
5004 - 6004	Dynamic	UDP (RTCP)	Control Information
Optional:			
PORT	**TYPE**	**PROTOCOL**	**DESCRIPTION**
389	Static	TCP	ILS Registration (LDAP)
1002	Static	TCP	Site Server Registration (Windows 2000 Built-in LDAP)
1503	Static	TCP	T.120 (Data Channel)
22136	Static	TCP	VCON MXM - Remote VCON Endpoint Admin
26505	Static	TCP	VCON MXM - Remote Console