



Cisco Remote Expert Manager Port Usage Guide

Release 1.9.5

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Overview

This document provides a list of the TCP and UDP ports that Cisco Remote Expert Manager (REM) release 1.9.5 uses for intra cluster connections and for communications with external applications. It provides important information for the configuration of firewalls and Access Control Lists (ACLs) on a network when an IP communications solution is implemented.

Topics in this guide include:

- [Introduction, page 1](#)
- [Port Descriptions, page 2](#)
- [Other Port Usage Guides, page 7](#)
- [Glossary and Acronyms, page 7](#)

Introduction

This document organizes the REM TCP and UDP ports into the following categories:

- Intra cluster ports between REM servers
- Inter REM component communications
- Web requests between the IEM/IEC and REM
- REM communications with Unified Communications (UC) components
- REM communications with external applications

Port Descriptions

Table 1 *Intra Cluster Ports Used Between REM Servers*

From (Sender)	To (Listener)	Destination Port	Purpose
REM server (RESC)	REM server (RESC)	5701 (TCP)	Inter cluster communication to support distributed cache
REM server (DB client)	REM server (PostgreSQL server)	5432 (TCP)	Database communication between application server/script and DB server
REM server (HA-JDBC)	REM server (HA-JDBC)	7800 (TCP)	Inter cluster communicate to support DB synchronization in REM HA deployment
REM server (IAS/rsync)	REM server (SSH)	22 (TCP)	Sync up of files between the cluster nodes and copying of auto generated files by IAS tool
REM server (REAC)	REM server (HA-JDBC)	(TCP) If you do not have preferences and restrictions from your network's firewall, you can use the default values in the REM Properties file. However, if you have some concerns or issues, you should specify the port numbers configured in your firewall. For example, in Cisco's production environment, 9325 is assigned for the JMX_RMI_PORT and 9990 is assigned for the JMX_PORT.	REAC makes a JMX over RMI call to fetch the DB cluster information on both the REM servers

Table 2 *Inter REM Component Communications*

From (Sender)	To (Listener)	Destination Port	Purpose
IEC (REIC)	REM server (RESC)	8443 (TCP)	REIC web services communication with RESC
CAD / Browser (READ/eREAD)	REM server (READ)	8443 (TCP)	READ /eREAD JSON communication between UI and backend
REM server (READ)	REM server (RESC)	1196, 1197, 1198, 1199 (TCP)	RMI communication between READ backend and RESC on the same VM
REM server (REAC)	REM server (RESC)	8443 (TCP)	Web services communication between REAC backend and RESC
Browser (REAC UI)	REM server (REAC)	8443 (TCP)	REAC UI communication with REAC backend
REM server (REAC)	REM server (RESC)	9990 (TCP)	REAC connects to JMX for HA-JDBC cluster health. Please refer to the limitation section.
REM server (Tomcat)	REM server (Tomcat)	8005 (TCP)	Internal listening port used by Tomcat shutdown scripts
REM server (Tomcat)	REM server (Tomcat)	8009 (TCP)	AJP 1.3 Connector Tomcat

Table 3 *Listening Ports on the IEM*

From (Sender)	To (Listener)	Destination Port	Purpose
REM server (RESC)	IEM (Application server)	443 (TCP)	RESC to IEM to initiate IEC reboot
REM server (REAC)	IEM (Application server)	443 (TCP)	REAC to IEM to initiate IEC reboot

From (Sender)	To (Listener)	Destination Port	Purpose
Administrator's laptop (SSH client)	IEM (SSH server)	22 (TCP)	Configuration and monitoring of logs by Administrator or Deployment engineer
	IEM	25 (TCP)	SendMail for IEM Email notification
	IEM (Web server)	80 (TCP)	HTTPS redirect to 443. It is open for backward compatibility support for older versions of the IEC firmware.
Administrator's laptop (Browser)	IEM (Application server)	443 (TCP)	To access IEM Administration console
IEM (Application server)	IEM (PostgreSQL)	5432 (TCP)	DB communication with Application server
IEM	NTP server	199 (UDP)	IEM time synchronization via NTP
		123 (UDP)	
	IEM	36680 (TCP)	On-Demand service
SNMP client	IEM (SNMP MIB)	161 (UDP)	This is to provide IT OPs monitoring of the IEM service

Table 4 *Listening Ports on the IECs*

From (Sender)	To (Listener)	Destination Port	Purpose
	IEC	21 (TCP)	FTP server in IEC
	IEC (Web server)	80 (TCP)	Web Server API to query IEC parameters
Administrator's laptop (SSH client)	IEC (SSH server)	2396 (TCP)	Administration purpose: SSH connection to IEC
	IEC	111 (TCP)	
Administrator's laptop (VNC client)	IEC (VNC server)	5980 (TCP)	For Remote Monitoring and Management via VNC login
		5950 (TCP)	
	IEC (Sane layer)	6566 (TCP)	Scanner support
IEM	IEC	36680 (TCP)	On-Demand service
SNMP client	IEC (SNMP MIB)	161 (UDP)	This is to provide IT OPs monitoring of the IEC service
IEC	IEM (NTP server)	123 (UDP)	NTP server for IEC

From (Sender)	To (Listener)	Destination Port	Purpose
CUCM /SIP endpoint	IEC (SIP widget)	5060 / 5061 (TCP or UDP)	SIP signaling
SIP endpoint	IEC (SIP widget)	16384 - 32767 (UDP)	Video and voice data between SIP endpoints over RTP

Table 5 REM Communications with UC Components

From (Sender)	To (Listener)	Destination Port	Purpose
CUCM (CTI server)	REM server (RESC)	2789 (TCP)	Port through which JTAPI parameter changes are communicated to JTAPI applications during runtime
REM server (REAC)	CUCM	8443 (TCP)	Serviceability and Extension mobility
UCCX (IVR script)	REM (RESC)	8443 (TCP)	UCCX script invokes RESC web services
REM server (RESC)	CUCM (CTI server)	2748 (TCP)	JTAPI monitoring

Table 6 REM Communications with Agents' Laptops

From (Sender)	To (Listener)	Destination Port	Purpose
IEC (REIC)	Agent's laptop (DC server)	8080 (TCP)	Agent desktop sharing that requires support for long running HTTP connections
Agent's laptop (DC server)	Agent's laptop (DC server)	8005 (TCP)	Internal listening port used by Tomcat shutdown scripts
Agent's laptop (DC client)	Agent's laptop (DC server)	8082 (TCP)	For the communication between DC client and DC server

Table 7 REM Communications with External Applications

From (Sender)	To (Listener)	Destination Port	Purpose
REM server	NTP server	123 (UDP)	Network Time Protocol (NTP)
REM server (REAC)	REM server (Licensing)	8443 (TCP)	REAC invokes IEP Licensing server API to check in/check out licenses

From (Sender)	To (Listener)	Destination Port	Purpose
REM server (RESC)	CTS endpoints	ICMP messages	RESC checks if CTS endpoints are reachable over ICMP
REM server (REAC UI QuickTime player)	MS	554 (TCP)	REAC QuickTime plugin streams RTSP Media from Media Sense server
REM server (REAC UI QuickTime player)	MS	80 (TCP)	REAC QuickTime plugin does HTTPS Streaming from Media Sense server
REM server (REIC)	Content server	Depends upon the content server port (check with the customer)	URL configured in READ for dual content
REM server (REAC)	MS	8440 (TCP)	REAC invokes restful MS API
REM server (Reporting tool/Backup script)	Mail Server	25 (TCP)	Reporting tool sends report over configured mail. Backup scripts sends notification to the Administrator.
REM server (Backup scripts)	Remote SSH server for backup of data	22 (TCP)	Backup scripts uploads scheduled data and config snapshot to a remote SSH server
Direct Connect Client	REM server (RESC)	80 (TCP)	DC client invokes web services to inform DC session share started by the expert
Camera Snapshot too	REM server (RESC)	8443 (TCP)	Camera Snapshot tool invokes web services to get the multicast port to subscribe to the document camera video feed

From (Sender)	To (Listener)	Destination Port	Purpose
SNMP client	REM server (SNMP)	161 (UDP) 199 (TCP)	Utilizes SNMP to provide operations support for host resources and process health
REM server	REM server	22 (TCP)	Runs the SSH-2 server that provides an administrator a jailed TUI-based set of controls for install and maintenance of an REM instance

**Note**

For DirectConnect, you may need to do additional antivirus/firewall configuration, such as whitelisting the PureWeb Server / Sharing Application and/or modifying the IP addresses/domains to which communication is allowed.

**Note**

Please use the following link to identify the ports that are applicable to stream video from AMS to the Branch (REIC) or Agent's Laptop (READ/EREAD) based on streaming protocol configured in REAC: <http://helpx.adobe.com/adobe-media-server/kb/ports-firewalls-flash-media-server.html>

Other Port Usage Guides

Consult the following port usage guides:

- Cisco UCM Port Usage Guide:
http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/port/9_1_1/CUCM_BK_T2CA6EDE_00_tcp-port-usage-guide-91_chapter_01.html
- Cisco UCCX port utilization guide:
http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/crs/express_9_0/configuration/guide/UCCX_BK_P794631C_00_port-utilization-guide-uccx-901.html

Glossary and Acronyms

CTI - Computer Telephony Integration. Provides a link between telephone systems and computers to facilitate incoming and outgoing call handling and control; the physical link between a telephone and server.

CTS - Cisco Telepresence System

CVP - Cisco Voice Portal

DC - Direct Connect

IVR - Interactive Voice Response

JTAPI - Java Telephony Application Program Interface. Sun Microsystems telephony programming interface for Java. It provides a set of classes and interfaces that provide access to call control and telephony device control as well as media and administrative services.

MS - Media Sense

NTP - Network Time Protocol

REAC - Remote Expert Admin Console

READ - Remote Expert Agent Desktop

REIC - Remote Expert Interactive Controller

REM - Remote Expert Manager

RESC - Remote Expert Session Controller

SNMP - Simple Network Management Protocol

SSH-2 - Secure Shell version 2

UCCE - Unified Contact Center Enterprise

UCCX - Unified Contact Center Express