Cisco Unified Wireless Network (CUWN) Protocol & Port Matrix

Version 3.0
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Introduction

This paper documents protocols and port numbers used across the entire product series as they interact in a comprehensive CUWN deployment. This information is based on software version 6.0 series code release train. This information is not meant to replace or supersede specific product documentation found in existing configuration guides, but only as a consolidated listing of information available at the time this document was created.

Background

The main purpose of this document was the necessity to provide customers with a consolidated listing of communication protocols that incorporate a CUWN solution. Customer's goals are to implement appropriate firewall and security policies based on this information to properly secure the CUWN infrastructure.

Network Overview

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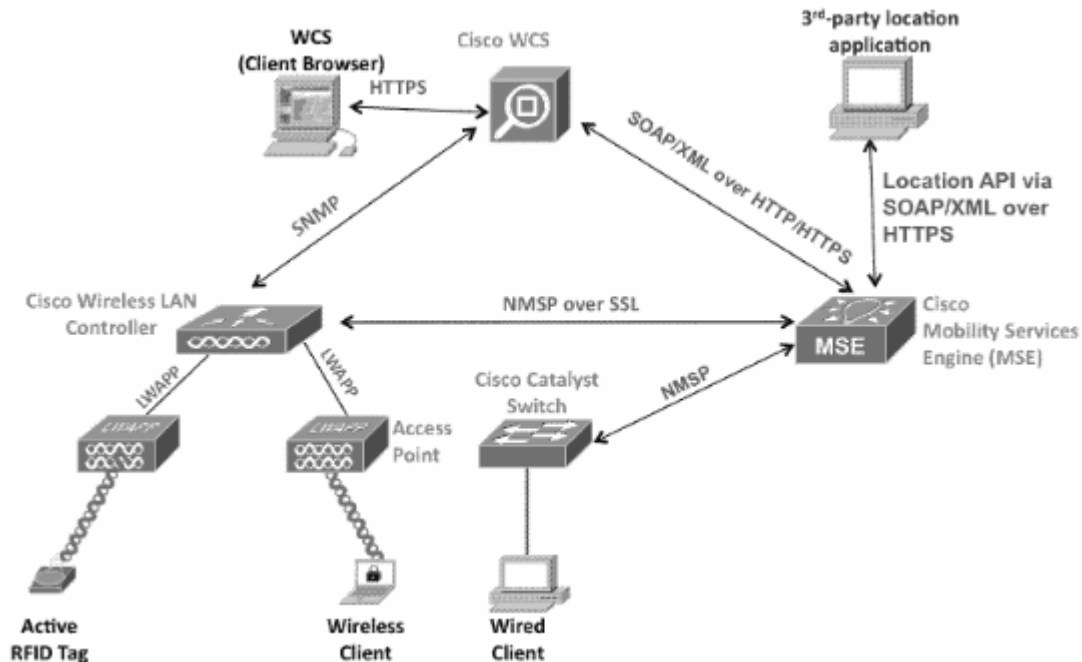
Table of Contents:

Table 1 – WCS Protocols & Ports:

WCS Protocols				
Source Device	**Destination Device**	**Protocol**	**Destination Port**	**Description**
WCS	WLC & MSE	TCP	21	FTP - Used to transfer files to/from devices
Various Management Stations	WCS Host Server OS-Linux	TCP	22	SSH - Used for remote Linux Host Access
AAA Servers	WCS	TCP / UDP	49	TACACS+
WLC	WCS	UDP	69	TFTP - Used to transfer files to/from devices
Various Management Stations	WCS	TCP	80	HTTP (Configurable at install time)
NTP Server	WLC	UDP	123	NTP
WLC & MSE	WCS	UDP	161	SNMP
WLC & MSE	WCS	UDP	162	SNMP Trap Receiver
Various Management Stations	WCS	TCP	443	HTTPS (Configurable at install time)
MSE	WCS	TCP	443	SOAP/XML (Simple Object Access Protocol Used for MSE Management
WLC	WCS	UDP	514	Syslog (Optional)
Local only	WCS	TCP	1299	RMI Registry port (local only)
Various & HA Server	WCS	TCP	1315	Database Server HA(QOS)
WCS HA Server	WCS	TCP	1316-1320	HA DB Ports
AAA Servers	WCS	UDP	1812 / 1645	Radius
AAA Servers	WCS	UDP	1813 / 1646	Radius
Various Management Stations	WCS Host Server OS-Windows	TCP / UDP	3389	RDP - Windows Remote Desktop (Optional)
Various	WCS	TCP	5001	Apache Axis SOAP Monitoring: Java Listener
Various Management Stations	WCS Host Server OS-Windows	TCP	5500	VNC - (Optional) Used for remote Windows Host Access
Various Management Stations	WCS Host Server OS-Windows	TCP	5800	VNC - (Optional) Used for remote Windows Host Access

Various Management Stations	WCS Host Server OS-Windows	TCP / UDP	5900	VNC - (Optional) Used for remote Windows Host Access
Local only	WCS	TCP	6789	RmiServer Port (local only)
MSE-Location Appliance	WCS	TCP	8001	Location Server Data Sync. Communication Port
Local only	WCS	TCP	8005	Tomcat Shutdown Port
Local only	WCS	TCP	8009	Web Server / Java Server Connector (local only)
HA Web Server	WCS	TCP	8082	HA Web Server Port: Health Monitor for WCS HA
Various Management Stations	WCS	TCP	8456	HTTP Connector
Various Management Stations	WCS	TCP	8457	HTTP Redirect
Various Management Stations	WCS	TCP	16113	LOCP TLS Port
WLC	WCS	UDP	29001-29005	TFTP Child threads
Various	AP	ICMP		ICMP - Optional

Table 2 – MSE – AwIPS Protocols:

MSE - AwIPS Protocols				
Source Device	Destination Device	Protocol	Destination Port	Description
WCS	MSE	TCP	21	FTP - Used to transfer files to/from devices
Various Management Stations	MSE Host Server OS-Linux	TCP	22	SSH - Used for remote Linux Host Access
WCS	MSE	TCP	80	HTTP (Configurable at install time)
NTP Server	WLC	UDP	123	NTP
WCS	MSE	UDP	161	SNMP
MSE	WCS	UDP	162	SNMP Trap Receiver
WCS	MSE	TCP	443	HTTPS (Configurable at install time)
WCS	MSE	TCP	443	SOAP/XML (Simple Object Access Protocol
WCS	MSE	TCP	8001	HTTPS (Configurable at install time)
WLC	MSE & Spectrum Expert	TCP	16113	NMSP (Network Mobility Services Protocol)
Various	AP	ICMP		ICMP - Optional

Table 3 – MSE – Context Protocols:

MSE - Context Protocols				
Source Device	**Destination Device**	**Protocol**	**Destination Port**	**Description**
WCS	MSE	TCP	21	FTP - Used to transfer files to/from devices
Various Management Stations	MSE Host Server OS-Linux	TCP	22	SSH - Used for remote Linux Host Access
WCS	MSE	TCP	80	HTTP (Configurable at install time)
NTP Server	WLC	UDP	123	NTP
WCS	MSE	UDP	161	SNMP
MSE	WCS	UDP	162	SNMP Trap Receiver
WCS	MSE	TCP	443	HTTPS (Configurable at install time)
WCS	MSE	TCP	443	SOAP/XML (Simple Object Access Protocol
WCS	MSE	TCP	8001	HTTPS (Configurable at install time)
WLC & Catalyst LAN Switches	MSE & Spectrum Expert	TCP	16113	NMSP (Network Mobility Services Protocol)
Various	AP	ICMP		ICMP - Optional

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Table 4 – WLC Protocols:

WLC Protocols				
Source Device	**Destination Device**	**Protocol**	**Destination Port**	**Description**
WCS	WLC	TCP	21	FTP - Used to transfer files to/from devices
WCS & Various Management Stations	WLC	TCP	22	SSH - Used for remote Management (optional)
WCS & Various Management Stations	WLC	TCP	23	Telnet - Used for remote Management (optional)
AAA Servers	WLC	TCP / UDP	49	TACACS+
WCS & Various Management Stations	WLC	UDP	69	TFTP - Used to transfer files to/from devices
Various Management Stations	WLC	TCP	80	HTTP (Configurable at install time)
WLC	WLC	TCP	91	
WLC Mobility Group members	WLC	IP	97	EoIP Tunnel - Client Anchor/Tunneling traffic
NTP Server	WLC	UDP	123	NTP
WCS	WLC	UDP	161	SNMP
WCS	WLC	UDP	162	SNMP Trap Receiver
Various Management Stations	WLC	TCP	443	HTTPS (Configurable at install time)
WLC & Various Syslog Servers	WLC	UDP	514	Syslog (Optional)
AAA Servers	WLC	UDP	1812 / 1645	Radius
AAA Servers	WLC	UDP	1813 / 1646	Radius
Various Management Stations (MSE, Spectrum Expert)	WLC	TCP	16113	LOCP TLS Port NMSP (Network Mobility Services Protocol)
WLC	WLC	UDP	16666	Mobility - non-secured
WLC	WLC	UDP	16667	Mobility - secured
AP	WLC	UDP	5246-5247	CAPWAP
AP	WLC	UDP	12222-12223	LWAPP
Various	AP	ICMP		ICMP - Optional

Table 5 – AP Protocols:

Source Device	Destination Device	Protocols	Destination Port	Description
Various	AP	UDP	69	TFTP - used for remote code update
Various	AP	TCP	22	SSH - used for optional remote troubleshooting access. Can be administratively disabled.
Various	AP	TCP	23	Telnet - used for optional remote troubleshooting access. Can be administratively disabled.
AP	DNS Server	TCP / UDP	53	DNS
AP	DHCP Server	UDP	68	DHCP
AP	Various	UDP	514	Syslog - Destination configurable. Default is 255.255.255.255
WLC	AP	UDP	5246-5247	CAPWAP - Control and Data plane as well as DTLS
WLC	AP	UDP	12222-12223	LWAPP
AP	Monitor PC	TCP	37540 for 2.4 GHz 37550 for 5GHz	Network Spectrum Interface (NSI) Protocol for SE-Connect
Various	AP	ICMP		ICMP - Optional