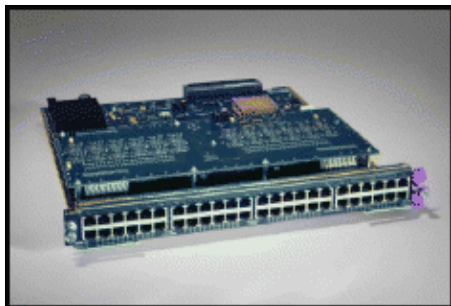


WS-X6348-RJ45V: 48 Port IP Phone Ethernet In-Line Power Blade for Catalyst 6500/6000 Series Switches

Document ID: 8013

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Introduction



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The Inline Power 10/100BaseT Ethernet switching module enables the Catalyst® 6500/6000 family to be the first platform of the industry that can support new Fast Ethernet features necessary for campus network convergence. You can use this module to supply inline power for Cisco IP Phones and Cisco Wireless Access Points.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

This document is not restricted to specific software and hardware versions.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Order Information

- **Product Number** WS-X6348-RJ45V

Description Catalyst 6500/6000 Inline Power 10/100 BaseT Switching Module

- **Product Number** WS-X6348-RJ-45

Description Catalyst 6500/6000 48-port 10/100 RJ-45, upgradable to Inline Power

- **Product Number** WS-F6K-VPWR=

Description Catalyst 6500/6000 Inline Power Upgrade Module for WS-X6348-RJ-45

Features

- **48 ports 10/100BaseTX per module (RJ-45)** The module has up to 384 10/100 Fast Ethernet ports per Catalyst 6500/6000 family switch.
- **Inline power** 48-volt DC power is provided over standard Category 5 unshielded twisted-pair (UTP) cable up to 100 meters.
- **Phone discovery** The Catalyst 6500/6000 family switch automatically detects the presence of an IP phone and supplies inline power. The phone discovery mechanism is intelligent enough to differentiate between an IP phone and a Network Interface Card (NIC). The phone discovery mechanism also does not supply inline power to a NIC or other device not designed to use inline power. Inline-powered devices that support CDP version 2 provide the power-supplying switch port with details on their power consumption level. This allows the switch to more accurately perform power accounting between the total load and the available power reserves. Inline-powered devices that do not support CDP, or devices that connect to ports where CDP is disabled, are allocated a nominal power consumption value of 7 watts for purposes of power accounting.
- **Phone discovery** The Catalyst 6500/6000 family switch automatically detects the presence of an IP phone and supplies inline power. The phone discovery mechanism is intelligent enough to differentiate between an IP phone and a Network Interface Card (NIC). The phone discovery mechanism does not supply inline power to a NIC or other device not designed to use inline power. But it does not work if Cisco Discovery Protocol (CDP) is disabled. This uses CDP version 2.
- **Auxiliary VLAN through 802.1Q** The Catalyst 6500/6000 family switch automatically segments phones and data endpoints into separate logical networks.
- The module offers support for the IEEE 802.3u autonegotiation process that allows the switch to negotiate speed (10 or 100 Mbps) or duplex mode (half or full duplex) with an attached device.
- **Capacity of up to eight modules per platform** These modules require one slot, they can be "mixed and matched" with other switching modules, and they can be hot-swapped or added as necessary without the interruption of the Catalyst 6500/6000 family switch. A maximum of 8 x 48 = 384 10/100 Fast Ethernet ports are supported.

- Superior traffic management, with large per-interface buffers and multiple priority queues.
- Support for multiple active MAC addresses (up to 32,000) on a switching port. You can also dynamically allocate the addresses to any port.
- **Spanning-tree algorithm on logical VLANs for fault-tolerant connectivity** These modules can support up to 1000 VLANs.
- The module provides extensive management tools with the use of Simple Network Management Protocol (SNMP) platforms such as CiscoWorks for Switched Internetworks.
- **Four remote monitoring (RMON) groups** Statistics, history, alarms, and events are supported in hardware.

Specifications

Standard Network Protocols:

- Ethernet: IEEE 802.3, 10 BaseT
- Fast Ethernet IEEE 802.3u, 100 BaseTX

Note: WS-X6148-RJ45V is a 48-port 10/100 module which has all the features supported by WS-X6348-RJ-45, which supports both Cisco Pre Standard PoE (with help of the daughter card WS-F6K-VPWR) and IEEE 802.3af PoE (with help of the daughter card WS-X6148-45AF-UG). Refer to the Cisco Catalyst 6500 Series 10/100- & 10/100/1000-MBPS Ethernet Interface Modules data sheet for more information. The minimum software that supports WS-X6148-RJ-45 is 7.2(2) in Cisco Catalyst OS (CatOS) and 12.1(11b)EX1 in Cisco IOS® Software.

Physical Specifications

- Occupies one slot in the Catalyst 6500/6000 family platform
- Dimensions (H x W x D): 1.2 x 14.4 x 16 in. (3.0 x 35.6 x 40.6 cm)

Environmental Conditions

- **Operating temperature** 32 to 104° F (0 to 40° C)
- **Storage temperature** -40 to 167° F (-40 to 75° C)
- **Relative humidity** 0 to 90 percent, noncondensing
- **Operating altitude** -60 to 4000m

Safety Compliance

- UL 1950
- CSA-C22.2 No. 950
- EN 60950
- IEC 950
- AS/NZS 3260

EMC Compliance

- FCC Part 15 (CFR 47) Class A
- VCCI Class A with unshielded twisted pair (UTP), Class B with foil twisted pair (FTP)
- EN55022 Class A with UTP, Class B with FTP
- CISPR 22 Class A with UTP, Class B with FTP
- CE marking

- AS/NZS 3548 Class A with UTP, Class B with FTP

Frame Process

- Transparent bridging (802.1d)

Inline Power Specifications

- **Output power per port** 8-volt DC power
- **Pin assignment** j, 2, 3, 6

Maximum Station-to-Station Cabling Distance

- **10/100BaseTX Fast Ethernet: Category 5 UTP: 328 ft (100 m), 100-ohm STP** 28 ft (100 m) half or full duplex

Indicators and Interfaces

- **Status** green (operational)/red (faulty)/orange (module **booting** or **running** diagnostics)
- **Link good** Green (port active)/orange (disabled)/off (not active/connected)/blinking orange (failed diagnostic and disabled)
- **Max power** Off (max power condition not reached; on (max power condition reached—no more phones will receive inline power from this module)
- **10/100 BaseTX** RJ-45 (female)

Network Management

- ETHERLIKE-MIB (RFC 1643)
- IF-MIB (RFC 1573)
- Bridge MIB (RFC 1493)
- CISCO-STACK-MIB
- CISCO-VTP-MIB
- CISCO-CDP-MIB
- RMON MIB (RFC 1757)
- CISCO-PAGP-MIB
- CISCO-STP-Extensions-MIB
- CISCO-VLAN-Bridge-MIB
- CISCO-VLAN-Membership-MIB
- CISCO-UDLDP-MIB
- CISCO-ENTITY-FRU-CONTROL-MIB
- CISCO-COPS-CLIENT-MIB
- ENTITY-MIB (RFC 2037)
- HC-RMON
- RFC1213-MIB (MIB-II)
- SMON-MIB

Known Issues

- When a Catalyst 6000 switch runs CatOS release 6.1(1) or 6.1(2), the Voice Health Monitor (VHM) does not recognize the WS-X6348-RJ45V cards as Inline Power Cards. In order to fix this problem, upgrade the Catalyst 6000 NMP card CatOS to release 6.1(3).

- WS-X6348-RJ-45 does not support these commands at the interface level:

- ◆ **mls qos trust dscp**
- ◆ **mls qos trust ip-precedence**

WS-X6348-RJ-45 allows the **mls qos trust cos** command. This command does not cause incoming Class of Service (COS) to be trusted. It only enables RX drop thresholds (a warning is issued). You need to issue the **trust cos** command in order to apply a policy map if you want the COS to be trusted.

Refer to Cisco bug ID CSCec30649 (registered customers only) for more information.

- When you perform an online insertion or removal of a standby Supervisor Engine or a WS-X6348-RJ-45 10/100 module while there is traffic present on the system. The problem manifests itself with a system reset and this error message:

```
Cat6509> (enable) 2000 Mar 30 17:28:47 %SYS-5-MOD_REMOVE:
Module 16 has been removed

2000 Mar 30 17:28:47 %SYS-5-MOD_REMOVE:Module 2 has been removed

cafe2_latte_seq_err_hdlr (Kernel and Idle), Exp:0, Rcv:0 PANIC:
Earl is in panic
```

The workaround is to issue a reset x, where x is the module number of the module to be removed, and then remove the module in slot x. This problem is resolved in CatOS release 5.5(2).

- The WS-X6348-RJ-45 modules reset at random times. The reset occurs at unpredictable times. The fix is found in CatOS releases 6.4(6), 7.6(3), 8.1(2), 8.2(1) and later. The fix is not in Cisco IOS Software Release 12.1(13)E10. Refer to Cisco bug ID CSCeb35612 (registered customers only) for more information.
- The WS-X6348-RJ-45 port cannot come up after the cable is unplugged when it connects to non-Cisco devices. Adjust the negotiation type of the other side in order to solve this issue. Refer to Cisco bug ID CSCef54753 (registered customers only) for more information.

Configuration

Refer to these documents for configuration information:

- Configuring Voice-Over-IP on a Catalyst 6500/6000 Switch
- Catalyst 6500/6000 Module Installation and Verification Note
- Configuring the Catalyst 6500/6000 WS-X6624 FXS Blade with Cisco CallManager 3.0

Platform Support

The WS-X6348-RJ45V requires a minimum of CatOS release 5.5(1) or Cisco IOS Software Release 12.1(13)E.

Related Information

- **Understanding IP Phone In-Line Power Provisioning on the Catalyst 6500/6000 Switch**
- **Interoperability Issue between Mixed Version IP phones, Aironet Access Points, and Line Power Switches Field Notice**
- **Catalyst 6500 Series White Papers**
- **Catalyst Switch Cable, Connector, and AC Power Cord Guide**
- **Understanding the Cisco IP Phone 10/100 Ethernet In-Line Power Detection Algorithm**
- **Voice Technology Support**

- **Voice and Unified Communications Product Support**
 - **Recommended Reading: Troubleshooting Cisco IP Telephony**
 - **Technical Support & Documentation – Cisco Systems**
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Updated: Aug 15, 2006

Document ID: 8013
