National Information Assurance Partnership

TM

Common Criteria Evaluation and Validation Scheme

Validation Report

Cisco System Routers (800, 1700, 1800, 2600XM, 2800, 3700, 3800, 7200, 7300, and 7400) running IOS 12.4(11)T2, 7600 running IOS 12.2(18)SXF8; 10000 and 12000 running 12.0(32)S7 and Cisco Secure ACS version 4.1.2.12

Report Number: **CCEVS-VR-VID6014-2008**
Dated: **February 29, 2008**
Version: **0.95 Final**

National Institute of Standards and Technology
Information Technology Laboratory
100 Bureau Drive
Gaithersburg, Maryland 20878

National Security Agency
Information Assurance Directorate
9600 Savage Road Suite 6757
Fort George G. Meade, MD 20755-6740

Acknowledgements

The TOE evaluation was sponsored by:

Cisco Systems Inc.
170 West Tasman Drive
San Jose, CA 95124-1706
USA

Evaluation Personnel:
Arca Common Criteria Testing Laboratory

Ken Dill
Maria Tadeo
.

Validation Personnel:

Jandria Alexander, The Aerospace Corporation
Robin Medlock, The MITRE Corporation

Table of Contents

1 Executive Summary

This report documents the National Information Assurance Partnership (NIAP) assessment of the evaluation of the Cisco Systems Routers (800, 1700, 1800, 2600XM, 2800, 3700, 3800, 7200, 7300 and 7400) running IOS 12.4(11)T2; 7600 running IOS 12.2(18)SXF8; 10000 and 12000 running 12.0(32)S7 and Cisco Secure ACS version 4.1.2.12. It presents the evaluation results, their justifications, and the conformance results. This Validation Report is not an endorsement of the Target of Evaluation (TOE) by any agency of the U.S. Government and no warranty of the TOE is either expressed or implied.

The evaluation of the Cisco Routers and Cisco ACS was performed by the Arca Common Criteria Testing Laboratory (CCTL) in the United States and was completed during August 2007. The information in this report is largely derived from the Security Target (ST), written by Cisco Systems, Inc. and the Evaluation Technical Report (ETR) and associated Evaluation Team Test Report, both written by Arca CCTL. The evaluation team determined the product to be CC version 2.2 Part 2 and Part 3 conformant, including all Information Technology Security Evaluation Final Interpretations from January 2004 through March 25, 2004, and concluded that the Common Criteria requirements for Evaluation Assurance Level (EAL) 3 have been met.

The TOE is Cisco Systems Routers (800, 1700, 1800, 2600XM, 2800, 3700, 3800, 7200, 7300, 7400, 7600, 10000, 12000) running IOS and a Cisco Secure Access Control Server (ACS). A router is a device that determines the next network point to which a packet should be forwarded toward its destination. The TOE also includes ACS, a software application that provides authentication, authorization, and accounting (AAA) services to network devices that function as AAA clients, including routers. Figure 1 illustrates the TOE and its environment. The TOE includes the Cisco Router the IOS version running on the router (shown by the router in the diagram), Cisco Secure ACS version 4.1.2.12 (ACS 4.1 server in the diagram),

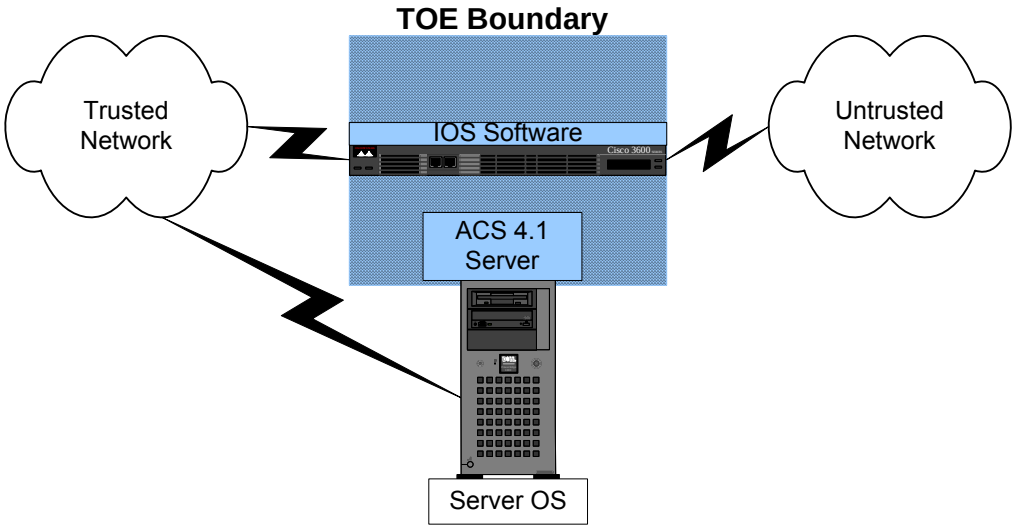

Figure 1: Typical TOE Configuration

A list of the product features that have been evaluated, that have not been evaluated, and that must remain disabled are listed in Section 3.5 Table 2.

The validation team monitored the activities of the evaluation team, provided guidance on technical issues and evaluation processes, reviewed successive versions of the Security Target, reviewed selected evaluation evidence, reviewed test plans, reviewed intermediate evaluation results (i.e., the Common Evaluation Methodology (CEM) work unit verdicts), and reviewed successive versions of the ETR and test report.

The validation team determined that the evaluation team showed that the product satisfies all of the functional and assurance requirements defined in the Security Target for an EAL 3 evaluation. Therefore the validation team concludes that the Arca CCTL findings are accurate, and the conclusions justified.

2 Identification

The CCEVS is a National Security Agency (NSA) effort to establish commercial facilities to perform trusted product evaluations. Under this program, security evaluations are conducted by commercial testing laboratories called Common Criteria Testing Laboratories (CCTLs) or candidate CCTLs using the CEM for EAL 1 through EAL 4 in accordance with National Voluntary Laboratory Assessment Program (NVLAP) accreditation.

The NIAP Validation Body assigns Validators to monitor the CCTLs and candidate CCTLs to ensure quality and consistency across evaluations. Developers of information technology products desiring a security evaluation contract with a CCTL and pay a fee for their product's NIAP's Validated Products List.

Table 1 provides information needed to completely identify the product, including:

- The Target of Evaluation (TOE): the fully qualified identifier of the product as evaluated;
- The Security Target (ST), describing the security features, claims, and assurances of the product;
- The conformance result of the evaluation;
- The organizations and individuals participating in the evaluation.

Table 1: Evaluation Identifiers

Item	Identifier
Evaluation Scheme	United States NIAP Common Criteria Evaluation and Validation Scheme
Target of Evaluation	Cisco Systems Routers (800, 1700, 1800, 2600XM, 2800, 3700, 3800, 7200, 7300 and 7400) running IOS 12.4(11)T2; 7600 running IOS 12.2(18)SXF8; 10000 and 12000 running 12.0(32)S7 running IOS and a Cisco Secure Access Control Server version 4.1.2.12
Security Target	Cisco Systems Routers EAL3 Security Target, Version 1.8, 29 February 2008

Item	Identifier
Evaluation Technical Report	• ASE (Security Target Evaluation): ASE Evaluation Technical Report for Cisco Systems Routers EAL3, document Version 0.8, released February 27, 2007. • ACM (Configuration Management Evaluation): ACM_CAP.3; ACM_SCP.1 Evaluation Technical Report for Cisco Systems Routers EAL3, document Version 0.9, released February 27, 2008. • ALC (Life Cycle Evaluation): ALC_DVS.1; ALC_FLR.1; Evaluation Technical Report for Cisco Systems Routers EAL3, document version 0.7, released February 27, 2008. • ADO (Delivery and Installation Evaluation): ADO_DEL.1; ADO_IGS.1 Evaluation Technical Report for Cisco Systems Routers EAL3, document Version 0.8, released February 27, 2008. • ADV (Development Evaluation): ADV_FSP.1; ADV_HLD.2; ADV_RCR.1; Evaluation Technical Report for Cisco Systems Routers EAL3, document Version 0.9 released February 27, 2008. • AGD (Administrative and User Guidance Evaluation): AGD_ADM.1; AGD_USR.1 Evaluation Technical Report for Cisco Systems Routers EAL3, document Version 0.9, released February 27, 2008. • ATE (Functional Testing, Testing Coverage, Testing Depth and Independent Testing Evaluation): ATE_COV.2; ATE_DPT.1, ATE_FUN.1; ATE_IND.2 Evaluation Technical Report for Cisco Systems Routers EAL3, document Version 0.1, released February 27, 2008. • AVA Vulnerability Assessment Evaluation): AVA_MSU.1; AVA_VLA.1; AVA_SOF.1 Evaluation Technical Report for Cisco Systems Routers EAL3, document Version 0.9, released February 27, 2008
Protection Profile	None
Conformance Result	CC Part 2 and CC Part 3 conformant, EAL 3
Applicable interpretations and precedents	▪ Compliant with all international interpretations with effective dates on or before February 25, 2004.
Sponsor	Cisco Systems Inc. 170 West Tasman Drive San Jose, CA 95124-1706
Common Criteria Testing Lab (CCTL)	SAVVIS Communications Arca Common Criteria Testing Laboratory NVLAP Lab Code 200429 45901 Nokes Boulevard Sterling, VA 20166

Item	Identifier
CCEVS Validator(s)	Jandria Alexander The Aerospace Corporation 6940 Columbia Gateway Drive Columbia, Maryland 21046 Robin Medlock The MITRE Corporation 7515 Colshire Drive McLean, VA 22102

3 Security Policy

3.1 Identification & Authentication (Authentication)

Identification and Authentication provides the method of identifying and authenticating users, including login and password dialog, challenge and response, and messaging support. The router performs authentication, using IOS platform authentication mechanisms, to authenticate access to user exec and privileged exec command modes.

Encryption of the packet body is provided through the use of Terminal Access Controller Access Control System (TACACS+), which is part of Authentication, Authorization, and Accounting (AAA) support. TACACS+ provides ACS-centralized user password authentication for all routers that the ACS manages and is an option that can be installed with ACS. Whenever a user requests some action, the router sends the user name and password to a central server located on the same server as the ACS. The server consults its access control database and either permits or denies the requested action.

3.2 Traffic Filtering

The router restricts remote terminal connectivity, using the router's access-control list functionality, to specific interfaces of the TOE so that sessions will only be accepted from the management station(s) identified in the management session TOE security policy.

Access lists filter network traffic by controlling whether routed packets are forwarded or blocked at the router's interfaces. The router examines each packet to determine whether to forward or drop the packet on the basis of the criteria specified within the access lists. Access list criteria could be the source address of the traffic, the destination address of the traffic, the upper-layer protocol, or other information.

3.3 Traffic Routing

The router examines each packet to determine whether to forward or drop the packet on the basis of the information contained within the routing tables.

Routing algorithms fill the routing tables with a variety of information. Destination/next hop associations tell a router that a particular destination can be reached optimally by sending the packet to a particular router representing the next hop on the way to the final destination. When a

router receives an incoming packet, it checks the destination address and attempts to associate this address with a next hop.

3.4 Security Management/Access Control (Authorization)

The ACS and router allow authorized administrators to add new administrators; start-up and shutdown the device; create, modify, or delete configuration items; modify and set the time and date; and create, delete, empty, and review the audit trail. The ACS, when using TACACS+, allows authentication administrators to modify and set the threshold for the number of permitted consecutive authentication attempt failures, and to restore authentication capabilities for users that have met or exceeded the threshold for permitted consecutive authentication attempt failures.

The TOE router platform maintains privileged and semi-privileged administrator roles. The router performs role-based authorization, using TOE platform authorization mechanisms, to grant access to the semi-privileged and privileged modes.

3.5 Protection of the TSF

The router protects against interference and tampering by untrusted subjects by implementing identification, authentication, and access controls to limit configuration to privileged administrators. Additionally IOS is not a general purpose operating system and access to IOS memory space is restricted to only IOS functions.

The ACS component protects against interference and tampering by untrusted subjects through its own interfaces by implementing identification, authentication, and roles.

Both the router and ACS component ensure that, when data is transmitted between them, security functions to protect the data from packet sniffing are invoked successfully before the data is transmitted.

The Cisco IOS contains a collection of features that build on the core components of the system. These features can be categorized as included in the evaluated configuration, excluded and hence not available in the evaluated configuration, and non-interfering with the TSF. These features are characterized in Table 2.

Table 2: IOS Features Included or Excluded

Feature	Description	Evaluated	Not Permitted	Not Evaluated
AAA	TACACS+ RADIUS (Remote Access Dial-In User Service)	X		
ACL	Access control lists.	X		

Feature	Description	Evaluated	Not Permitted	Not Evaluated
AES	Advanced Encryption Standard	X		
CEF	Cisco Express Forwarding	X		
Certificates and Certificate Server	Not permitted in the evaluated configuration.		X	X
DHCP	Dynamic Host Control Protocol (DHCP) enables you to automatically assign reusable IP addresses to DHCP clients.			X
Firewall	Firewall feature set: Not permitted in the evaluated configuration.		X	X
HSRP	Hot Standby Router Protocol (HSRP): Not permitted in the evaluated configuration.		X	X
HTTP Server	Not permitted in the evaluated configuration.		X	X
IEEE 802.11 Wireless Standards	Not permitted in the evaluated configuration.		X	X
IGMP	Not permitted in the evaluated configuration.		X	X
IPv6	Not permitted in the evaluated configuration.		X	X
MAC address filtering	Not permitted in the evaluated configuration.		X	X
Media Types (non-Ethernet)	Not evaluated: ADSL, ATM, Frame Relay, ISDN, MPLS, PPP, and PPPoE.			X
Mobile IP	Not permitted in the evaluated configuration.		X	X
NAC	Not permitted in the evaluated configuration.		X	X
NAT	Network Address Translation is used by a device (firewall, router or computer) that sits between an internal network and the rest of the world.	X		

Feature	Description	Evaluated	Not Permitted	Not Evaluated
NetFlow	Not evaluated.			X
QoS	Quality of Service features: Not evaluated.			X
Routing and Switching Protocols Disabled	Not permitted in the evaluated configuration: RIP version 1, EIGRP, and STP (Spanning tree protocol).		X	X
Routing Protocols Permitted	RIPv2: Routing Information Protocol (RIP) version 2 OSPF: Open Shortest Path First (OSPF) BGP: Border Gateway Protocol	X		
SSHv1	Not permitted in the evaluated configuration.		X	X
SSHv2	SSH version 2 client and server support.	X		
SLB	Server load balancing: Not evaluated.			X
SNMP	Simple Network Management Protocol (SNMP): Not permitted in the evaluated configuration.		X	X
SPAN	Switched Port Analyzer: Not evaluated.			X
Syslog	Configuration and delivery of SYSLOG messages.	X		
Telnet	Legacy unencrypted protocol for remote administration. Not permitted in the evaluated configuration.		X	X
VLAN	Not permitted in the evaluated configuration.		X	X
VoIP	Not permitted in the evaluated configuration: Voice over IP (VoIP), SIP (Session Initiation Protocol), and H.323.		X	X
VPN	Not permitted in the evaluated configuration: WebVPN, IPSec, IKE, EasyVPN, L2TP(Layer 2 Tunneling Protocol).		X	X

4 Assumptions

The assumptions are ordered into three groups: Personnel Assumptions, Physical Environment Assumptions, and Operational Assumptions.

4.1 Personnel Assumptions

A.NOEVIL	The authorized administrators are not careless, willfully negligent, or hostile, and will follow and abide by the instructions provided by the TOE documentation, including the administrator guidance; however, they are capable of error.
A.TRAIN_AUDIT	Administrators will be trained to periodically review audit logs to identify sources of concern
A.TRAIN_GUIDAN	Personnel will be trained in the appropriate use of the TOE to ensure security.

4.2 Physical Environment Assumptions

A.LOCATE	The processing resources of the TOE will be located within controlled access facilities, which will prevent unauthorized physical access.

4.3 Operational Assumptions

A.CONFIDENTIALITY	The hard copy documents that describe the configuration of the TOE, I&A information and Audit storage will be kept confidential and access will be limited to Authorized administrators.
A.GENPUR	There are no general-purpose computing capabilities (e.g., the ability to execute arbitrary code or applications) and storage repository capabilities on the TOE.
A.INTEROPERABILITY	The TOE will be able to function with the software and hardware of other router vendors on the network.
A.LOWEXP	The threat of malicious attacks aimed at exploiting the TOE is considered low.

5 Architectural Information

The TOE is the Cisco Routers running IOS. The network on which they reside is part of the environment.

The following table lists the software, hardware and router operating system from table below, and declares whether or not each is part of the TOE.

Table 3: TOE Boundary

Hardware	TOE
Router	Yes
ACS Server hardware	No
OS	
Windows 2000 Server (ACS Server OS)	No
Software	
Cisco ACS Version 4.1.2.12	Yes
TACACS+ or RADIUS[1]	Yes
IOS (versions listed in the table below)	Yes

Table 4: Evaluated Configurations

Router Series	Router Models	IOS Version	Router Type
800 Series	831, 836, 837, 851, 857, 871, 876, 877, 878	12.4(11)T2	Ethernet, ADSL, SHDSL, and ISDN routers
1700 Series	1701, 1711, 1712, 1721, 1751, 1751-V, 1760	12.4(11)T2	Flexible, modular access routers
1800 Series	1801, 1802, 1803, 1811, 1812, 1841	12.4(11)T2	ADSL, SHDSL, ISDN, and Integrated Services routers
2600XM Series	2610XM, 2611XM, 2620XM, 2621XM, 2650XM, 2651XM, 2691	12.4(11)T2	Modular multiservice router and dial access server
2800 Series	2801, 2811, 2821, 2851	12.4(11)T2	Integrated Services router
3700 Series	3725, 3745	12.4(11)T2	Multiservice access routers
3800 Series	3825, 3845	12.4(11)T2	Integrated Services router

[1] Software installed with ACS

Router Series	Router Models	IOS Version	Router Type
7200 Series	7204VXR, 7206VXR	12.4(11)T2	WAN-edge router for intelligent services, modularity, high performance, and scalability
7300 Series	7301	12.4(11)T2	WAN-edge router
7400 Series	7401	12.4(11)T2	Compact routers for application specific deployments
7600 Series	7603, 7606, 7609, 7613, Supervisor Engines: 7600-SUP2/MSFC2, 7600-SUP32/MSFC2A, 7600-SUP720/MSFC3	12.2(18)SXF8	High-end Services-enabled core and WAN aggregation router for voice, video, and data in enterprise and service provider applications
	7600-CMM, 7600-MWAM	12.4(11)T2	High-end Services-enabled core and WAN aggregation router for voice, video, and data in enterprise and service provider applications
10000 Series	10700	12.0(32)S7	Edge-router for carriers deploying Broadband services
12000 Series	12006, 12008, 12010, 12012, 12016, 12404, 12406, 12410, 12416, 12810, 12816, Route Processor: PRP-1, PRP-2	12.0(32)S7	Gigabit Switch Routers (GSRs)

.

6 Documentation

Following is a list of the evaluation evidence, each of which was issued by the developer (and sponsor):

Table 5: Evaluation Evidence

Component	Description
Installation and Configuration for Common Criteria EAL3 Evaluated Cisco IOS/AAA (ADM/IGS)	version 0-6, July 2007
Cisco Systems IOS/AAA Functional Specification EAL3 (FSP)	version 0-8 July 26, 2007.
Cisco Systems IOS/AAA High Level Design EAL3 (HLD)	version 0-8, August 10, 2007
Cisco's Configuration Management ,Plan and Delivery Procedures (CMP)	version 0.9, April 2007
Cisco AAA Configuration Items (CI)	version 0-4 August 2007
Cisco Systems Vulnerability, Misuse and Strength of Function EAL3 (MSU_VLA_SOF)	version 0-5, July 25, 2007
Cisco IOS Routers EAL3 Detailed Test Plan (ATE)	version 1.7 August 14, 2007
Cisco Systems Routers EAL3 Security Target (ST)	version 1.3 July 26, 2007

Guidance documentation is listed in Appendix A.1.

7 IT Product Testing

This section describes the testing efforts of the developer and the evaluation team.

7.1 Developer Testing

The developer performed a testing and coverage analysis, which examined each SFR and developed one or more Cisco test cases to verify the function or command requirement. These tests were documented in the Cisco IOS EAL3 Detailed Test Plan. The scope of the developer tests included all TOE Security Functions.

The developer testing addresses the following security functionality claimed by the TOE:

- ssh communications,
- acl,
- user lockout collaboration between the TOE device and ACS server,
- logging messages to the ACS server using Radius or TACACS+,
- syslog connections,
- capabilities of the TOE to maintain audit records in the local buffer,
- ability of the AAA subsystem to authenticate users for console login using username/password configured locally on the router,
- attributes of a user,

- proof that a user cannot do any TSF mediated actions prior to identification and authentication,
- ability of administrators to carry out management functions, and
- traffic-filtering requirements.

See Appendices, *Router modules*, which identify the individual modules that can compose the evaluated product.

The evaluation team determined that the developer's test methodology met the coverage and depth requirements and that the actual test results matched the expected results.

7.2 Evaluation Team Independent Testing

The evaluation team ensured that the TOE performs as described in the design documentation and demonstrated that the TOE enforces the TOE security functional requirements. Specifically, the evaluation team ensured that the developer test documentation sufficiently addresses the security functions as described in the functional specification. The evaluation team also ensured that all subsystem interfaces were tested by the developer by creating a mapping of test cases to subsystem and SFR's.

The evaluation team performed a sample of the developer's test suite and devised an independent set of team tests and penetration tests. The evaluation team reran a subset of the developer's test suite that tested all TSF, and 24 SFRs.

The evaluation team also performed a penetration flaw hypothesis analysis of the product to prepare for a penetration testing effort. The analysis examined each SFR to determine whether it was possible that the evaluated configuration could be susceptible to a vulnerability. The specific penetration tests executed include the following:

- Use a port scanner against the target network device to determine whether the target device may have different services listening on multiple TCP/IP-enabled interfaces and scanned each type of interface Checked for open ports on the target host/device.
- Test the different privilege levels and granting command access to the different levels.
- Test potential abuse privilege levels using the "autocommand" command.
- Checked for known vulnerabilities on the target host/device using nessus.
- Test potential misuse of the "kron" command to run commands as another user.

The evaluation team constructed and ran each of the identified tests. The results of the penetration test execution verified that none of the hypothesized flaws was exploitable.

8 Evaluated Configuration

The evaluated configuration was tested in the configuration identified in Figure 2, below. The evaluation results are valid for all configurations of the TOE identified in section 4 of this report.

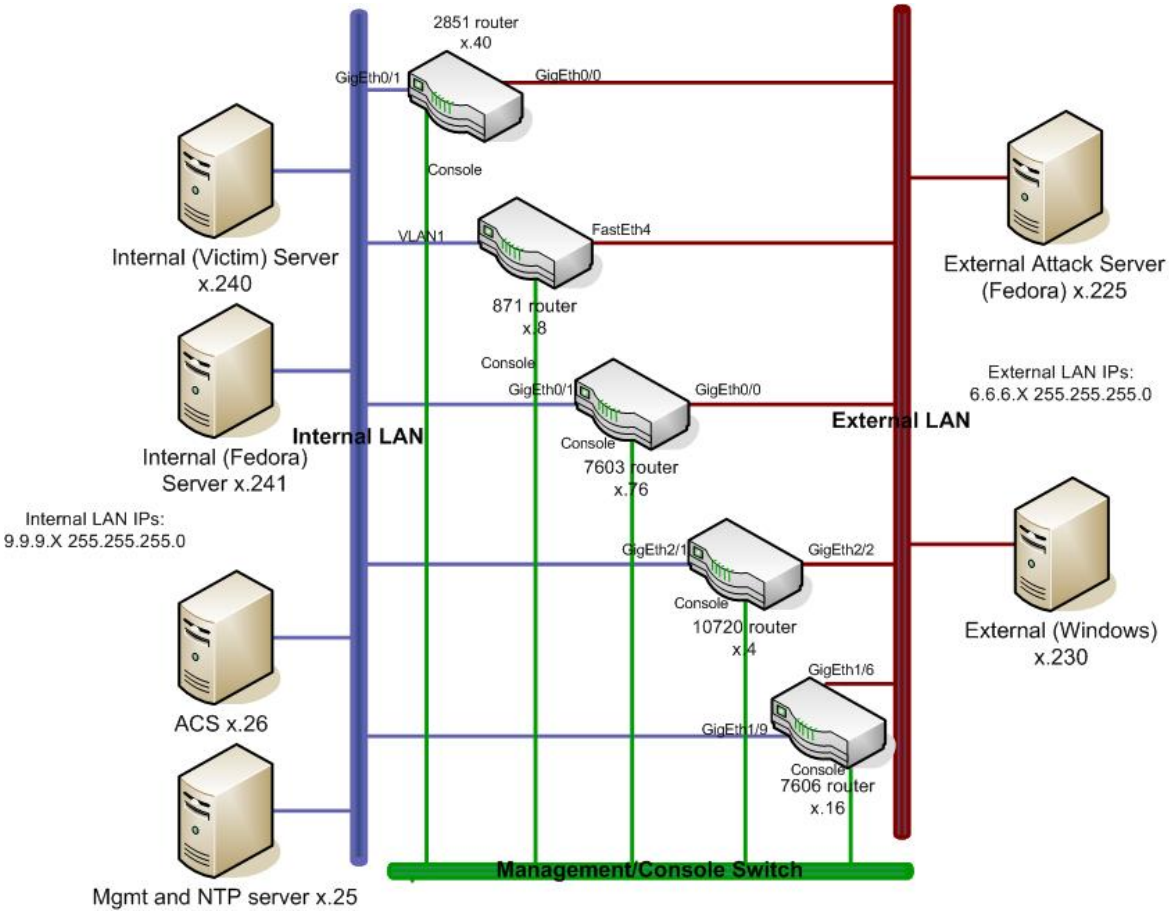

Figure 2: Testing Environment

Table 6: Hardware and Software Components Tested

Component	Description
Cisco 2851	Cisco 2851 running IOS version 12.4(11)T2
Cisco 7606	Cisco 7606 running IOS version 12.2(18)SXF8
Cisco 10720	Cisco 10720 running IOS version 12.0(32)S7

9 Validator Comments

The Validator has reviewed the evaluation technical report and agrees with the conclusion of this evaluation. The customer is reminded that the following were not included within the scope of the evaluation.

- There are no Protection Profile compliance claims
- The TOE does not address encryption (IPSec), VPNs, or Quality of Service (QoS)
- The TOE relies on the IT environment for the following:
    - Protection of the stored audit records in the audit trail
    - Non-bypassability of the TSP
    - Partial environment TSF domain separation (this requirement is split between the TOE and the environment)
    - Reliable Time Stamps for the ACS component's use

10 Security Target

Cisco Systems Routers EAL3 Security Target, Version 1.8, Final February 29, 2008.

11 List of Acronyms

ACL	Access Control List
API	Application Programming Interface
CC	Common Criteria
CCEVS	Common Criteria Evaluation and Validation Scheme (US CC Validation Scheme)
CCIMB	Common Criteria Implementation Board
CCTL	Common Criteria Testing Laboratory
CEM	Common Evaluation Methodology
CLI	Command Line Interface
CMS	Certificate Management System
CRL	Certificate Revocation List
EAL	Evaluation Assurance Level
ETR	Evaluation Technical Report
ID	Identifier
NIAP	National Information Assurance Partnership
NIST	National Institute of Standards and Technology
NSA	National Security Agency
NVLAP	National Voluntary Laboratory Assessment Program
OS	Operating System
RFC	Request for Comment
SAR	Security Functional Requirement
SFR	Security Assurance Requirement
SSL	Secure Socket Layer
ST	Security Target
TCP	Transmission Control Protocol
TOE	Target Of Evaluation
TSF	TOE Security Function
URL	Uniform Resource Locator
VR	Validation Report

12 Bibliography

The following documents referenced during preparation of the validation report.

[1] Common Criteria for Information Technology Security Evaluation – Part 1: Introduction and general model, dated January 2004, Version 2.2.

[2] Common Criteria for Information Technology Security Evaluation – Part 2: Security functional requirements, dated January 2004, Version 2.2.

[3] Common Criteria for Information Technology Security Evaluation – Part 2: Annexes, dated January 2004, Version 2.2.

[4] Common Criteria for Information Technology Security Evaluation – Part 3: Security assurance requirements, dated January 2004, Version 2.2.

[5] Common Evaluation Methodology for Information Technology Security – Part 1: Introduction and general model, dated January 2004, Version 2.2.

[6] Common Evaluation Methodology for Information Technology Security – Part 2: Evaluation Methodology, dated January 2004, Version 2.2.

[7] Security Target for Cisco Routers EAL3, Version 1-3, July 26, 2007.

[8] Common Criteria Evaluation and Validation Scheme for IT Security, *Guidance to Validators of IT Security Evaluations*. Scheme Publication # 3, Version 1.0, January 2002.

[9] Cisco IOS Routers EAL3 Detailed Test Plan Version 1.7, August 14, 2007

[10] Installation and Configuration for Common Criteria EAL3 Evaluated Cisco IOS/AAA, version 0-7, August 2007 .

13 Interpretations

13.1 International Interpretations

Official start date of the evaluation was February 25, 2004. The evaluation team performed an analysis of the international interpretations and applied those that were applicable and had impact to the TOE evaluation as the CEM work units were applied.

The following international interpretations were applied for this evaluation:

- The TOE is also compliant with all International interpretations with effective dates on or before Feb 25, 2004

13.2 Interpretations Validation

The Validation Team concluded that the Evaluation Team correctly addressed the interpretations that it identified.

- The TOE is also compliant with all International interpretations with effective dates on or before Feb 25, 2004

Appendix A.1: Guidance Documentation

The following is the list of other evaluation evidence provided by the sponsor:

Table 7: Guidance Documentation

Hardware Family	Installation Information
800 / SOHO	*Cisco 831 Router and SOHO 91 Router Cabling and Setup Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_fix/831/qsg/index.html* *Cisco 836 and SOHO 96 Router Cabling and Setup Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_fix/836/qsg/index.html* *Cisco 837 Router and SOHO 97 Router Cabling and Setup Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_fix/837/qsg/837qsg.html* *Cisco 850 Series and Cisco 870 Series Access Routers Cabling and Setup Quick Start Guide (English)* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_fix/85x87x/857qsg/857qseng.html*
1700	*Cisco 1701 ADSL Security Access Router Cabling and Installation Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1700/1701/1701qsg/index.html* *Cisco 1711 and 1712 Quick Installation Guides* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1700/1711/171xqsg/index.html* *Quick Start Guide for Installing Your Cisco 1721 Router* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1700/1721/1721qsg/1721qsg.html* *Cisco 1751 Router Hardware Installation Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1700/1751/1751hig/index.html* *Cisco 1751 Router Software Configuration Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1700/1751/1751swg/index.html* *Quick Start Guide for Installing Your Cisco 1760 Modular Access Router* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1700/1760/1760qsg/index.html*
1800	*Cisco 1801, Cisco 1802, and Cisco 1803 Integrated Services Router Cabling and Installation* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1800fix/qsgs/1801qsg.html* *Cisco 1811 and 1812 Integrated Services Router Cabling and Installation* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1800fix/qsgs/1811qsg.html* *Cisco 1800 Series Integrated Services Routers (Modular) Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1800/qsg/1800qsg.html*

Hardware Family	Installation Information
2600	*Cisco 2600XM Series and Cisco 2612 Routers Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/cis2600/26xx_qsg/2600_qsg.html* *Cisco 2691 Modular Router Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/cis2600/26xx_qsg/2691_qsg.html*
2800	*Cisco 2800 Series Integrated Services Routers Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/2800/qsg/2800_qsg.html*
3700	*Cisco 3725 Router Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/cis3700/37xx_qsg/3725qsg.html* *Cisco 3745 Router Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/cis3700/37xx_qsg/3745qsg.html*
3800	*Cisco 3800 Series Integrated Services Routers Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/3800/qsg/rb_qsg.html*
7200	*Cisco 7200 VXR Routers Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/core/7200vx/5012q.html*
7300	*Cisco 7301 Router Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/core/7301/5341q.html*
7400	*Cisco 7401ASR Router Quick Start Guide* *http://www.cisco.com/univercd/cc/td/doc/product/core/7401/12372q.html*
7600	*Cisco 7600 Series Router Installation Guide* *http://www.cisco.com/univercd/cc/td/doc/product/core/cis7600/hardware/cis_76xx/7600book.pdf* *Cisco 7600 Series Router Module Installation Guide* *http://www.cisco.com/univercd/cc/td/doc/product/core/cis7600/hardware/osmodule/osr_mod.pdf*
10000	*Cisco 10720 Internet Router Installation and Configuration Guide* *http://www.cisco.com/univercd/cc/td/doc/product/aggr/10720/10720icg/ybicg_bk.pdf*

Hardware Family	Installation Information
12000	*Cisco 12008 Gigabit Switch Router Installation and Configuration Guide* *http://www.cisco.com/univercd/cc/td/doc/product/core/cis12000/cis12008/icg/mfricg.pdf* *Cisco 12012 Installation and Configuration Guide* *http://www.cisco.com/univercd/cc/td/doc/product/core/cis12000/cis12012/icg/bfricg.pdf* *Cisco 12404 Internet Router Installation and Configuration Guide* *http://www.cisco.com/univercd/cc/td/doc/product/core/cis12000/cis12404/icg/tod.pdf* *Cisco 12006 and Cisco 12406 Router Installation and Configuration Guide* *http://www.cisco.com/univercd/cc/td/doc/product/core/cis12000/cis12x06/icg/qdome.pdf* *Cisco 12010, Cisco 12410, and Cisco 12810 Router Installation and Configuration Guide* *http://www.cisco.com/univercd/cc/td/doc/product/core/cis12000/cis12x10/icg/hfdm_icg.pdf* *Cisco 12016, Cisco 12416, and Cisco 12816 Router Installation and Configuration Guide* *http://www.cisco.com/univercd/cc/td/doc/product/core/cis12000/cis12x16/icg/hrcicg.pdf*
ACS Software (Cisco Secure ACS for Windows Server) v 4.1.2.12	*Installation Guide for Cisco Secure ACS for Windows 4.1* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_soft/csacs4nt/acs41/igwin41/index.html* *User Guide for Cisco Secure ACS for Windows 4.1* *http://www.cisco.com/univercd/cc/td/doc/product/access/acs_soft/csacs4nt/acs41/user/index.html*

- **Specific to IOS 12.4(11)T2:**
  - *Cisco IOS Configuration Fundamentals Configuration Guide, Release 12.4T* (http://www.cisco.com/en/US/products/ps6441/products_configuration_guide_book09186a008072adae.html)
  - *Cisco IOS Network Management Configuration Guide, Release 12.4T* (http://www.cisco.com/en/US/products/ps6441/products_configuration_guide_book09186a00807ca341.html)
  - *Cisco IOS Security Configuration Guide, Release 12.4T* (http://www.cisco.com/en/US/products/ps6441/products_configuration_guide_book09186a008049e249.html)
  - *Cisco IOS Security Configuration Guide, Release 12.4* (http://www.cisco.com/en/US/products/ps6350/products_configuration_guide_book09186a008043360a.html)
  - *Cisco IOS Network Management Configuration Guide, Release 12.4T* (http://www.cisco.com/en/US/products/ps6441/products_configuration_guide_book09186a00807ca341.html)
  - *Cisco IOS Security Command Reference, Release 12.4T* (http://www.cisco.com/en/US/products/ps6441/products_command_reference_book09186a0080497056.html)

- *Cisco IOS Software Release Notes 12.4T (http://www.cisco.com/en/US/products/ps6441/prod_release_notes_list.html)*

- **Specific to IOS 12.2(18)SXF8:**
  - *Release Notes for Cisco IOS Release 12.2SX on the Supervisor Engine 720, Supervisor Engine 32, and Supervisor Engine 2 (http://www.cisco.com/en/US/products/hw/switches/ps708/prod_release_note09186a00801c8339.html)*
  - *Cisco 7600 Series Cisco IOS Software Configuration Guide, 12.2SX (http://www.cisco.com/en/US/products/hw/routers/ps368/products_configuration_guide_book09186a00801d4269.html)*
  - *Cisco IOS Configuration Fundamentals Configuration Guide, Release 12.2 (http://www.cisco.com/en/US/products/sw/iosswrel/ps1835/products_configuration_guide_book09186a0080080ff9.html)*
  - *Cisco IOS Security Configuration Guide, Release 12.2 (http://www.cisco.com/en/US/products/sw/iosswrel/ps1835/products_configuration_guide_book09186a0080087df1.html)*
  - *Cisco 7600 Series Cisco IOS Command Reference, 12.2 SX (http://www.cisco.com/en/US/products/hw/routers/ps368/products_command_reference_book09186a00801d4267.html)*

- **Specific to IOS 12.0(32)S7:**
  - *Cisco IOS Software Releases 12.0 S Release Notes (http://www.cisco.com/en/US/products/sw/iosswrel/ps1829/prod_release_notes_list.html)*
  - *Cisco IOS Release 12.0 Configuration Fundamentals Configuration Guide (* http://www.cisco.com/en/US/docs/ios/12_0/configfun/configuration/guide/fun_c.html *)*
  - *Cisco IOS Release 12.0 Configuration Fundamentals Command Reference (* http://www.cisco.com/en/US/docs/ios/12_0/configfun/command/reference/fun_r.html *)*
  - *Cisco IOS Release 12.0 Security Configuration Guide)* (http://www.cisco.com/en/US/docs/ios/12_0/security/configuration/guide/secur_c.html)

Appendix A.2: 1721 Modules

The following is the list of other evaluation evidence provided by the sponsor:

WIC	Description
WIC-1T	One-port serial, asynchronous and synchronous (T1/E1)
WIC-2T	Two-port serial, asynchronous and synchronous (T1/E1)
WIC-2A/S	Two-port low-speed serial (up to 128 kbps), asynchronous and synchronous
WIC-1B-S/T	One-port ISDN Basic Rate Interface (BRI) S/T
WIC-1B-U	One-port ISDN BRI U interface with integrated NT1
WIC-1DSU-56K4	One-port integrated 56/64-kbps, four-wire DSU/CSU
WIC-1DSU- T1	One-port integrated T1/fractional T1 DSU/CSU
WIC-1ADSL	One-port ADSL interface
WIC-1ENET	One-port 10BASE-T Ethernet interface
WIC-1SHDSL	One-port G.shdsl interface
VWIC-1MFT-T1	One-port RJ-48 multiflex trunk - T1
VWIC-2MFT-T1	Two-port RJ-48 multiflex trunk - T1
VWIC-2MFT-T1-DI	Two-port RJ-48 multiflex trunk - T1 with drop and insert
VWIC-1MFT-E1	One-port RJ-48 multiflex trunk - E1
VWIC-2MFT-E1	Two-port RJ-48 multiflex trunk - E1
VWIC-2MFT-E1-DI	Two-port RJ-48 multiflex trunk - E1 with drop and insert
VWIC-1MFT-G703	One-port RJ-48 multiflex trunk - E1 G.703
VWIC-2MFT-G703	Two-port RJ-48 multiflex trunk - E1 G.703

Appendix A.3: 1751 Modules

Module	Description
WIC-1T	One serial, async, and sync (T1/E1)
WIC-2T	Two serial, async, and sync (T1/E1)
WIC-2A/S	Two low-speed serial (up to 128 kbps), async, and sync
WIC-1B-S/T	One ISDN BRI S/T
WIC-1B-U	One ISDN BUI U with integrated NT1
WIC-1DSU-56K4	One integrated 56/64-kbps, four-wire DSU/CSU
WIC-1DSU-T1	One integrated T1/fractional T1 DSU/CSU
WIC-1ADSL	One-port ADSL interface
WIC-1ENET	One-port 10BaseT Ethernet Interface
WIC-1SHDSL	One-port G.SHDSL interface
WIC-1AM	One-port V.90 analog modem WIC
WIC-2AM	Two-portV.90 analog modem WIC
WIC-1ADSL-I-DG	1-port ADSLoISDN Wan Interface Card
WIC-1ADSL-DG	1-port ADSLoPOTS WIC with Dying Gasp
WIC-1B-U-V2	1-Port ISDN BRI NT-1 WIC for 1700, 2600, 3600 and 3700 series

Voice Interface Cards for the Cisco 1751

Module	Description
VIC-2FXS	Two-port FXS voice/fax interface card for voice/fax network module
VIC-2DID	Two-port DID (direct inward dial) voice/fax interface card
VIC-2FXO	Two-port FXO voice/fax interface card for voice/fax network module
VIC-2FXO-EU	Two-port FXO voice/fax interface card for Europe
VIC-2FXO-MI	Two-port FXO voice/fax interface card with battery reversal detection and Caller ID support (for US, Canada, and others) [enhanced version of the VIC-2FXO]
VIC-2FXO-M2	Two-port FXO voice/fax interface card with battery reversal detection and Caller ID support (for Europe) [enhanced version of the VIC-2FXO-EU]
VIC-2FXO-M3	Two-port FXO voice/fax interface card for Australia
VIC-2E/M	Two-port E&M voice/fax interface card for voice/fax network module

Module	Description
VIC-2BRI-NT/TE	Two-port network Side ISDN BRI interface
VIC-4FXS/DID	Four-port FXS and DID voice/fax interface card
VWIC-1MFT-T1	One-port RJ-48 multiflex trunk - T1
VWIC-2MFT-T1	Two-port RJ-48 multiflex trunk - T1
VWIC-2MFT-T1-DI	Two-port RJ-48 multiflex trunk - T1 with drop and insert
VWIC-1MFT-E1	One-port RJ-48 multiflex trunk - E1
VWIC-2MFT-E1	Two-port RJ-48 multiflex trunk - E1
VWIC-2MFT-E1-DI	Two-port RJ-48 multiflex trunk - E1 with drop and insert
VWIC-1MFT-G703	One-port RJ-48 multiflex trunk - E1 G.703
VWIC-2MFT-G703	Two-port RJ-48 multiflex trunk - E1 G.703
VIC2-2FXS	Two-port Voice Interface Card - FXS
VIC2-2FXO	Two-port Voice Interface Card - FXO (Universal)
VIC2-4FXO	Four-port Voice Interface Card - FXO (Universal)
VIC2-2E/M	Two-port Voice Interface Card - E and M
VIC2-2BRI-NT/TE	Two-port Voice Interface Card - BRI (NT and TE)

Appendix A.4: 1760 Series Modules

Module	Description
WIC-1T	One-port serial, async and sync (T1/E1)
WIC-2T	Two-port serial, async and sync (T1/E1)
WIC-2A/S	Two-port low-speed serial (up to 128 kbps), async and sync
WIC-1B-S/T	One-port ISDN BRI[1] S/T
WIC-1B-U	One-port ISDN BRI U interface with integrated NT1
WIC-1DSU-56K4	One-port integrated 56/64-kbps, four-wire DSU/CSU
WIC-1DSU-T1	One-port integrated T1/fractional T1 DSU/CSU
WIC-1ADSL	One-port ADSL interface
WIC-1ENET	One-port 10BASE-T Ethernet interface
WIC-1SHDSL	One-port G.shdsl interface
WIC-1AM	One-port V.90 analog modem WIC
WIC-2AM	Two-port V.90 analog modem WIC
WIC-1ADSL-I-DG	1-port ADSLoISDN Wan Interface Card
WIC-1ADSL-DG	1-port ADSLoPOTS WIC with Dying Gasp
WIC-1B-U-V2	1-Port ISDN BRI NT-1 WIC for 1700, 2600, 3600 and 3700 series

Voice Support for the Cisco 1760 Router

Module	Description
VIC-2E/M	Two-port E&M voice/fax interface card for voice/fax network module
VIC-2FXO	Two-port FXO voice/fax interface card for voice/fax network module
VIC-2FXS	Two-port FXS voice/fax interface card for voice/fax network module
VIC-2FXO-M1	Two-port FXO voice/fax interface card for North America
VIC-2FXO-M2	Two-port FXO voice/fax interface card for Europe
VIC-2FXO-M3	Two-port FXO voice/fax interface card for Australia
VIC-2DID	Two-port analog DID voice interface card
VIC-2FXO-EU	Two-port FXO voice/fax interface card for Europe
VIC-2BRI-NT/TE	Two-port network-side ISDN BRI VIC
VIC-4FXS/DID[5]	Four-port FXS and DID voice/fax interface card
VWIC-1MFT-T1	One-port FJ-48 multiflex trunk - T1
VWIC-2MFT-T1	Two-port RJ-48 multiflex trunk - T1
VWIC-2MFT-T1-DI	Two-port RJ-48 multiflex trunk - T1 with drop and insert
VWIC-1MFT-E1	One-port RJ-48 multiflex trunk - E1
VWIC-2MFT-E1	Two-port RJ-48 multiflex trunk - E1

Module	Description
VWIC_2MFT-E1-DI	Two-port RJ-48 multiflex trunk - E1 with drop and insert
VWIC-1MFT-G.703	One-port RJ-48 multiflex trunk - E1 G.703
VWIC-2MFT-G.703	Two-port RJ-48 multiflex trunk - E1 G.703
VIC2-2FXS	Two-port Voice Interface Card - FXS
VIC2-2FXO	Two-port Voice Interface Card - FXO (Universal)
VIC2-4FXO	Four-port Voice Interface Card - FXO (Universal)
VIC2-2E/M	Two-port Voice Interface Card - E and M
VIC2-2BRI-NT/TE	Two-port Voice Interface Card - BRI (NT and TE)

Appendix A.5: 1841 Series Modules

Items	Description
HWIC-4ESW	4-port single-wide 10/100 BaseT Ethernet switch HWIC
WIC-1T	1-port serial WIC
WIC-2T	2-port serial WIC
WIC-2A/S	2-port asynchronous or synchronous serial WIC
WIC-1DSU-T1-V2	1-port T1/Fractional-T1 CSU/DSU WIC
WIC-1DSU-56K4	1-port 4-wire 56-/64-kbps CSU/DSU WIC
WIC-1B-U-V2	1-port ISDN Basic Rate Interface (BRI) with integrated NT1 (U interface)
WIC-1B-S/T-V3	1-port ISDN BRI with S/T interface
WIC-1ADSL	1-port asymmetric DSL (ADSL) over basic-telephone-service WIC
WIC-1ADSL-DG	1-port ADSL over basic telephone service with dying-gasp[1] WIC
WIC-1ADSL-I-DG	1-port ADSL over ISDN with dying-gasp1 WIC
WIC-1SHDSL	1-port G.shdsl WIC (two wire only)
WIC-1SHDSL-V2	1-port G.shdsl WIC (two or four wire)
WIC-1AM	1-port analog modem WIC
WIC-2AM	2-port analog modem WIC
VWIC-1MFT-T1	1-port RJ-48 multiflex trunk-T1
VWIC-2MFT-T1	2-port RJ-48 multiflex trunk-T1
VWIC-2MFT-T1-DI	2-port RJ-48 multiflex trunk-T1 with drop and insert
VWIC-1MFT-E1	1-port RJ-48 multiflex trunk-E1
VWIC-1MFT-G703	1-port RJ-48 multiflex trunk-G.703
VWIC-2MFT-E1	2-port RJ-48 multiflex trunk-E1
VWIC-2MFT-E1-DI	2-port RJ-48 multiflex trunk-E1 with drop and insert
VWIC-2MFT-G703	2-port RJ-48 multiflex trunk-G.703
AIM-VPN/BPII-PLUS	Enhanced-performance DES, 3DES, AES, and compression VPN encryption AIM

Appendix A.6: 2800 Series Modules

Network Module	Description	Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
Ethernet Switching Network Modules					
NM-16ESW	16-port 10/100 Cisco EtherSwitch® Network Module	No	√	√	√
NM-16ESW-1GIG	16-port 10/100 Cisco EtherSwitch Network Module with 1 Gigabit Ethernet (1000BASE-T) port	No	√	√	√
NM-16ESW-PWR	16-port 10/100 Cisco EtherSwitch Network Module with in-line power support	No	√	√	√
NM-16ESW-PWR-1GIG	16-port 10/100 Cisco EtherSwitch Network Module with in-line power and Gigabit Ethernet	No	√	√	√
NMD-36ESW	36-port 10/100 Cisco EtherSwitch High-Density Services Module (HDSM)	No	No	No	√
NMD-36ESW-2GIG	36-port 10/100 Cisco EtherSwitch HDSM with 1 Gigabit Ethernet (1000BASE-T) port	No	No	No	√
NMD-36ESW-PWR	36-port 10/100 Cisco EtherSwitch HDSM with in-line power support	No	No	No	√
NMD-36ESW-PWR-2G	36-port 10/100 Cisco EtherSwitch HDSM with in-line power and Gigabit Ethernet	No	No	No	√
Serial Connectivity Network Module					
NM-1T3/E3	1-port clear-channel T3/E3 network module	No	√	√	√
NM-1HSSI	1-port High-Speed Serial Interface (HSSI) network module	No	√	√	√
NM-4A/S	4-port asynchronous/synchronous serial network module	No	√	√	√

NM-8A/S	8-port asynchronous/synchronous serial network module	No	√	√	√
NM-16A/S	16-port asynchronous/synchronous serial network nodule	No	√	√	√
NM-16A	16-port asynchronous serial network module	No	√	√	√
NM-32A	32-port asynchronous serial network module	No	√	√	√
Channelized T1/E1 and ISDN Network Modules					
NM-1CE1T1-PRI	1-port Channelized E1/T1/ISDN PRI network module	No	√	√	√
NM-2CE1T1-PRI	2-port Channelized E1/T1/ISDN PRI network module	No	√	√	√
NM-4B-S/T	4-port ISDN BRI network module (S/T interface)	No	√	√	√
NM-4B-U	4-port ISDN BRI network module with integrated Network Termination 1 (NT1) (U interface)	No	√	√	√
NM-8B-S/T	8-port ISDN BRI network module (S/T interface)	No	√	√	√
NM-8B-U	8-port ISDN BRI network module with integrated NT1 (U interface)	No	√	√	√
ATM Network Modules					
NM-1A-T3	1-port DS-3 ATM network module	No	√	√	√
NM-1A-E3	1-port E3 ATM network module	No	√	√	√
Analog Dialup and Remote Access Network Modules					
NM-8AM-V2	8-port analog modem network module with v.92	No	√	√	√
NM-16AM-V2	16-port analog modem network module with v.92	No	√	√	√
Voice Network Modules and Accessories					
NM-HD-1V	1-slot IP Communications voice and fax network module	No	√	√	√
NM-HD-2V	2-slot IP Communications voice and fax network module	No	√	√	√

NM-HD-2VE	2-slot IP Communications enhanced voice and fax network module	No	√	√	√
NM-HDA-4FXS	High-density analog voice and fax network module with 4 FXS slots	No	√	√	√
NM-HDV2	IP Communications high-density voice and fax network module	No	√	√	√
NM-HDV2-1T1/E1	1-port T1/E1 IP Communications high-density voice and fax network module	No	√	√	√
NM-HDV2-2T1/E1	2-port T1/E1 IP Communications high-density voice and fax network module	No	√	√	√
NM-HDV=	High Density Voice/Fax Network Module (Single VIC Slot)	No	√	√	√
NM-HDV-1T1-12	1-port 12-channel T1 voice and fax network module	No	√	√	√
NM-HDV-1T1-24	1-port 24-channel T1 voice and fax network module	No	√	√	√
NM-HDV-1T1-24E	Single-port 24 enhanced channel T1 voice and fax network module	No	√	√	√
NM-HDV-2T1-48	2-port 48-channel T1 voice and fax network module	No	√	√	√
NM-HDV-1E1-12	1-port 12-channel E1 voice and fax network module	No	√	√	√
NM-HDV-1E1-30	1-port 30-channel E1 voice and fax network module	No	√	√	√
NM-HDV-1E1-30E	1-port 30-enhanced-channel E1 voice and fax network module	No	√	√	√
NM-HDV-2E1-60	2-port 60-channel E1 voice and fax network module	No	√	√	√
NM-HDV-1J1-30	1-port 30-channel J1 high-density voice network module	No	√	√	√
NM-HDV-1J1-30E	1-port 30-enhanced-channel J1 high-density voice network module	No	√	√	√
NM-HDV-FARM-C36	36-port transcoding and conferencing DSP farm	No	√	√	√

NM-HDV-FARM-C54	54-port transcoding and conferencing DSP farm	No	√	√	√
NM-HDV-FARM-C90	90-port transcoding and conferencing DSP farm	No	√	√	√
Application Network Modules					
NM-CE-BP-40G-K9	Cisco Content Engine Network Module, basic performance, 40-GB IDE hard disk	No	√	√	√
NM-CE-BP-80G-K9	Cisco Content Engine Network Module, basic performance, 80-GB IDE hard disk	No	√	√	√
NM-CE-BP-SCSI-K9	Cisco Content Engine Network Module, basic performance, Small Computer System Interface (SCSI) controller	No	√	√	√
NM-CIDS-K9	Cisco IDS Network Module	No	√	√	√
NM-CUE	Cisco Unity Express Voice-Mail Network Module	No	√	√	√
NM-NAM	Cisco 2600, 3660, and 3700 series network analysis module	No	√	√	√
Alarm Monitoring and Control Network Modules and Accessories					
NM-AIC-64	Alarm monitoring and control network module	No	√	√	√
Circuit Emulation over IP (CEoIP) Network Modules					
NM-CEM-4SER	4-port serial Circuit Emulation over IP (CEoIP) network module	No	√	√	√
NM-CEM-T4E1	4-port T1/E1 Circuit Emulation over IP (CEoIP) network module	No	√	√	√

Extension Voice Modules		Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
EVM-HD-8FXS/DID	High density voice/fax extension module -8 FXS/DID	No	No	√	√

Interface-Card Support		Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
Ethernet Switching HWICs					
HWIC-4ESW	4-port single-wide 10/100BaseT Ethernet switch HWIC	√	√	√	√
HWIC-D-9ESW	9-port double-wide 10/100BaseT Ethernet switch HWIC	√	√	√	√
HWIC-4ESW-POE	4-port Ethernet switch HWIC, Power over Ethernet capable	√	√	√	√
HWIC-D-9-ESW-POE	9-port Ethernet switch HWIC, Power over Ethernet capable	√	√	√	√
Gigabit Ethernet HWICs					
HWIC-1GE-SFP		No	√	√	√
Serial WICs					
WIC-1T	1-port high-speed serial WIC	√	√	√	√
WIC-2T	2-port high-speed serial WIC	√	√	√	√
WIC-2A/S	2-port asynchronous/synchronous serial WIC	√	√	√	√
CSU/DSU WICs					
WIC-1DSU-T1-V2	1-port T1/Fractional-T1 DSU/CSU WIC	√	√	√	√
WIC-1DSU-56K4	1-port 4-wire 56-/64-kbps CSU/DSU WIC	√	√	√	√
ISDN BRI WICs					
WIC-1B-U-V2	1-port ISDN BRI with integrated NT1 (U interface)	√	√	√	√
WIC-1B-S/T-V3	1-port ISDN BRI with S/T interface	√	√	√	√
DSL WAN Interface Cards					
WIC-1ADSL	1-port asymmetric DSL (ADSL) over POTS service WIC	√	√	√	√

WIC-1ADSL-DG	1-port ADSL over basic telephone service with dying-gasp WIC	√	√	√	√
WIC-1ADSL-I-DG	1-port ADSL over ISDN with dying-gasp WIC	√	√	√	√
WIC-1SHDSL	1-port G.shdsl WIC (two wire only)	√	√	√	√
WIC-1SHDSL-V2	1-port G.shdsl WIC (two or four wire)	No	√	√	√
Analog Modem WICs					
WIC-1AM	1-port analog modem WIC	√	√	√	√
WIC-2AM	2-port analog modem WIC	√	√	√	√
T1, E1, and G.703 Multiflex Trunk Voice Cards and WICs					
VWIC-1MFT-T1	1-port RJ-48 multiflex trunk-T1	√	√	√	√
VWIC-2MFT-T1	2-port RJ-48 multiflex trunk-T1	√	√	√	√
VWIC-2MFT-T1-DI	2-port RJ-48 multiflex trunk-T1 with drop and insert	√	√	√	√
VWIC-1MFT-E1	1-port RJ-48 multiflex trunk-E1	√	√	√	√
VWIC-1MFT-G703	1-port RJ-48 multiflex trunk-G.703	√	√	√	√
VWIC-2MFT-E1	2-port RJ-48 multiflex trunk-E1	√	√	√	√
VWIC-2MFT-E1-DI	2-port RJ-48 multiflex trunk-E1 with drop and insert	√	√	√	√
VWIC-2MFT-G703	2-port RJ-48 multiflex trunk-G.703	√	√	√	√
VICs					
VIC-2DID	2-port DID voice and fax interface card	√	√	√	√
VIC-1J1	1-port digital VIC (J1) for Japan	No	√	√	√
VIC-4FXS/DID	4-port FXS or DID VIC	√	√	√	√
VIC2-2FXS	2-port VIC-FXS	√	√	√	√

VIC2-2FXO	2-port VIC-FXO (universal)	√	√	√	√
VIC2-4FXO	4-port VIC-FXO (universal)	√	√	√	√
VIC2-2E/M	2-port VIC-E&M	√	√	√	√
VIC2-2BRI-NT/TE	2-port VIC card-BRI (NT and TE)	√	√	√	√

Advanced Integration Modules		**Cisco 2801**	**Cisco 2811**	**Cisco 2821**	**Cisco 2851**
AIM-ATM	High-performance ATM SAR AIM	No	√	√	√
AIM-COMPR2-V2	Data compression AIM	No	√	√	√
AIM-CUE	Cisco Unity Express Voice-Mail AIM	√	√	√	√
AIM-VPN/EPII-PLUS	Enhanced-performance DES, 3DES, AES, and compression VPN encryption AIM	√	√	√	√

DSP (PVDM) Support on Motherboard Slots		**Cisco 2801**	**Cisco 2811**	**Cisco 2821**	**Cisco 2851**
PVDM2-8	8-channel fax and voice DSP module	√	√	√	√
PVDM2-16	16-channel fax and voice DSP module	√	√	√	√
PVDM2-32	32-channel fax and voice DSP module	√	√	√	√
PVDM2-48	48-channel fax and voice DSP module	√	√	√	√
PVDM2-64	64-channel fax and voice DSP module	√	√	√	√

Appendix A.7: 3700 Series Modules

Network Modules, HDSM, WIC, VIC and AIM	Description
Serial Network Modules	
NM-1T3/E3	1-port clear-channel T3/E network module
NM-4A/S	4-port async/sync serial network module
NM-8A/S	8-port async/sync serial network module
NM-4T	4-port High Speed Serial network module
NM-1HSSI	1-port high speed serial interface module
Asynchronous Network Modules	
NM-16A	16 Async Ports network module
NM-32A	32 Async Ports network module
NM-1GE	1 port Gigabit Ethernet Network Module
NM-2W	2 WAN Card Slot Network Module (no LAN)
NM-1FE2W	1 10/100 Ethernet 2 WAN Card Slot Network Module
NM-1FE1R2W	1 10/100 Ethernet 1 4/16 Token Ring 2 WAN Card Slot NM
NM-2FE2W	2 10/100 Ethernet 2 WAN Card Slot Network Module
NM-1FE-FX	1-port Fast Ethernet network module (10/100Base Fiber only)
NM-1FE-FX-V2	1-port Fast Ethernet network module (10/100Base Fiber only), version 2
NM-HDV-1T1-12	High Density Voice Network Module, with 1 VWIC-1MFT-T1 and 1 PVDM-12
NM-HDV-1E1-12	High Density Voice Network Module, with 1 VWIC-1MFT-E1 and 1 PVDM-12
NM-HDV-1E1-30	Single-port, 30-channel E1 voice/fax Network Module (supports 30 channels) of medium complexity VoCoders: G.729a/b, G.726, G.711 and fax or 12 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711 and fax)
NM-HDV-1E1-30E	ingle-port, enhanced 30-channel E1 voice/fax Network Module (supports 30 channels of high and medium complexity VoCoders: G.729a/b, G.726, G.729, G.728, G.723.1, G.711 and fax)
NM-HDV-2E1-60	Dual-port, 60-channel E1 voice/fax Network Module (supports 60 channels) of medium complexity VoCoders: G.729a/b, G.726,G.711and fax or 30channels of G726, G729, G723.1, G.728, G729a/b, G711 and fax) Supports add/drop multiplexing (drop and insert)
NM-HDV-1T1-24	Single-port, 24-channel T1 voice/fax Network Module (supports 24 channels of medium complexity VoCoders: G.729a/b, G.726, G.711 and fax or 12 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711 and fax)
NM-HDV-1T1-24E	Single-port, enhanced 24-channel T1 voice/fax Network Module (supports 24 channels of high and medium complexity VoCoders: G.729a/b, G.726, G.729, G.728, G.723.1, G.711 and fax)
NM-HDV-2T1-48	Dual-port, 48-channel T1 voice/fax Network Module (supports 48 channels) of

	medium complexity VoCoders:G.729a/b,G.726,G.711 and fax or 24 channels of G726, G729, G723.1, G.728, G729a/b, G711 and fax) Supports add/drop multiplexing (drop and insert)
NM-CE-BP-20G-K9	Content Engine Network Module, basic performance, 20-GB IDE hard disk
NM-CE-BP-40G-K9	Content Engine Network Module, basic performance, 40-GB IDE hard disk
NM-CE-BP-SCSI-K9	Content Engine Network Module, basic performance, SCSI controller (requires external SCSI disk array such as the Cisco SA-6)
AIM-COMPR4	Data Compression AIM for 3660 Series (4 E1 performance)
AIM-VPN/HP	DES/3DES VPN Encryption AIM for 3660-High Performance
AIM-VPN/EP	DES/3DES VPN Encryption AIM for 2600-Enhanced Performance
AIM-VPN/HPII	
AIM-VPN/EPII	
AIM-ATM	ATM cell processing module
AIM-ATM-VOICE-30	SAR and 30 Channel T1/E1 Digital Voice module
AIM-VOICE-30	30 Channel T1/E1 Digital Voice module
NM-1V	1-slot voice and fax network module
NM-2V	2-slot voice and fax network module
NM-HDA	High Density Analog Module
Voice Interface Cards	
VIC-2FXS	2-port voice interface card—FXS
VIC-2FXO	2-port voice interface card—FXO
VIC-2FXO-EU	2-port voice interface card—FXO (for Europe)
VIC-2FXO-M1	2-port voice interface card—FXO (with battery reversal, for North America)
VIC-2FXO-M2	2-port voice interface card—FXO (with battery reversal, for Europe)
VIC-2FXO-M3	2-port voice interface card—FXO (for Australia)
VIC-2E/M	2-port voice interface card—E&M
VIC-2DID	2-port voice interface card—DID (Direct Inward Dial)
VIC-2BRI-S/T-TE	2-port voice interface card—BRI (Terminal side)
VIC-2BRI-NT/TE	2-port voice interface card—BRI (Network side)
VIC-2CAMA	2-port voice interface card—CAMA
NM-4T1-IMA	4-port T1 ATM network module with Inverse Multiplexing over ATM (IMA)
NM-4E1-IMA	4-port E1 ATM network module with IMA
NM-8T1-IMA	8-port T1 ATM network module with IMA
NM-8E1-IMA	8-port E1 ATM network module with IMA

NM-1A-T3	1-port DS3 ATM network module
NM-1A-E3	1-port E3 ATM network module
NM-1A-OC3MM	1-port ATM OC-3 Multimode NM for Cisco3725
NM-1A-OC3SMI	1-port ATM OC-3 Singlemode Intermediate Reach NM for Cisco 3725
NM-1A-OC3SML	1-port ATM OC-3 Singlemode Long Reach NM for Cisco 3725
NM-1A-OC3MM-EP	1-port ATM OC-3 Multimode NM for Cisco 3745
NM-1A-OC3SMI-EP	1-port ATM OC-3 Singlemode Intermediate Reach NM for 3745
NM-1A-OC3SML-EP	1-port ATM OC-3 Singlemode Long Reach NM for Cisco 3745
Serial WAN Interface Cards	
WIC-1DSU-T1	One T1 CSU/DSU - Integrated
WIC-1T	1-port High Speed Serial
WIC-2T	2-port High Speed Serial
WIC-2-A/S	2-port Async/Sync Serial
WIC-1DSU-56K4	1-port, four-wire 56/64-Kbps with CSU/DSU
Digital Voice/WAN Interface Cards	
VWIC-1MFT-T1	1-port RJ-48 MultiFlex Trunk—T1
VWIC-2MFT-T1	2-port RJ-48 MultiFlex Trunk—T1
VWIC-2MFT-T1-DI	2-port RJ-48 MultiFlex Trunk—T1 with Drop and Insert
VWIC-1MFT-E1	1-port RJ-48 MultiFlex Trunk—E1
VWIC-2MFT-E1	2-port RJ-48 MultiFlex Trunk—E1
VWIC-2MFT-E1-DI	2-port RJ-48 MultiFlex Trunk—E1 with Drop and Insert Add not for VWICs VIC slots and WIC slots
VWIC-1MFT-G703	1-port RJ-48 MultiFlex Trunk—E1 unstructured
VWIC-2MFT-G703	2-port RJ-48 MultiFlex Trunk—E1 unstructured
ISDN WAN Interface Cards	
WIC-1B-S/T	1-port ISDN BRI
WIC-1B-U	1-port ISDN BRI with NT1
NM-1CT1	1-port channelized T1/ISDN PRI network module
NM-1CT1-CSU	1-port channelized T1/ISDN PRI with CSU network module
NM-2CT1	2-port channelized T1/ISDN PRI network module
NM-2CT1-CSU	2-port channelized T1/ISDN PRI with CSU network module
NM-1CE1B	1-port channelized E1/ISDN PRI balanced network module

NM-1CE1U	1-port channelized E1/ISDN PRI unbalanced network module
NM-2CE1B	2-port channelized E1/ISDN PRI balanced network module
NM-2CE1U	2-port channelized E1/ISDN PRI unbalanced network module
NM-4B-S/T	4-port ISDN BRI network module
NM-4B-U	4-port ISDN BRI with NT1 network module
NM-8B-S/T	8-port ISDN BRI network module (S/T interface)
NM-8B-U	8-port ISDN BRI with NT1 network module (U interface)
Modem Modules	
WIC-1AM	1-port analog modem WAN interface card (WIC)
WIC-2AM	2-port analog modem WAN interface card (WIC)
NM-6DM	6-port digital modem network module
NM-12DM	12-port digital modem network module
NM-18DM	18-port digital modem network module
NM-24DM	24-port digital modem network module
NM-30DM	30-port digital modem network module
NM-8AM	8-port analog modem Network Module
NM-16AM	16-port analog modem Network Module
NM-8AMJ	8-port analog modem Network Module—Japan
NM-16AMJ	16-port analog modem Network Module—Japan
Digital Subscriber Line (DSL)	
WIC-1ADSL	1-port ADSL WAN Interface Card
WIC-G.SHDSL	1-port G.shdsl WAN Interface Card
Ethernet Switch	
NM-16ESW	1 16-port 10/100 EtherSwitch Network Module
NM-36-ESW	1 36-port 10/100 EtherSwitch High Density Service Module
NM-16ESW-1GIG	1 16-port 10/100 Etherswitch with 1GE (1000BaseT) port
NM-16ESW-PWR-1GIG	1 16-port 10/100 Etherswitch with inline Power daughter Card and 1GE (1000BaseT) port
NMD-36-ESW-2GIG	1 36-port 10/100 Etherswitch with 1GE (1000BaseT) port
NMD-36-ESW-PWR-2G	1 36-port 10/100 Etherswitch with inline Power daughter Card and 2GE (1000BaseT) port

Appendix A.8: 3800 Series Modules

Ethernet Switching Network Modules	
NM-16ESW	16-port 10/100 Cisco EtherSwitch network module
NM-16ESW-1GIG	16-port 10/100 Cisco EtherSwitch network module with 1 Gigabit Ethernet (1000BASE-T) port
NM-16ESW-PWR	16-port 10/100 Cisco EtherSwitch network module with inline power support
NM-16ESW-PWR-1GIG	16-port 10/100 Cisco EtherSwitch network module with inline power and 1 Gigabit Ethernet port
NMD-36ESW	36-port 10/100 Cisco EtherSwitch high-density services module (HDSM)
NMD-36ESW-2GIG	36-port 10/100 Cisco EtherSwitch HDSM with 1 Gigabit Ethernet (1000BASE-T) port
NMD-36ESW-PWR	36-port 10/100 Cisco EtherSwitch HDSM with inline power support
NMD-36ESW-PWR-2GIG	36-port 10/100 Cisco EtherSwitch HDSM with inline power and 1 Gigabit Ethernet port
LAN Network Modules	
NM-1FE-FX-V2	1-port Fast Ethernet, revision 2 (100BASE-FX interface)
NM-1GE	1-port Cisco Gigabit Ethernet network module
NM-2W	2-WIC-slot network module (no LAN)
NM-1FE1R2W	1-port 10/100 Ethernet 1-port 4/16 Token Ring 2-WIC-slot network module
NM-1FE2W	1-port 10/100 Ethernet 2-WIC-slot network module
NM-2FE2W	2-port 10/100 Ethernet 2-WIC-slot network module
NM-1FE2W-V2	1-port 10/100 Ethernet 2-WIC-slot network module, version 2
NM-2FE2W-V2	2-port 10/100 Ethernet 2-WIC-slot network module, version 2
Serial Connectivity Network Modules	
NM-1T3/E3	1-port clear-channel T3/E3 network module
NM-1HSSI	1-port High-Speed Serial Interface (HSSI) network module
NM-4T	4-port serial network module
NM-4A/S	4-port asynchronous/synchronous serial network module
NM-8A/S	8-port asynchronous/synchronous serial network module
NM-16A/S	16-port asynchronous/synchronous serial network nodule
NM-16A	16-port asynchronous serial network module
NM-32A	32-port asynchronous serial network module
Channelized T1/E1 and ISDN Network Modules	
NM-1CE1T1-PRI	1-port Channelized E1/T1/ISDN-PRI network module
NM-2CE1T1-PRI	2-port Channelized E1/T1/ISDN-PRI network module

NM-4B-S/T	4-port ISDN BRI network module (S/T interface)
NM-4B-U	4-port ISDN BRI network module with integrated Network Termination 1 (NT1) (U interface)
NM-8B-S/T	8-port ISDN BRI network module (S/T interface)
NM-8B-U	8-port ISDN BRI network module with integrated NT1 (U interface)
ATM Network Modules	
NM-1A-T3	1-port DS-3 ATM network module
NM-1A-E3	1-port E3 ATM network module
NM-4T1-IMA	4-port T1 ATM network module with Inverse Multiplexing over ATM (IMA)
NM-4E1-IMA	4-port E1 ATM network module with IMA
NM-8T1-IMA	8-port T1 ATM network module with IMA
NM-8E1-IMA	8-port E1 ATM network module with IMA
Digital Dialup and Remote-Access Network Modules	
NM-6DM	6-digital-modem network module
NM-12DM	12-digital-modem network module
NM-18DM	18-digital-modem network module
NM-24DM	24-digital-modem network module
NM-30DM	30-digital-modem network module
Analog Dialup and Remote-Access Network Modules	
NM-8AM-V2	8-port analog modem network module with v.92
NM-16AM-V2	16-port analog modem network module with v.92
Analog and ISDN Basic Rate Voice Network Modules and Accessories	
NM-HD-1V	1-slot IP communications voice/fax network module
NM-HD-2V	2-slot IP communications voice/fax network module
NM-HD-2VE	2-slot IP communications enhanced voice/fax network module
NM-HDA-4FXS	High-density analog voice/fax network module with 4-port FXS
EM-HDA-8FXS	8-port FXS voice/fax expansion module
EM-HDA-4FXO	4-port FXO voice/fax expansion module
EVM-HD-8FXS/DID	High-density analog (FXS/FXO/DID) and digital (BRI S/T) voice network module
EM-HDA-3FXS/4FXO	7-port voice/fax expansion module - 3FXS/4FXO
EM-HDA-6FXO	6-port voice/fax expansion module - FXO
EM-4BRI-NT/TE	4-port voice/fax expansion module - BRI
High-Density Voice Network Modules and Accessories	
NM-HDV2	IP communications high-density voice/fax network module
NM-HDV2-1T1/E1	1-port T1/E1 IP communications high-density voice/fax network module

NM-HDV2-2T1/E1	2-port T1/E1 IP communications high-density voice/fax network module
NM-HDV-1T1-12	1-port 12-channel T1 voice/fax network module Bundle: NM-HDV with one (1) VWIC-1MFT-T1 and one (1) PVDM-12
NM-HDV-1T1-24	1-port 24-channel T1 voice/fax network module Bundle: NM-HDV with one (1) VWIC-1MFT-T1 and two (2) PVDM-12
NM-HDV-1T1-24E	Single-port 24 enhanced channel T1 voice/fax network module Bundle: NM-HDV with one (1) VWIC-1MFT-T1 and four (4) PVDM-12
NM-HDV-2T1-48	2-port 48-channel T1 voice/fax network module Bundle: NM-HDV with one (1) VWIC-2MFT-T1-DI and four (4) PVDM-12
NM-HDV-1E1-12	1-port 12-channel E1 voice/fax network module Bundle: NM-HDV with one (1) VWIC-1MFT-E1 and one (1) PVDM-12
NM-HDV-1E1-30	1-port 30-channel E1 voice/fax network module Bundle: NM-HDV with one (1) VWIC-1MFT-E1 and three (3) PVDM-12
NM-HDV-1E1-30E	1-port 30-enhanced-channel E1 voice/fax network module Bundle: NM-HDV with one (1) VWIC-1MFT-E1 and five (5) PVDM-12
NM-HDV-2E1-60	2-port 60-channel E1 voice/fax network module Bundle: NM-HDV with one (1) VWIC-2MFT-E1-DI and five (5) PVDM-12
NM-HDV-1J1-30	1-port 30-channel J1 high-density voice network module Bundle: NM-HDV with three (3) PVDM-12 and one (1) VIC-1J1
NM-HDV-1J1-30E	1-port 30-enhanced-channel J1 high-density voice network module Bundle: NM-HDV with five (5) PVDM-12 and one (1) VIC-1J1
NM-HDV-FARM-C36	Network module 36-port DSP farm bundle High Density Voice/Fax Transcoding/conferencing DSP farm equipped with two (2) DSP SIMMs
NM-HDV-FARM-C54	Network module 54-port DSP farm bundle HDV transcoding/conferencing DSP farm equipped with three (3) DSP SIMMs
NM-HDV-FARM-C90	Network module 90-port DSP farm bundle HDV transcoding/conferencing DSP farm equipped with five (5) DSP SIMMs
Application Network Modules	
NM-CE-BP-40G-K9	Cisco Content Engine network module, basic performance, 40-GB IDE hard disk
NM-CE-BP-80G-K9	Cisco Content Engine network module, basic performance, 80-GB IDE hard disk
NM-CE-BP-SCSI-K9	Cisco Content Engine network module, basic performance, SCSI controller (requires external SCSI disk array such as the Cisco SA-6)
NM-CIDS	Cisco Intrusion Detection System network module
NM-CUE	Cisco UnityÔ Express voice mail network module

NM-NAM	Cisco 2600/3660/3700 series network analysis module
Alarm Monitoring and Control Network Modules and Accessories	
NM-AIC-64	Alarm monitoring and control network module
Circuit Emulation over IP (CESoIP) Network Modules	
NM-CEM-4SER	4 Port Serial Circuit Emulation over IP network module
NM-CEM-T1E1	4 Port T1/E1 Circuit Emulation over IP network module
Serial WAN Interface Cards	
WIC-1T	1-port high-speed serial WIC
WIC-2T	2-port high-speed serial WIC
WIC-2A/S	2-port asynchronous/synchronous serial WIC
Channel Service Unit/Data Service Unit (CSU/DSU) WAN Interface Cards	
WIC-1DSU-T1-V2	1-port T1/Fractional-T1 DSU/CSU WIC
WIC-1DSU-56K4	1-port 4-wire 56-/64-kbps CSU/DSU WIC
ISDN BRI WAN Interface Cards	
WIC-1B-U-V2	1-port ISDN BRI with integrated NT1 (U interface)
WIC-1B-S/T-V3	1-port ISDN BRI Wan Interface card for Dial and Lease Line
DSL WAN Interface Cards	
WIC-1ADSL	1-port asymmetric DSL (ADSL) over basic telephone service WIC
WIC-1ADSL-DG	1-port ADSL over basic telephone service with dying-gasp WIC
WIC-1ADSL-I-DG	1-port ADSL over ISDN with dying-gasp WIC
WIC-1SHDSL	1-port G.shdsl WIC (two wire only)
WIC-1SHDSL-V2	1-port G.shdsl WIC (two or four wire)
Analog Modem WAN Interface Cards	
WIC-1AM	1-port analog modem WIC
WIC-2AM	2-port analog modem WIC
T1, E1, and G.703 Multiflex Trunk Voice and WAN Interface Cards	
VWIC-1MFT-T1	1-port RJ-48 multiflex trunk-T1
VWIC-2MFT-T1	2-port RJ-48 multiflex trunk-T1
VWIC-2MFT-T1-DI	2-port RJ-48 multiflex trunk-T1 with drop and insert
VWIC-1MFT-E1	1-port RJ-48 multiflex trunk-E1
VWIC-1MFT-G703	1-port RJ-48 multiflex trunk-G.703
VWIC-2MFT-E1	2-port RJ-48 multiflex trunk-E1
VWIC-2MFT-E1-DI	2-port RJ-48 multiflex trunk-E1 with drop and insert

VWIC-2MFT-G703	2-port RJ-48 multiflex trunk-G.703
Voice Interface Cards	
VIC-2DID	2-port DID voice and fax interface card
VIC-1J1	1-port digital voice interface card (J1) for Japan
VIC-4FXS/DID	4-port FXS or DID VIC
VIC2-2FXS	2-port VIC-FXS
VIC2-2FXO	2-port VIC-FXO (universel)
VIC2-4FXO	4-port VIC-FXO (universel)
VIC2-2E/M	2-port VIC-ear and mouth (E&M)
VIC2-2BRI-NT/TE	2-port VIC-BRI (NT and TE)
Ethernet Switching High-Speed WAN Interface Cards	
HWIC-4ESW	4-port 10/100 Ethernet switch interface card
HWIC-4ESW-POE	4-port Ethernet switch HWIC with PoE
HWIC-D-9ESW	9-port 10/100 Ethernet switch interface card
HWIC-D-9ESW - POE	9-port Ethernet switch HWIC with PoE
Gigabit Ethernet High-Speed WAN Interface Card	
HWIC-1GE-SFP	Cisco Gigabit Ethernet High-Speed Interface Card
Advanced Integration Modules	
AIM-ATM	High-performance ATM segmentation and reassembly (SAR) advanced integration module
AIM-COMPR4	Data compression advanced integration module
AIM-CUE	Cisco Unity Express voice mail advanced integration module
AIM-VPN/EPII-PLUS	Enhanced-performance DES/3DES/AES and compression VPN encryption advanced integration module
AIM-VPN/HPII-PLUS	High-performance DES/3DES/AES and compression VPN encryption advanced integration module
Packet Voice Data Modules	
PVDM2-8	8-channel fax and voice DSP module
PVDM2-16	16-channel fax and voice DSP module
PVDM2-32	32-channel fax and voice DSP module
PVDM2-48	48-channel fax and voice DSP module
PVDM2-64	64-channel fax and voice DSP module

Appendix A.9: 7000 Family Modules Support

Reference: http://wwwin.cisco.com/rtg/products/7000/index.shtml

ATM Port Adapters

Part Number and Description	Chassis Supported
PA-A3-OC3-xxx 1-Port ATM OC-3c/STM-1 Port Adapter, Enhanced (-MM, -SMI, or - SML)	7200, 7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-40/50, 7500 VIP 4/6, 7600 FlexWAN
PA-A3-E3 or -T3 1-Port ATM E3, or DS3 Port Adapter, Enhanced	7200, 7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-40/50, 7500 VIP 4/6. 7600 FlexWAN
PA-A3-OC12-xx 1-Port ATM OC-12c/STM-4 Port Adapter, Enhanced (-MM or -SM)	7500 VIP 4-80/6-80
PA-A3-8E1IMA or -8T1IMA ATM Inverse Multiplexer over ATM Port Adapter with 8 E1 or 8 T1 Ports	7200, 7200 VXR, 7301, 7500 VIP 2-40/50, 7500 VIP 4/6, 7600 FlexWAN
PA-A6-OC3-xxx 1-Port ATM OC-3 Port Adapter, Enhanced (-MM, -SMI, or -SML)	7200, 7200 VXR, 7301. 7401
PA-A6-T3 or -E3 1-Port ATM DS3 (E3) Port Adapter, Enhanced	7200, 7200 VXR, 7301, 7401

Ethernet Port Adapters

Part Number and Description	Chassis Supported
PA-2FE-FX or -TX 2-Port Fast Ethernet 100BaseFX or 100BaseTX	7200 VXR, 7301, 7304 PA Carrier Card, 7401,7500 VIP 2-0/15/20/40/50, 7500 VIP 4/6
PA-4E 4-Port Ethernet 10bT Interface	7200 VXR, 7301,7304 PA Carrier Card, 7401, 7500 VIP 2-0/15/20/40/50, 7500 VIP 4/6
PA-8E 8-Port Ethernet 10bT Interface	7200 VXR, 7301, 7304 PA Carrier Card, 7401,7500 VIP 2-0/15/20/40/50,7500 VIP 4/6
PA-GE 1-Port Gigabit Ethernet Port Adapter	7200 VXR, 7304 PA Carrier Card, 7401
GEIP+ Enhanced Gigabit Ethernet Interface Processor	7500

Token Ring and FDDI Port Adapters

Part Number and Description	Chassis Supported
PA-4R-DTR 4 Port Dedicated Token Ring	7200 VXR, 7500 VIP 2-10/15/20, 7500 VIP 2-40

Serial Port Adapters

Part Number and Description	Chassis Supported
PA-4E1G-75 and -120 4 Port E1/G.703 Interface	7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-0/15/20/40/50, 7500 VIP 4/6
PA-4T+ 4 Port Serial Adapter	7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-0/15/20/40/50, 7500 VIP 4/6, 7600 FlexWAN
PA-8T-232 or -V35 or -X21 8 Port Serial Port Adapter w/ either a EIA/TIA-232 Interface, a V.35 interface, or a X.21 interface	7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-0/15/20/40/50, 7500 VIP 4/6, 7600 FlexWAN

High-Speed Serial Port Adapters

Part Number and Description	Chassis Supported
PA-H **or** -2H **1 or 2 Port HSSI Port Adapter**	**7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-0/15/20/40/50, 7500 VIP 4/6, 7600 FlexWAN**
PA-E3 **or** -2E3 **1 or 2 Port Clear-Channel E3 Port Adapter**	**7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-0/15/20/40/50, 7500 VIP 4/6, 7600 FlexWAN**
PA-T3+ **or** 2T3+ **1 or 2 Port Clear-Channel DS3 Port Adapter**	**7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-0/15/20/40/50, 7500 VIP 4/6, 7600 FlexWAN**

Multichannel Serial Port Adapters

Part Number and Description	Chassis Supported
PA-4B-U 4 Port BRI Port Adapter	7200 VXR, 7301
PA-8B-S/T 8 Port BRI Port Adapter, S/T Interface	7200 VXR, 7301
PA-MC-2T1, or -4T1 2 or 4 Port Multichannel T1 with Integrated CSUs and DSUs	7200 VXR, 7301, 7304 PA Carrier Card, 7500 VIP 2-40/50, 7500 VIP 4/6, 7600 FlexWAN (-4T1 only)
PA-MC-8TE1+ 8 Port Enhanced Multichannel T1 / E1 Port Adapter with CSU / DSU	7200, 7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-40/50, 7500 VIP 4/6, 7600 FlexWAN
PA-MC-2E1/120 2 Port Multichannel E1 G.703/G.704 120-ohm Interfaces	7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-10/15/20/40/50, 7500 VIP 4/6
PA-MC-E3 1 Port Multichannel E3 with Integrated E3 G.703 75 ohm Interface	7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-40/50, 7500 VIP 4/6, 7600 FlexWAN

PA-MC-T3 1 Port Multichannel T3 Interface	7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-40/50, 7500 VIP 4/6, 7600 FlexWAN
PA-MC-2T3+ 2 Port Enhanced Multichannel T3 Port Adapter	7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-40/50, 7500 VIP 4/6, 7600 FlexWAN
PA-MC-STM-1xxx Multichannel STM-1 Port Adapter (-MM or -SMI)	7200 VXR, 7301, 7304 PA Carrier Card, 7500 VIP 4/6, 7600 FlexWAN
PA-MCX-2TE1, or -4TE1, or -8TE1 2, 4, or 8 Port MIX Multichannel T1/E1 Port Adapter with CSU/DSU	7200 VXR

Packet over SONET (POS) Adapters

Part Number and Description	Chassis Supported
PA-POS-2OC3 2-Port OC3/STM1 POS Port Adapter	7200VXR, 7401, 7500 VIP 4/6
PA-POS-OC3-xxx 1 Port POS OC-3c/STM1 Port Adapter (Multimode, Single-Mode (IR), or Single-mode (LR))	7200 VXR, 7301, 7304 PA Carrier Card, 7401, 7500 VIP 2-50, 7500 VIP 4/6, 7600 FlexWAN

SRP (DPT) Port Adapters

Part Number and Description	Chassis Supported
PA-SRP-OC12xxx DPT Fiber (Multimode, Single-Mode Fiber - Intermediate Reach, Single-Mode Fiber - Long Reach, or Single-Mode Fiber - Extended Reach)	7200 VXR, 7500 VIP 4/6

Miscellaneous / Service Adapters

Part Number and Description	Chassis Supported
PA-FC-1G Cisco Fibre Channel over IP Port Adapter Interface	7200, 7200VXR, 7401
PA-4C-E 1 Port High-Performance ESCON CPA	7200 VXR
SA-VAM2 VPN Acceleration Module 2	7200 VXR 7301
SA-VAM VPN Acceleration Module	7200 VXR 7401
PA-VXC-2TE1+ and -VXB-2TE1+ 2 Port T1/E1 High-or Moderate-Capacity Enhanced Digital Voice Port Adapter	7200 VXR, 7301, 7401 (-VXB-2TE1+ only), 7500 VIP 2-40/50, 7500 VIP 4/6

PA-VXA-1TE1-24+ or -30+ 1 Port T1/E1 Enhanced Digital Voice Port Adapter with 24 Channels, or with 30 Channels	7200 VXR, 7401, 7500 VIP 2-40/50, 7500 VIP 4/6

Appendix A.10: 10008 Modules

Asynchronous Transfer Mode (ATM)

1-Port OC-12 ATM One-Port OC-12 ATM
4-Port OC-3c/STM-1c ATM Four-Port OC-3c/STM-1c ATM
8-Port DS3/E3 ATM Eight-Port DS3/E3 ATM

Channelized

1-Port Channelized OC-12/STM-4 One-Port Channelized OC-12/STM-4
4-Port Channelized STM-1/OC-3 Four-Port Channelized STM-1/OC-3
6-Port Channelized T3 Six-Port Channelized T3
24-Port Channelized E1/T1 Twenty Four-Port Channelized E1/T1

Electrical Interface

8-Port Unchannelized E3/T3 Eight-Port Unchannelized E3/T3

Ethernet

Gigabit Ethernet One-Port Gigabit Ethernet
1-Port GE Half-Height One-Port Gigabit Ethernet Half-Height
8-Port FE Half-Height Eight-Port Fast Ethernet Half-Height
Half-Height Carrier

Packet over SONET (POS)

1-Port OC-48/STM-16 POS/SDH One-Port OC-48/STM-16 POS
1-Port OC-12/STM-4 POS/SDH One-Port OC-12/STM-4 POS
6-Port OC-3c/STM-1 POS/SDH Six-Port OC-3c/STM-1 POS

Appendix A.11: 12000 Modules

Packet Over SONET/SDH (POS) Line Cards

Line Card Name	Chassis Supported
2-Port OC-192 POS Two-Port OC-192c/STM-64c POS	12810 12816
1-Port OC-192 POS ES One-Port OC-192c/STM-64c POS Enhanced Services (ES)	10G Chassis
8-Port OC-48 POS Eight-Port OC-48c/STM-16c POS	12810 12816
4-Port OC-48 POS ES Four-Port OC-48c/STM-16c POS ES	10G Chassis
1-Port OC-48 POS ISE One-Port OC-48c/STM -16c POS ISE	10G Chassis 2.5G Chassis
4-Port OC-12 POS ISE Four-Port OC-12c/STM-4c POS ISE	10G Chassis 2.5G Chassis
1-Port OC-12 POS One-Port OC-12c/STM-4c POS	10G Chassis 2.5G Chassis
16-Port OC-3 POS ISE Sixteen-Port OC-3c/STM-1c POS ISE	10G Chassis 2.5G Chassis
8-Port OC-3 POS ISE Eight-Port OC-3c/STM-1c POS ISE	10G Chassis 2.5G Chassis
4-Port OC-3 POS ISE Four-Port OC-3c/STM1c POS ISE	10G Chassis 2.5G Chassis
8- and 16-Port OC-3 POS Eight and Sixteen-Port OC-3c/STM-1c POS	10G Chassis 2.5G Chassis

Ethernet Line Cards

Line Card Name	Chassis Supported
4-Port GE ISE Four-Port Gigabit Ethernet ISE	10G Chassis 2.5G Chassis
1-Port 10-GE One-Port 10-Gigabit Ethernet	10G Chassis
Modular GE Modular Gigabit Ethernet	10G Chassis
3-Port GE Three-Port Gigabit Ethernet	10G Chassis 2.5G Chassis
8-Port FE w/ ECC Eight-Port Fast Ethernet	10G Chassis 2.5G Chassis

Dynamic Packet Transport/Resilient Packet Ring (DPT/RPR) Line Cards

Line Card Name	Chassis Supported
1-Port OC-192 DPT One-Port OC-192c/STM-64c DPT	10G Chassis
4-Port OC-48 DPT Four-Port OC-48c/STM-16c DPT	10G Chassis
1-Port OC-48 DPT One-Port OC-48c/STM-16c DPT	10G Chassis 2.5G Chassis
4-Port OC-12 DPT ISE Four-Port OC-12c/STM-4c DPT ISE	10G Chassis 2.5G Chassis

Channelized Edge Line Cards

Line Card Name	Chassis Supported
1-Port CHOC-48 POS ISE One-Port Channelized OC-48/STM-16 (DS3/E3, OC-3c/STM-1c, OC-12c/STM-4c) POS ISE	10G Chassis 2.5G Chassis
4-Port CHOC-12 POS ISE Four-Port Channelized OC-12/STM-4 (DS3/E3, OC-3c/STM-1c) POS ISE	10G Chassis 2.5G Chassis
1-Port CHOC-12 ISE One-Port Channelized OC-12c/STM-4c (DS1/E1) ISE	12816 12810 10G Chassis 2.5G Chassis
1-Port CHOC-12 (OC-3) One-Port Channelized OC-12/STM-4 (OC-3/STM-1)	10G Chassis 2.5G Chassis
1-Port CHOC-12 (DS3) One-Port Channelized OC-12 (DS3)	10G Chassis 2.5G Chassis
2-Port CHOC-3 (DS1/E1) Two-Port Channelized OC-3/STM-1 (DS1/E1)	10G Chassis 2.5G Chassis
6-Port Ch T3 Six-Port Channelized T3 (T1)	10G Chassis 2.5G Chassis

Asynchronous Transfer Mode (ATM) Line Cards

Line Card Name	Chassis Supported
4-Port OC-12 ATM ISE Four-Port OC-12c/STM-4c ATM ISE	10G Chassis 2.5G Chassis
4-Port OC-12 ATM Four-Port OC-12c/STM-4c ATM	10G Chassis 2.5G Chassis
1-Port OC-12 ATM One-Port OC-12c/STM-4c ATM	10G Chassis 2.5G Chassis

4-Port OC-3 ATM ISE Four-Port OC-3c/STM-1c ATM ISE	12816 12810 10G Chassis 2.5G Chassis
8-Port OC-3 ATM Eight-Port OC-3c/STM-1c ATM	10G Chassis 2.5G Chassis
4-Port OC-3 ATM Four-Port OC-3c/STM-1c ATM	10G Chassis 2.5G Chassis

Electrical Interface Line Cards

Line Card Name	Chassis Supported
12-Port DS3 Twelve-Port DS3	10G Chassis 2.5G Chassis
6-Port DS3 Six-Port DS3	10G Chassis 2.5G Chassis
12-Port E3 Twelve-Port E3	10G Chassis 2.5G Chassis
6-Port E3 Six-Port E3	10G Chassis 2.5G Chassis

Appendix A.12: 7600 Modules

Packet Over SONET/SDH (POS)

Part Number & Description
OSM-1OC48-POS-xx+ Enhanced 1-port OC-48/STM-16 SONET/SDH 4 GE OSM: SM-SR, SM-IR, or SM-LR
OSM-2OC12-POS-xx+ Enhanced 2-port OC-12/STM-4 SONET/SDH 4 GE OSM: MM or SI
OSM-4OC12-POS-SI+ Enhanced 4-port OC-12/STM-4 SONET/SDH OSM, SM-IR with 4 Gigabit Ethernet
OSM-4OC3-POS-SI+ Enhanced 4-port OC-3/STM-1 SONET/SDH OSM, SI with 4 GE
OSM-8OC3-POS-xx+ Enhanced 8-port OC-3/STM-1 SONET/SDH OSM: SI with 4 GE, or SL with 4 GE

Ethernet

Part Number & Description
OSM-2+4GE-WAN+ Enhanced 4-port Gigabit Ethernet OSM

Asynchronous Transfer Mode (ATM)

Part Number & Description
OSM-2OC12-ATM-xx+ Enhanced 2-port OC-12 ATM, 4GE OSM: IR or MM

Channelized

Part Number & Description
OSM-1CHOC12/T3-SI 1-Port OC-12 to T3 with 4 Gigabit Ethernet Singlemode Intermediate Reach (LC)
OSM-1CHOC12/T1-SI 1-Port Channelized OC-12/STM-4 to DS-0 Optical Services Module, Singlemode Intermediate Reach (LC)
OSM-12CT3/T1 12-Port Channelized T3 to DS-0 Optical Services Module

Dynamic Packet Transport (DPT)

Part Number & Description
OSM-2OC48/1DPT-xx Two-port OC-48c/STM-16 SONET/SDH configurable to be one-port OC-48c/STM-16 DPT 4GE OSM: SM-SR1, SM-IR2, or SM-SL3