Cisco 3700 Series
Application Service Routers

Access Platform Optimized for the Modular Integration and Consolidation of Branch Office Applications and Services

Introduction

The Cisco 3700 Series Application Service Routers are a new family of modular routers that enable flexible and scalable deployment of new e-business applications in an integrated branch office access platform. For customers planning to migrate services from legacy infrastructure and to distribute new applications from the core to the edge of the enterprise, the Cisco 3700 Series offers a powerful new solution for remote office access. Deploying the Cisco 3700 Series accelerates customers' cost reduction benefits of e-business applications, reduces total cost of ownership of customers' infrastructure, and improves competitive leverage of the network. The Cisco 3700 series supports the Cisco AVVID (Architecture for Voice, Video and Integrated Data), which is the enterprise-wide, standards-based network architecture that provides the roadmap for combining business and technology strategies into one cohesive model.

Complementing the existing Cisco 1700/2600/3600 modular multiservice routers, which are optimized to support the broadest array of connectivity options, the Cisco 3700 Series is ideal for sites and solutions requiring the highest levels of integration at the edge, such as:

- Integration of flexible routing and low density switching
- Single platform solution for Branch Office IP Telephony and Voice Gateway allowing flexible, incremental migration and service integration
- Consolidation of service infrastructure and high service density in a compact form factor

The Cisco 3700 Series delivers an access platform optimized for the modular integration and consolidation of branch applications and services.

Cisco 3700 Application Service Router Overview

The modular Cisco 3700 Series Application Service Routers leverage select network modules (NMs), WAN Interface Cards (WICs), and Advanced Integration Modules (AIMs) from the Cisco 1700, 2600 and 3600 Series Routers for WAN Access, Voice

Figure 1

The Cisco 3700 Series Application Service Routers

Gateway, and Dial applications. In addition, the two Cisco 3700 platforms, the Cisco 3725 and Cisco 3745, introduce a new, wider interface form factor, a high density services module (HDSM). The 4 NM-slot Cisco 3745 router can accept two HDSMs in place of four NMs by removing the center guides between each pair of adjacent NM slots. The 2 NM-slot Cisco 3725 router can accept an HDSM in one of its two NM slots and still accept an NM in the remaining slot. By utilizing the new HDSM the Cisco 3700 Series routers are able to integrate higher port density and new, high performance services.

Figure 2

Cisco 3745 Application Services Router (shown with optional interfaces)
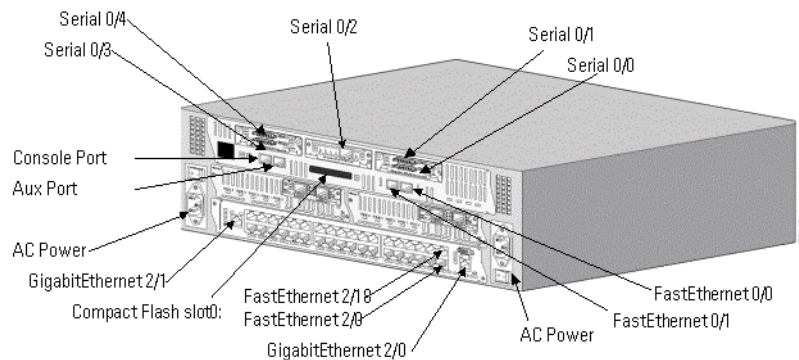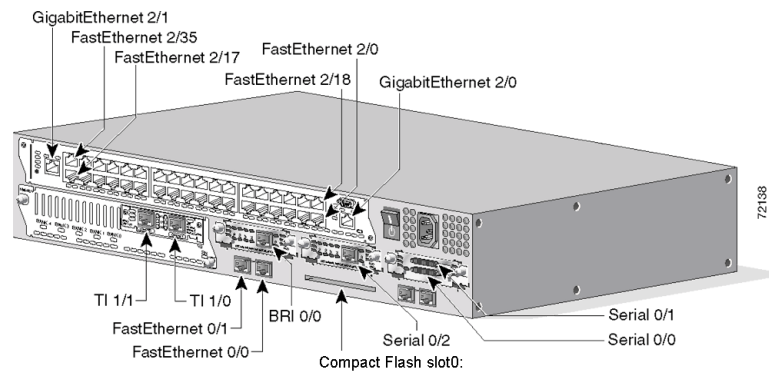

Figure 3

Cisco 3725 Application Series Router (shown with optional interfaces)

Also new in the Cisco 3700 Series is the ability to support integrated In-Line Power on optional 10/100 switching modules for IP Telephony and/or Aironet Wireless LAN applications. By integrating the connectivity slots and ports on the base chassis, the Cisco 3700 Series enables the NM slots to integrate additional services in a small footprint. Both Cisco 3700 platforms offer increased Flash and DRAM default memory to accelerate and simplify future service and feature additions. In addition, the Cisco 3745 router offers additional availability features that may be required in high density, multiple services configurations.

Key features for the Cisco 3725 and 3745:

- Two Integrated 10/100 LAN ports
- Two Integrated Advanced Integration Modules (AIM) slots
- Three Integrated WAN Interface Card (WIC) slots
- Two (Cisco 3725) or four (Cisco 3425) Network Module (NM) slots
- One (Cisco 3725) or two (Cisco 3745) High Density Service Module (HDSM)-capable slots
- 32MB Compact Flash/ 128MB DRAM (default, single 128MB DIMM/SODIMM)
- The 3725 has a single 128MB SDRAM DIMM module and a single 32MB Compact Flash module by default
- Optional In-Line Power for 16-port EtherSwitch NM and 36-port EtherSwitch HDSM
- Support for all major WAN protocols and media: LL, FR, ISDN, X.25, ATM, fractional T1/E1, T1/E1, xDSL, T3/E3, HSSI
- Support for selected NMs, WICs and AIMs from the Cisco 1700, 2600 and 3600 Series
- 2 RU (Cisco 3725) or 3 RU (Cisco 3745) Rack-mountable chassis

Additional Key Features for the Cisco 3745:

- Field-replaceable motherboard, I/O board and fan tray
- Passive backplane
- Optional internal redundant power supplies (RPS—system and inline power)
- Online Insertion and Removal (OIR) of NMs and RPSs:

Table 1 Cisco 3700 Series Key Features and Benefits

Feature	Benefit
Investment Protection	
Modular platform which shares interfaces with Cisco 1700, 2600, 3600	• Network interfaces are field-upgradable to accommodate future technologies • Additional services can be added on an "integrate as you grow" basis • Leverages the large existing portfolio of WICs, VICs, NMs and AIMs to reduce sparing, training, configuration and installation and maintenance costs
LAN/WAN Connectivity integrated into chassis	• More NM and HDSM slots available to add services in the future • Combination of AIMs and WICs along with NMs/HDSMs gives greater flexibility to create new configurations as requirements change
Flexible voice gateway and IP Telephony configurations	• Incremental migration from legacy infrastructure to IP Telephony • Compatibility with over 90% of the world's legacy analog and digital TDM PBXs • Sliding scale options for higher density mixed analog and digital voice gateway configurations
Cisco IOS software	• Supports Cisco IOS feature sets common with the Cisco 2600 and 3600 routers • New releases of Cisco IOS add support for new services and applications • Enables end to end solutions with full support for Cisco IOS-based QoS, bandwidth management and Security mechanisms

Table 1 Cisco 3700 Series Key Features and Benefits

Feature	Benefit
Scalability	
Increased AIM (2) and WIC density (3)	• Services and WAN connectivity and backup can be supported without consuming an NM slot • Increased density per RU of voice, switching, WAN connectivity
Increased default memory of 32MB Compact Flash and 128MB DRAM	• A greater number of new Cisco IOS releases may be added without the need to purchase/install additional memory
New High Density Service Modules (HDSM)	• Enables higher port density and new, high performance services
Availability	
Support for Optional Redundant Power	• Accommodates optional RPS (external for Cisco 3725,[1] internal for Cisco 3745) and minimizes network downtime
Survivable Remote Site Telephony	• Branch offices can leverage centralized call control while cost-effectively providing local branch backup redundancy for IP Telephony
Online Insertion and Removal-capable (3745 only)	• Allows network modules to be swapped or serviced with minimal impact to network availability • Allows servicing of online replacement of RPS • Online replacement of fan tray
Field-replaceable motherboard, I/O board, power supplies and fan tray (3745 only)	• High serviceability design • Additional operations and maintenance flexibility

1. In future releases.

Key Applications and Benefits

Integration of Flexible Routing and Low Density Switching

Many enterprises planning to deploy e-business applications in their branch and remote offices can benefit from deploying a single integrated platform that combines the industry-leading routing and switching technologies with the highest level of WAN flexibility to accommodate the dynamic remote office environment. The Cisco 3700 Series meets these requirements for the low-density branch office with a modular, integrated platform, offering WAN interfaces, and integrated switched Ethernet ports.

The Cisco 3700 Series offers an optional 16-port 10/100 EtherSwitch network module (NM), or an optional 36-port 10/100 EtherSwitch high density service module (HDSM), both of which leverage the proven Cisco Catalyst technology. The EtherSwitch NM/HDSM hardware supports 802.1p Layer 2 prioritization, while Cisco IOS supports Layer 3 Diff-Serv and Class of Service (CoS) markings for critical business data. Coupling Layer 2/3 prioritization techniques, with the QoS for the WAN, the Cisco 3700 Series ensures low latency for critical business applications, enabling the deployment of e-business applications.

The EtherSwitch ports can also be used to power the Cisco Aironet Access Points in the low-density-branch to deliver Wireless LAN (802.11b) access flexibility. The Cisco 3700 Series with the EtherSwitch NM/HDSM integrates Cisco IOS routing and Catalyst switching technologies in a single platform, offering a single point of management for easier configuration, troubleshooting and a lower total cost of ownership.

Key features include:

- Combination of the industry-leading Cisco IOS features with Catalyst switching technologies for wire-rate Layer 2 switching, with rich protocol and feature support.
- Integrated platform, with EtherSwitch ports for LAN, WAN flexibility, and a rich QoS toolkit for e-business applications.
- Enables simple, single point for configuration and troubleshooting, while integrating diverse technologies.
- Modular design enables scaling as business needs evolve with options for 16- or 36-port EtherSwitch module port densities.

Figure 4
Cisco 16- and 36-port EtherSwitch Modules

Single Platform Solution for Branch Office IP Telephony and Voice Gateway

As the migration to converged voice/data networks accelerates, enterprises need to deploy a platform that has the ability to immediately or gradually grow to support a wide range of traditional telephony devices in addition to newer IP telephony solutions. The Cisco 3700 Series delivers on that need by supporting legacy phone systems through a variety of scalable analog telephony connectivity options starting at two analog ports and scaling to 16, 32, 48 or 64 analog ports. Digital telephony connectivity is just as scalable with options beginning at 12 channels up to 240 channels. IP telephony solutions are also supported on the Cisco 3700 Series through a powerful set of features including line powered IP phone connectivity that begins with 16 ports and scales to 36, 52, or 72 ports in a single platform.

The performance-tuning of the Cisco 3700 Series enables customers to take advantage of quality of service, bandwidth optimization and data fragmentation along with other advanced call admission control, call control and queuing mechanisms without sacrificing the expected data performance needed for future growth. The Cisco 3700 Series offers resilient IP telephony services, including Survivable Remote Site Telephony (SRST), H.323, SIP and MGCP, and redundant power for the system and IP phones.

With the Cisco 3700 Series, enterprises can deploy this scalable platform to support all of their telephony needs without investing in all connectivity requirements in the initial deployment. The enhanced service density of the Cisco 3700 allows enterprises the opportunity to deploy a base level configuration that will scale to the converged telephony needs of that branch when necessary. This modular telephony format mitigates future technology lockout.

Deployment of IP Telephony infrastructure solutions are facilitated by the following key Cisco 3700 features:

- Optional modular integration of an inline-powered EtherSwitch NM or HDSM, combined with analog and/or digital high-density voice gateway modules and flexible WAN connectivity for a modular, single-platform IP Telephony infrastructure
- Resilient IP Telephony services, including Survivable Remote Site Telephony (SRST), H.323, SIP and MGCP, and redundant power for system and IP phones
- Complete Cisco CallManager support for both H.323 and MGCP call control protocols makes the Cisco 3700 the ideal voice gateway
- Performance-tuned to scale both analog, and digital voice solutions and hybrid solutions
- Modular expandability enables the addition of gateway or phone aggregation ports as needed

The evolution from time division multiplexing (TDM) voice to IP Telephony has created the requirement that branch offices be equipped to deploy IP Telephony solutions without the need to replace the branch office access platforms. The Cisco 3700 series fulfills that need by ensuring complete support for the range of voice gateway densities and IP Telephony features necessary for Enterprises' evolving branch office infrastructures.

Figure 5

Typical Deployment: Branch Office Data and IP Phones
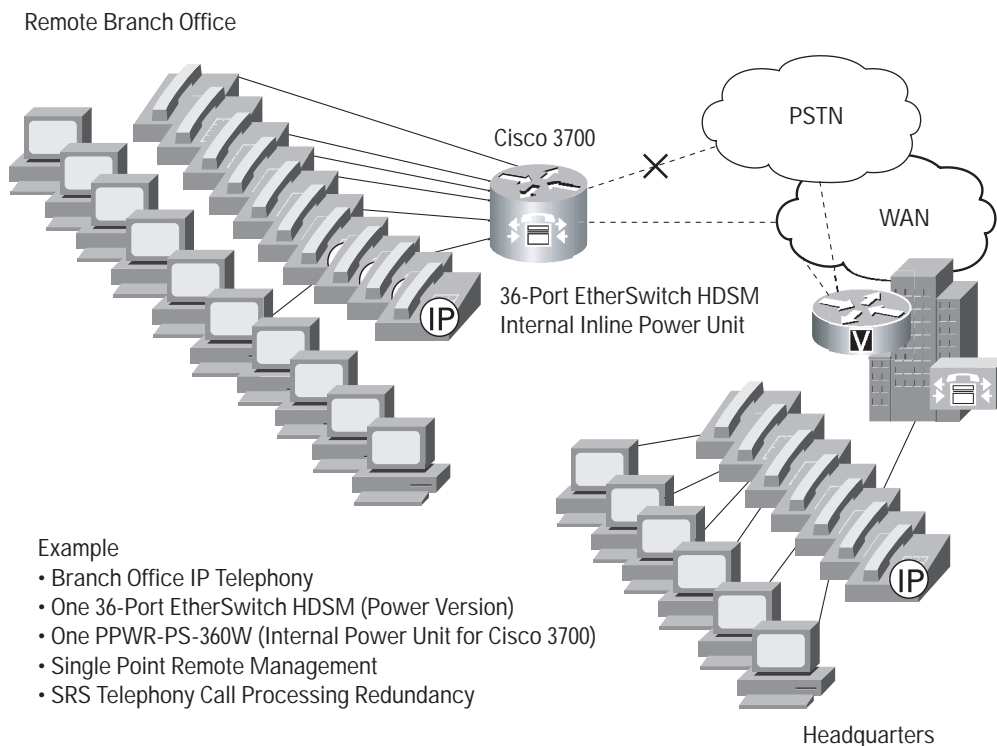
Consolidation of Service Infrastructure and High Service Density in a Compact Form Factor

The Cisco 3700 Series addresses the dynamic needs of the evolving branch by blending improved efficiency and scalability into platforms for branch offices requiring a higher level of integration. These platforms offer a wide array of voice and data interfaces in a compact form factor. The Cisco 3700 Series reduces network complexity and delivers single-platform solution that lowers total cost of ownership by simplifying training, deployment, and management. Key features include:

- On-board LAN/WAN connectivity options free up network module slots for multiple high-density services (see Table 2 for available options)
- Integrated inline power for wireless access points and IP phones
- Versatile HDSM module design enables higher port density and enhanced integrated services
- Increased Flash and DRAM default memory to accelerate and simplify future service and feature additions
- Redundant power, OIR, as well as field replaceable motherboard and I/O board provide high density, multiple services configurations.

Figure 6
High Service Density in a Compact Form Factor
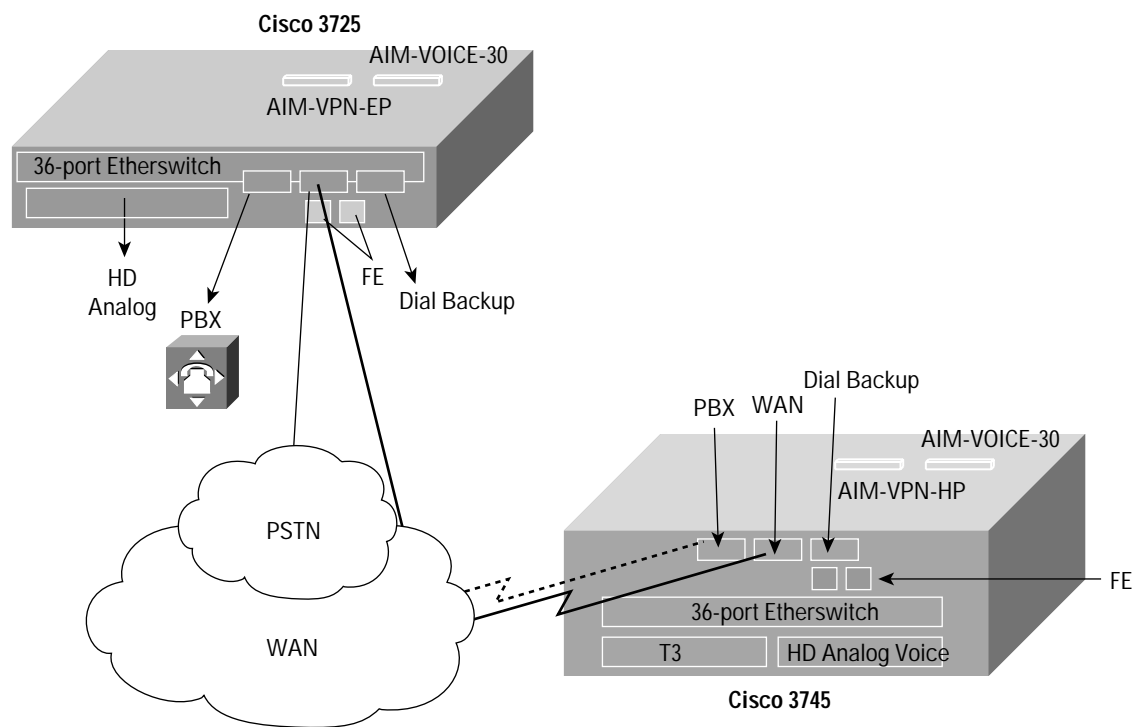
Cisco 3700 enables higher service densities through a versatile, wider interface form factor (using a HDSM), additional interface options with three WIC slots, CPU offload with two built-in AIM slots, and on-board LAN/WAN connectivity to free up module slots.

Table 2 Supported Interfaces for the Cisco 3700 Series at FCS

LAN/WAN	LAN	Serial	ISDN/ Channel	Voice	ATM	Modem	Encryption/ Compression
FE Combo NMs (NM-1FE2W, etc.) 1 port ADSL WIC	16 & 36 port EtherSwitch Modules	2 port Serial WICs 1 and 2 port T1/E1 CSU/ DSU VWICs 1 port 56k CSU/DSU WIC 4 and 8 port Sync/Async Serial NMs HSSI NM	1 and 2 port T1/E1 Channelized/ ISDN Pri NMs 4 and 8 port T1/E1 ISDN BRI NMs ISDN BRI WICs	Low Density Analog Voice NMs (all VICs except BRI NT/TE) High density T1/E1 Digital Voice NMs	4 and 8 port T1/E1 NMs 1 port DS3 / E3 NMs	Digital Modem NMs 1 and 2 port Analog Modem WICs	EP & HP AIMs[1]

1. AIM-VPN-EP on 3725, AIM-VPN-HP on 3745

Table 3 Supported Interfaces for the Cisco 3700 Series at Phase 2

LAN/WAN	LAN	Serial	ISDN/ Channel	Voice	ATM	Modem	Encryption/ Compression
1 port Multimode Fiber FE 1 port G.SHDSL WIC		1 port T1 CSU/DSU WIC 16 & 32 port Async		High Density Analog Voice NM BRI NT/TE VIC DSP AIM	SAR AIM SAR/DSP AIM	4 and 8 port Analog Modem NMs	COMP4 AIM

Specifications

Table 4 Cisco 3700 Series Specifications

Description	Specification
Processor Type	Cisco 3725—MIPS RISC processor Cisco 3745—MIPS RISC processor
Performance	Cisco 3725—100kpps Cisco 3745—225kpps
Flash Memory (Compact Flash)	Internal: 32MB (default), expandable to 128MB External: 32MB, 64MB,128MB options
System Memory	128MB (SDRAM default)—expandable to 256MB

Table 4 Cisco 3700 Series Specifications

Description	Specification
Integrated WIC slots	3
Onboard AIM (internal)	2
Console port	1 (up to 115.2 kbps)
Aux port	1 (up to 115.2kbps)
Minimum Cisco IOS Release	Cisco IOS 12.2(8) T
Onboard LAN ports	2 10/100 Fast Ethernet ports
Redundant Power Supply Support	Cisco 3725—External only (at a later date) Cisco 3745—Internal AC or DC options
Rack Mounting	Yes, 19′ and 23″ options
Power requirements	
Power Supply	*Cisco 3725—* 135W Maximum (5V, 3.3V, 12V,-12V) AC to DC power supply 495W Maximum with optional power supply: (5V, 3.3V, 12V,-12V,-48V@360W) AC to DC power supply *Cisco 3745—* 230W Maximum (5V, 3.3V, 12V, -12V)AC-DC Power Supply 590W Maximum (Per AC Input) With Optional power supply (5V, 3.3V, 12V,-12V,-48V@360W) AC-DC power
Heat Dissipation	*Cisco 3725—* 135W Maximum 460.661 BTU/hour 495W Maximum 1689.089 BTU/hour *Cisco 3745—* 230W Maximum 784.829 BTU/hour 590W Maximum 2013.257 BTU/hour
Output	*Cisco 3725—* 12V@5A,5V@21A,3.3V@12A,-12V@2A,(optional -48V@7.5A) *Cisco 3745—* 12V@12A,5V@25A,3.3V@18A,-12V@2.5A, (optional -48V@7.5A)
AC input voltage	100 to 240VAC
Frequency	47-63Hz
AC input current	*Cisco 3725—* 2A max @ 100VAC;1A max @ 240VAC (215W Maximum) with optional power supply: 7A Max@100VAC;3.5A max @ 240VAC (665W Maximum) *Cisco 3745—* 5A max @ 100VAC;2.5A max @ 200VAC (365W Maximum) With optional power supply: 10A max @100VAC;5A max@200VAC (815W Maximum)

Table 4 Cisco 3700 Series Specifications

Description	Specification
Environmental Specifications	
Operating temperature	32 to 104 F (0 to 40 C)
Nonoperating temperature	-40 to 185 F (-40 to 85 C)
Relative humidity	5-95% noncondensing
Operation altitude	Up to 6500 ft (2000m), derate 1C per 1,000 ft.
Dimensions (HxWxD)	Cisco 3725—3.5 x 17.1 x 14.7 in. Cisco 3745—5.25 x 17.25 x 16 in.
Weight (without NMs or WICs or additional Power Supplies)	Cisco 3725—14 lbs. Cisco 3745—32 lbs.
Regulatory Compliance	
Safety	UL 1950 CAN/CSA-C22.2 No. 950 EN 60950 IEC 60950 TS 001
EMC	FCC Part 15 ICES-003 Class A EN55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI Class A
Telecom	FCC Part 68 Canada CS-03 JATE RTTE Directive
Interface Support	
High Density Service Modules	NM-36-ESW, NM-36ESW-PWR
Network Modules	*At Introduction:* NM-1FE2W, NM-2FE2W, NM-1FE1R2W, NM-2W, NM-16ESW, NMD-36ESW, NM-1V, NM-2V, NM-HDV-1T1-12, NM-HDV-1E1-12, NM-HDV-1E1-30, NM-HDV-1E1-30E, NM-HDV-2E1-60, NM-HDV-1T1-24, NM-HDV-2T1-48, NM-HDV-1T1-24E, NM-HDV-2T1-48, NM-HDA-4FXS, NM-HDA-4FXS, NM-1A-T3, NM-1A-E3, NM-4E1-IMA, NM-4T1-IMA, NM-8E1-IMA, NM-8T1-IMA, NM-6DM, NM-12DM, NM-18DM, NM-24DM, NM-30DM, NM-4B-S/T, NM-8B-S/T, NM-4B-U, NM-8B-U, NM-1CT1, NM-1CT1-CSU, NM-2CT1, NM-2CT1-CSU, NM-1CE1B, NM-1CE1U, NM-2CE1U, NM-2CE1B, NM-1HSSI, NM-4A/S, NM-8A/S, NM-16ESW,NM-16ESW-PWR *At a later date:* NM-8AM, NM-16AM, NM-16A, NM-32A

Table 4 Cisco 3700 Series Specifications

Description	Specification
WICs, VWICs, and VICs	*At Introduction:* WIC-2T, WIC-2A/S, WIC-1B-S/T, WIC-1B-U, WIC-1DSU-56K4, VWIC-1MFT-T1, VWIC-2MFT-T1, VWIC-2MFT-T1-DI, VWIC-1MFT-E1, VWIC-2MFT-E1, VWIC-2MFT-E1-DI, VWIC-1MFT-G703, VWIC-2MFT-G703, WIC-1ADSL, WIC-1AM, WIC-2AM, VIC-2FXS, VIC-2FXO, VIC-2FXO-EU, VIC-2FXO-M1, VIC-2FXO-M2, VIC-2FXO-M3, VIC-2E/M, VIC-2BRI-S/T-TE *At a later date:* WIC-1SHDSL, WIC-1DSU-T1, VIC-2BRI-NT/TE
AIMs	*At Introduction:* AIM-VPN-HP, AIM-VPN-EP *At a later date:* AIM-ATM, AIM-ATM-Voice-30, AIM-Voice-30, AIM-COMP4

Ordering Information

The Cisco 3700 Series is orderable through the following part numbers:

Part Number	Description
CISCO3725	2-slot Modular Application Service Router with IP Software
CISCO3745	4-slot Modular Application Service Router with IP Software

Summary

The Cisco 3700 Series Application Service Routers enable flexible and scalable deployment of new e-business applications in an integrated branch office access platform. The Cisco 3700 Series is ideal for sites and solutions requiring the highest levels of integration at the edge for Branch Office IP Telephony, voice gateway, and integrated flexible routing with low-density switching solutions. In addition, the Cisco 3700 Series provides a consolidated service infrastructure and high service density in a compact form factor that enables the incremental integration of branch applications and services.

Service and Support

The award-winning Cisco Service and Support offerings provide presales network audit planning, design consulting, network implementation, operational support, and network optimization. By including service and support when purchasing Cisco 3700 products, customers can confidently deploy a converged network architecture using Cisco expertise, experience, and resources.

For More Information on Cisco Products, Contact:

U.S. and Canada: 800 553-NETS (6387)

Europe: 32 2 778 4242

Australia: 612 9935 4107

Other: 408 526-7209

Web: www.cisco.com

CISCO SYSTEMS

Corporate Headquarters	European Headquarters	Americas Headquarters	Asia Pacific Headquarters
Cisco Systems, Inc.	Cisco Systems Europe	Cisco Systems, Inc.	Cisco Systems, Inc.
170 West Tasman Drive	11 Rue Camille Desmoulins	170 West Tasman Drive	Capital Tower
San Jose, CA 95134-1706	92782 Issy-les-Moulineaux	San Jose, CA 95134-1706	168 Robinson Road
USA	Cedex 9	USA	#22-01 to #29-01
www.cisco.com	France	www.cisco.com	Singapore 068912
Tel: 408 526-4000	www-europe.cisco.com	Tel: 408 526-7660	www.cisco.com
800 553-NETS (6387)	Tel: 33 1 58 04 60 00	Fax: 408 527-0883	Tel: +65 317 7777
Fax: 408 526-4100	Fax: 33 1 58 04 61 00		Fax: +65 317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the
Cisco Web site at www.cisco.com/go/offices

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia
Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland
Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland
Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden
Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe