



## ORDERING GUIDE

# HOW TO ORDER A CISCO AS5350 UNIVERSAL GATEWAY

## PRODUCT OVERVIEW

The Cisco® AS5350 Universal Gateway offers high-density voice, wireless, fax, and data services. Cisco Any Service for Any Port (ASAP) architecture enables the platform to be used as both a Voice Gateway and a Network Access Server. The rich set of Cisco IOS® Software features available in Cisco AS5350 Universal Gateway makes the platforms versatile and deployable in a wide range of network architectures.

The Cisco AS5350 Universal Gateway chassis has three slots that can take trunk cards and Universal Port digital signal processor (DSP) cards. The following feature card options allow you to customize the platform configuration to meet specific customer needs.

- The trunk card options that are available for this platform are 2CT1, 2CE1, 4CT1, 4CE1, 8CT1, and 8CE1.
- The Universal Port DSP card options that are available for this platform are NP108 (108 universal ports) and NP60 (60 universal ports).

This document describes how to order the Cisco AS5350 Universal Gateway and the relevant software licenses required for the gateway features.

## BEFORE YOU BEGIN

Before you begin, have information ready as indicated by the following questions:

- Will the customer use AC or DC power supply?
- What is the ingress trunk type?
  - The platform supports CT1 and CE1 ingress trunks.
- What cable/connector type is required to connect the trunks?
  - Specific cable types like DB15, RJ45, BNC, etc. may be required to connect the E1/T1 trunks to the Cisco AS5350 Universal Gateway. The RJ45 is sometimes referred to as RJ48C.
- What trunk signaling is used?

The Cisco AS5350 Universal Gateway supports a variety of trunk signaling protocols including T1 or E1 Primary Rate Interface (PRI), Channel Associated Signaling (CAS), and E1/R2. If using E1/R2 signaling, check with your Cisco Systems® representative that the platform supports the country variant. A list of country variants supported is at [http://www.cisco.com/en/US/products/hw/univgate/ps501/products\\_configuration\\_guide\\_chapter09186a008007df5b.html#wp1081171](http://www.cisco.com/en/US/products/hw/univgate/ps501/products_configuration_guide_chapter09186a008007df5b.html#wp1081171). Signaling System 7 (SS7) signaling is also supported with the use of an external call agent such as the BTS10200 or the PGW2200.
- If T1 or E1 cables will be used for ingress, does the customer need the optional 8-PRI-breakout cable rack mount bracket to organize cabling?
- Which of the following kinds of calls will be terminated on the platform?
  - Modem calls, ISDN digital calls, wireless (V.110, V.120) calls, voice calls, Voice Extensible Markup Language (VXML), etc., or a combination of the above?
- How many simultaneous sessions need to be supported?
  - The maximum number of sessions that can be supported on one chassis varies depending on the application. The Cisco AS5350 Universal Gateway is designed to handle a maximum of 216 voice or dial sessions. Consult your Cisco representative to determine the performance and capabilities of the platform for your specific applications.

- Is the platform used along with PGW2200 or any other vendor's Signaling System 7 (SS7) controller?
  - To access the Integrated Signaling Link Terminal (SLT) feature, order the license FR535-SLT-LIC (AS5350 Cisco IOS Software Integrated SLT License priced per platform).
- What Cisco IOS Software features are required?
  - Basic Cisco IOS Software features are present in the IP PLUS feature set
  - Applications requiring Triple Data Encryption Standard (3DES) encryption, such as SSHv2 need the IP PLUS 3DES feature set
  - Lawful Intercept is supported in IP PLUS 3DES LAWFUL INTERCEPT feature set
  - X.25, Appletalk, and other non-IP protocols are supported on the ENTERPRISE PLUS feature set
  - Enterprise applications requiring 3DES encryption need the ENTERPRISE PLUS 3DES feature set

## FEATURE LICENSES

All orders must include one of the basic feature licenses listed in Table 1.

**Table 1.** AS5350 Basic Feature Licenses

Part Number	Description
<b>FR535-DATA-LIC</b>	AS5350 Cisco IOS Software Data License Per Port
<b>FR535-ENHVOX-LIC</b>	AS5350 Cisco IOS Software Enhanced Voice License Per Port

- FR535-DATA-LIC
  - The Data-Only license covers all Cisco IOS Software features required for remote access and dial services. This license includes support for access VPN, ISDN remote access, and time-division multiplexing (TDM) switching. This license does not cover the Cisco IOS Software features required for voice services.
- FR535-ENHVOX-LIC
  - The Voice-Only license covers all Cisco IOS Software features required for all voice and fax relay services (voice codec, T.38 Fax Relay, H.323, and Session Initiation Protocol [SIP], Media Gateway Control Protocol [MGCP], VXML, etc). This license does not cover the Cisco IOS Software features required for basic remote access and dial services.

Consult Appendix 1 for the number of licenses that need to be ordered for various CT1 and CE1 configurations.

## Optional Feature Licenses

- FR535-SLT-LIC
  - FR535-SLT-LIC is the feature license for the integrated SLT function on the Cisco AS5350 Universal Gateway. The Integrated SLT feature pulls existing Cisco distributed Message Transfer Part (MTP) SS7 signaling architecture functions—previously available only on Cisco 26xx-based SLTs—directly onto a single Cisco AS5350 Universal Gateway. Like the Cisco 26xx-based SLT, the Integrated SLT on a Cisco AS5350 Universal Gateway backhauls upper-layer SS7 protocols across an IP network using Cisco Reliable User Datagram Protocol (RUDP), terminating the MTP1 and MTP2 layers of the SS7 protocol stack at the Media Gateway Controller (MGC).

## Performance and Capacity

The performance and capacity of the Cisco AS5350 Universal Gateway varies for different applications. For example, the gateway is designed to handle 216 dial sessions. Consult your Cisco representative for performance characteristics for the specific applications that you will be running on the gateway.

The Cisco AS5350 Universal Gateway occupies one Rack Unit (RU) = 1.73 inches of rack space. The maximum power consumption of one Cisco AS5350 Universal Gateway is 168W in the 8E1 configuration with 216 active calls. The heat dissipation is 573 BTUs/hour.

## ORDERING A SYSTEM

We have created easy-to-order bundle options for the most commonly used voice and data configurations. This saves you time and effort in configuring the Cisco AS5350 Universal Gateway and offers a significant pricing advantage.

### Ordering Bundles

Pick the appropriate bundle based on the requirements (refer to the previous sections).

Each easy-order bundle contains the following products (the quantities of each vary based on the configuration):

- IP Plus Cisco IOS Software
- Universal Port feature card (NP60s and/or NP108s)
- Trunk feature card (2CT1/2CE1/4CT1/4CE1/8CT1/8CE1)
- Enhanced Voice licenses or Data licenses (the number of licenses depends upon the configuration)
- AC power supply
- Power cord
- Cisco AS5350 Universal Gateway chassis with default memory for boot flash, system flash, shared I/O memory, and main memory

You will have to choose:

- The Cisco IOS Software containing the features required
- The appropriate AC power cable, T1/E1 cables, and octal cables
- Optionally add a Single DC or a Dual AC/DC power supply
- Optionally add main synchronous dynamic RAM (SDRAM)
- Optionally add Data/Voice and Integrated SLT licenses

Appendix 2 contains a list of available bundles with a description of the included components.

### Ordering Spares

#### Memory

The Cisco AS5350 chassis comes with the default memory sizes shown in Table 2.

**Table 2.** AS5350 Memory Spares

Memory Type	Spare Memory Sizes	Part Numbers	Default Size
System Flash	32 MB, 64 MB	MEM-32F-AS535=	64 MB
		MEM-64F-AS535=	
Boot Flash	8 MB, 16 MB	MEM-8BF-AS535=	16 MB
		MEM-16BF-AS535=	
Main SDRAM	256 MB, 512 MB	MEM-256M-AS535=	256 MB
		MEM-512M-AS535=	

Memory Type	Spare Memory Sizes	Part Numbers	Default Size
Shared SDRAM	64 MB, 128 MB	MEM-64S-AS535=	64 MB
		MEM-128S-AS535=	

## Chassis and Feature Cards

Order spare chassis and feature cards as required Table 3.

**Table 3.** AS5350 Chassis and Feature Card Spares

Spare	Description	Part Numbers
Chassis	Cisco AS5350 Spare chassis; AC/DC power; Default Memory	AS5350-AC=
		AS5350-DC=
Trunk Cards	Spare CT1/CE1 trunk cards for Cisco AS5350	AS535-DFC-2CT1=
		AS535-DFC-2CE1=
		AS535-DFC-4CT1=
		AS535-DFC-4CE1=
		AS535-DFC-8CT1=
		AS535-DFC-8CE1=
Universal Port DSP Cards	60, 108 Universal port DSP cards	AS535-DFC-60NP=
		AS535-DFC-108NP=

## Miscellaneous Spares

You can order optional 19 or 24-inch rack mount kits (AS5350RM-19/AS5350RM-24), cables, and cable shelves.

For a complete list of all orderable parts, spares, and bundles for Cisco AS5350 Universal Gateway, search for the Cisco AS5350 product family on the Pricing Tool at <https://tools.cisco.com/qtc/pricing/MainServlet>.

## EXAMPLE CONFIGURATIONS

This section provides some typical orders that you can use as a reference order.

### Entry Level North American ISP—Voice Service

This is for a North American customer who is beginning an Internet Service Provider business. A flexible Universal Gateway beginning with two CT1s is required. As they are just starting Voice-Only service and they anticipate rapid growth.

You have determined that a single Cisco AS5350 with at least 48 universal port DSPs and the IP-Plus Cisco IOS Software, and the necessary cabling for 110V AC power are required. You have determined that PRI signaling is used.

You could use the easy-to-order bundle AS535-2T1-48-AC-V, which automatically contains the products shown in Table 4.

**Table 4.** System Configuration for Entry Level Voice Service

Quantity	Part Number	Description
1	AS5350 Chassis	Cisco AS5350 Base Chassis
1	AS535-AC-PWR	Cisco AS5350 AC Power Supply
1	AS535-DFC-2CT1	Cisco AS5350 2 T1/PRI DFC card
1	AS535-DFC-60NP	Cisco AS5350 60 Universal Port Card
1	S535CP-12303	Cisco AS5350 Series Cisco IOS IP-Plus Software Feature Set
48	FR535-ENHVOX-LIC	Cisco AS5350 Cisco IOS Software Enhanced Voice Licenses Per Port
2	CAB-AC	Power Cords, 110V
1	MEM-16BF-AS535	Cisco AS5350 16 MB Boot Flash Upgrade
1	MEM-256M-AS535	Cisco AS5350 256 MB Main SDRAM Upgrade
1	MEM-128S-AS535	Cisco AS5350 128 MB Shared I/O Upgrade
1	MEM-64F-AS535	Cisco AS5350 64 MB System Flash Upgrade

#### Indonesia ISP—Data Only

An ISP in Indonesia wants to add capacity to existing dialup network by adding a network access server to terminate up to 8CE1s terminating at their central office.

You have determined that a single Cisco AS5350 with one octal CE1 trunk card and at least 240 Universal DSP ports, memory upgrade to 512 M of main memory and a DC power supply are required. The customer will need a 1RU Octal cable patch panel. The signaling used is E1/R2 and you have verified that R2 country variant for Indonesia is supported and have determined that they would need the Enterprise Plus IP Security (IPSec) 3DES Cisco IOS Software.

You need to order the AS535-8E1-210-AC bundle and choose the DC power option, 1RU Octal cable patch panel and the Enterprise Plus 3DES Cisco IOS Software, memory upgrade. The complete configuration would contain the products indicated in Table 5.

**Table 5.** System Configuration for Data Only ISP

Quantity	Part Number	Description
1	AS5350 Chassis	Cisco AS5350 Base Chassis
1	AS535-DC-PWR	Cisco AS5350 DC Power Supply
1	AS535-DFC-8CE1	Cisco AS5350 Octal E1/PRI DFC card
2	AS535-DFC-108NP	Cisco AS5350 108 Universal Port Cards
1	S535AK9-12302T	Cisco AS5350 Series Cisco IOS Software Enterprise Plus 3DES
210	FR535-DATA-LIC	Cisco AS5350 Cisco IOS Software Data Licenses Per Port
1	CAB-DFC-OCTAL-2MF	2 Meter 8 PRI DFC Cable—Female RJ45

Quantity	Part Number	Description
1	MEM-16BF-AS535	Cisco AS5350 16 MB Boot Flash Upgrade
1	MEM-512M-AS535	Cisco AS5350 512 MB Main SDRAM Upgrade
1	MEM-128S-AS535	Cisco AS5350 128 MB Shared I/O Upgrade
1	MEM-64F-AS535	Cisco AS5350 64 MB System Flash Upgrade

## APPENDIX 1—MANDATORY LICENSES

Ordering bundles automatically include the required licenses with your order. The rules in Tables 6 and 7 help you to configure a nonstandard configuration.

**Table 6.** CT1 Licensing Rules

Configuration	Number of Trunk Cards	Number of Universal Port Cards	Minimum Number of Base Licenses
2T1 with 48 ports	1 2PRI	1 NP60	48
4T1 with 96 ports	1 4PRI	1 NP108	96
8T1 with 192 ports	1 8PRI	2 NP108	192
Greater than 8T1	More than 1 8PRI	Fewer than 2 NP108/NP60 (incomplete DSP coverage)	Num T1s *24

**Table 7.** CE1 Licensing Rules

Configuration	Number of Trunk Cards	Number of Universal Port Cards	Minimum Number of Base Licenses
2E1 with 60 ports	1 2PRI	1 NP60	60
4E1 with 120 ports	1 4PRI	1 NP108 and 1 NP60	120
7E1 with 210 ports	1 8PRI	2 NP108	210
Greater than 8E1s	More than 1 8PRI	Fewer than 2 NP108/NP60 (incomplete DSP coverage)	Num E1s *30

## APPENDIX 2—EASY-TO-ORDER BUNDLES

The following tables list the various easy-to-order bundles that we have created. Table 1 and 2 are Data-Only bundles and Table 3 and 4 are Voice-Only bundle. Table 5 describes the VXML bundle for Cisco AS5350.

**Table 8.** Low-Density Data Bundles

Part Number	Description	Number of PRI Cards	Number of Universal Port Cards
<b>AS535-2T1-48-AC</b>	AC Cisco AS5350;2T1,48 ports,IP+ Cisco IOS Software, 48 Data Licenses	1 2T1	1 NP60
<b>AS535-2E1-60-AC</b>	AC Cisco AS5350;2E1, 60 ports, IP+ Cisco IOS Software, 60 Data Licenses	1 2E1	1 NP60

**Table 9.** High-Density Data Bundles

Part Number	Description	Number of PRI Cards	Number of Universal Port Cards
<b>AS535-4T1-96-AC</b>	AC Cisco AS5350;4T1, 108 ports, IP+ Cisco IOS Software, 96 Data Licenses	1 4T1	1 NP108
<b>AS535-4E1-120-AC</b>	AC Cisco AS5350;4E1, 120 ports, IP+ Cisco IOS Software, 120 Data Licenses	1 4E1	2 NP60
<b>AS535-8T1-196-AC</b>	AC Cisco AS5350;8T1, 216 ports, IP+ Cisco IOS Software, 196 Data Licenses	1 8T1	2 NP108
<b>AS535-8E1-210-AC</b>	AC Cisco AS5350;8E1, 216 ports, IP+ Cisco IOS Software, 210 Data Licenses	1 8E1	2 NP108

**Table 10.** Low- Density Voice Bundles

Part Number	Description	Number of PRI Cards	Number of Universal Port Cards
<b>AS535-2T1-48-AC-V</b>	AC Cisco AS5350 voice;2T1,48 ports,IP+ Cisco IOS Software, 48 Enhanced Voice Licenses	1 2T1	1 NP60
<b>AS535-2E1-60-AC-V</b>	AC Cisco AS5350 voice;2E1, 60 ports,IP+ Cisco IOS Software, 60 Enhanced Voice Licenses	1 2E1	1 NP60

**Table 11.** High-Density Voice Bundles

Part Number	Description	Number of PRI Cards	Number of Universal Port Cards
<b>AS535-4T1-96-AC-V</b>	AC Cisco AS5350 voice;4T1,108 ports, IP+ Cisco IOS Software, 96 Enhanced Voice Licenses	1 4T1	1 NP108
<b>AS535-4E1-120-AC-V</b>	AC Cisco AS5350 voice;4E1,120 ports, IP+	1 4E1	2 NP60

Part Number	Description	Number of PRI Cards	Number of Universal Port Cards
	Cisco IOS Software, 120 Enhanced Voice Licenses		
<b>AS535-8T1-196-AC-V</b>	AC Cisco AS5350 voice;8T1,216 ports, IP+ Cisco IOS Software, 196 Enhanced Voice Licenses	1 8T1	2 NP108
<b>AS535-8E1-210-AC-V</b>	AC Cisco AS5350 voice;8E1,216 ports, IP+ Cisco IOS Software, 210 Enhanced Voice Licenses	1 8E1	2 NP108

**Table 12.** VXML Bundles

Part Number	Description	Number of PRI Cards	Number of Universal Port Cards
<b>AS535-80-AC-V</b>	AC Cisco AS5350 voice;2T1,IP+ Cisco IOS Software, 80 Enhanced Voice Licenses	None	None



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