# How to Order a Cisco AS5350XM Universal Gateway

## Product Overview

Cisco® AS5350XM Universal Gateways offer unparalleled capacity and the flexibility to deploy advanced voice, fax, and remote-access services. With more than 24 million ports deployed, Cisco Systems® customers worldwide have shown that Cisco AS5000s provide the scale, reliability, and suite of services required to meet market demands. The Cisco AS5350XM offers best-in-class voice, fax, and remote-access services in one rack unit (RU). The rich set of Cisco IOS® Software features available in the Cisco AS5350XM Universal Gateway makes the platform versatile and deployable in a wide range of network architectures.

The Cisco AS5350XM Universal Gateway chassis has three slots that can take trunk cards, high-density packet voice/fax digital signal processor (DSP) feature cards, and universal port DSP cards. Mixing high-density packet voice/fax feature cards and universal port DSP cards in the same chassis is not supported. The following feature card options allow you to customize the platform configuration to meet specific customer needs:

- The trunk card options available for this platform are 2CT1, 2CE1, 4CT1, 4CE1, 8CT1, 8CE1, and CT3.
- The high-density packet voice/fax feature card (AS5X-FC) available for this platform supports from 1 to 6 DSP modules (AS5X-PVDM2-64) providing scalability from 64 to 384 voice and fax ports per card.
- The universal port DSP card options available for this platform are NP108 (108 universal ports) and NP60 (60 universal ports).

This document describes how to order the Cisco AS5350XM Universal Gateway and the relevant software licenses required for the gateway features.

## Before You Begin

Before you begin, have the following information ready:

- Is an AC or DC power supply required? Is a non-redundant or a redundant power supply preferred?
- What is the ingress trunk type?
  ◦ The platform supports CT1, CE1, and CT3 ingress trunks.
- What cable or connector type is required to connect the trunks?
  ◦ Specific cable types such as DB15, RJ-45, BNC, etc. may be required to connect the E1/T1 trunks to the Cisco AS5350XM Universal Gateway. The RJ-45 is sometimes referred to as RJ-48C.
- What trunk signaling is used?
  ◦ The Cisco AS5350XM 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 representative to ensure that the platform supports the country variant. A list of country variants supported is available at http://www.cisco.com/en/US/products/hw/univgate/ps501/products_configuration_guide_chapter09186a00 8007df5b.html - wp1081171.
  ◦ Signaling System 7 (SS7) signaling is also supported with the use of an external call agent such as the Cisco BTS 10200 Softswitch or the Cisco PGW 2200 Softswitch.

- If T1 or E1 cables will be used for ingress, does the customer need the optional eight PRI breakout cable rack-mount bracket to organize cabling?
- Which of the following kinds of calls will be terminated on the platform?
  - Voice calls, Voice Extensible Markup Language (VXML), modem calls, ISDN digital calls, wireless (V.110 or V.120) calls, or a combination of these?
- Which applications need to be supported: Packet voice and fax, or universal port (dial-up/remote access in combination with voice), or dial only?
  - Choose bundles or starter kit configurations that include high-density packet voice/fax feature cards and DSP modules for voice and fax applications.
  - Choose bundles or starter kit configurations that include universal port DSP feature cards for combined voice, fax, and remote access applications.
  - Choose bundles or starter kit configurations that include dial DSP feature cards for remote access applications. The AS5XM-DIAL-60NP and AS5XM-DIAL-108NP DSP feature cards offer a lower price point, but upgrades to support voice require a hardware trade-in.
- 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 AS5350XM Universal Gateway supports a maximum of 550 voice or 216 dial sessions. Using the high-density packet voice/fax feature card, the Cisco AS5350XM supports up to 360 (12 E1 interfaces) or 550 (1 CT3 interface) G.711 voice or fax calls on IOS 15.0.1M. Consult your Cisco representative to determine the performance and capabilities of the platform for your specific applications.
- Is the AMR narrowband codec required?
  - AMR narrowband codec support is available with the high-density packet voice/fax feature card. To activate the AMR codec, order the Cisco AS5350XM AMR narrowband codec license (part number FR535XM-AMR-LIC); pricing is per platform.
- Is the platform used along with the Cisco PGW 2200 or any other vendor's SS7 controller?
  - To use the Integrated Signaling Link Terminal (SLT) feature, order the Cisco AS5350XM Cisco IOS Software Integrated SLT License (part number FR535XM-SLT-LIC); pricing is 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 Secure Shell (SSH) Protocol Version 2, need the IP PLUS 3DES feature set.
  - Lawful Intercept is supported in the 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.
  - Session border controller (SBC) features facilitate direct IP connectivity between independent VoIP and video networks. The Cisco Multiservice IP-to-IP Gateway is an integrated Cisco IOS Software application that runs on the Cisco AS5350XM Universal Gateway, and is available in the INT VOICE/VIDEO IPIPGW, TDMIP GW EPLUS and IOS INT VOICE/VIDEO IPIPGW, TDMIP GW LI feature sets.

## Feature Licenses

Basic feature licenses for voice and dial applications on the Cisco AS5350XM Universal Gateway are included in the price of the DSP feature cards. A feature license is required to use the AMR narrowband codec, Cisco Multiservice IP-to-IP Gateway SBC features, Cisco Gatekeeper, and integrated SLT features.

**Optional Feature Licenses**

- Feature license for the AMR Narrowband Codec on the Cisco AS5350XM Universal Gateway (part number FR535XM-AMR-LIC)

  ◦ This feature is designed to allow connectivity between GSM, US-TDMA, and PDC networks. AMR is the 3GPP mandatory standard codec for narrowband speech and multimedia messaging services over GSM networks.

- Feature license for the Cisco Multiservice IP-to-IP Gateway SBC features and Cisco Gatekeeper on the Cisco AS5350XM Universal Gateway (part number FL-INTVVSRV-5X)

  ◦ Operating a Cisco IOS Software image with support for the Cisco Multiservice IP-to-IP Gateway or Cisco Gatekeeper feature set requires the purchase of an integrated voice and video services feature license. Cisco Multiservice IP-to-IP Gateway features can operate concurrently with public-switched telephone network (PSTN) voice gateway features. Direct IP interconnections between VoIP networks lower costs, lower latency, improve voice quality, and offer greater flexibility to support emerging services. The Cisco AS5350XM Universal Gateway supports up to 600 concurrent IP-to-IP calls (i.e. 1200 sessions with VAD off) in media flow-through mode.

- Feature license for the Integrated SLT feature on the Cisco AS5350XM Universal Gateway (part number FR535XM-SLT-LIC)

  ◦ 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 AS5350XM Universal Gateway. Like the Cisco 26xx-based SLT, the Integrated SLT on a Cisco AS5350XM 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 AS5350XM Universal Gateway varies for different applications. For example, the gateway supports up to 550 voice or 216 dial sessions at up to 12 calls per second. Consult your Cisco representative for performance characteristics for the specific applications that you will run on the gateway.

The Cisco AS5350XM Universal Gateway occupies one rack unit (RU), or 1.73 inches of rack space. The maximum power consumption of one Cisco AS5350XM Universal Gateway is 168W in the 8E1 configuration with 216 active calls. The heat dissipation is 573 BTUs/hour.

**Voice Codecs**

The Cisco AS5350XM Universal Gateway offers multiple codecs to meet interoperability, compression, and latency requirements for a variety of voice applications. The Cisco AS5350XM Universal Gateway supports the voice codecs in Table 1 and Table 2.

**Table 1.**     Codec Support: Cisco AS5350XM Universal Gateway with High-Density Packet Voice/Fax Feature Card

| DSP Feature Card | Low Complexity Codecs | Medium Complexity Codecs | High Complexity Codecs |
|---|---|---|---|
| **Cisco AS5350XM High-Density Packet Voice/Fax Feature Card (AS5X-FC) with Six DSP Module (AS5X-PVDM2-64) Slots** | • G.711 mu-law<br>• G.711 a-law<br>• Fax pass-through<br>• Modem pass-through<br>• Clear channel codec | • G.729 a<br>• G.729 ab<br>• G.726 16K, 24K, 32K<br>• T.38 Fax Relay<br>• Cisco Fax Relay | • Adaptive Multi-Rate: AMR-NB 4.75K, 5.15K, 5.9K, 6.7K, 7.4K, 7.95K, 10.2K, 12.2K, SID<br>• G.723.1 5.3K, 6.3K<br>• G.723.1A 5.3K, 6.3K<br>• G.728<br>• Internet Low Bitrate Codec (iLBC)<br>• Modem Relay |
| **Maximum Channel Capacity per Feature Card (AS5X-FC)** | 384 | 192 | 144 |

**Table 2.** Codec Support: Cisco AS5350XM Universal Gateway with Universal Port Feature Card

| DSP Feature Card | Codecs |
|---|---|
| **Cisco AS5359XM Voice/Universal Port Feature Card (AS5XM-VUFC-108NP, AS5XM-VUFC-60NP)** | • G.711 mu-law<br>• G.711 a-law<br>• Fax pass-through<br>• Modem pass-through<br>• Clear channel codec<br>• G.723.1 5.3K, 6.3K<br>• G.726 16K, 24K, 32K<br>• G.729ab, G729a<br>• GSM-FR<br>• T.38 Fax Relay |
| **Maximum Channel Capacity per Universal Port Feature Card for All Codec Types** | • 60 per AS5XM-VUFC-60NP<br>• 108 per AS5XM-VUFC-108NP |

## Ordering a System

Cisco has created easy-to-order bundle options for the most commonly used configurations. This saves you time and effort in configuring the Cisco AS5350XM Universal Gateway and offers a significant pricing advantage.

### Ordering Bundles

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

Cisco AS5350XM Universal Gateway easy-to-order bundles contain the following products (quantities vary based on the configuration):

- Cisco IOS Software IP Plus feature set
- DSP feature cards—maximum six per chassis, a mix of DSP feature cards is not supported
  - High-density packet voice/fax feature card (AS5X-FC) and DSP module (AS5X-PVDM2-64)

    AS5X-FC is a feature card with six PVDM DSP module slots

    AS5X-PVDM2-64 is a 64-channel high-density packet voice/fax DSP module
  - Universal port DSP feature cards

    AS5XM-VUFC-60NP and AS5XM-VUFC-108NP cards support voice, fax and remote-access services

    AS5XM-DIAL-60NP and AS5XM-DIAL-108NP cards support remote-access services ONLY
- Trunk feature card (2CT1, 2CE1, 4CT1, 4CE1, 8CT1, 8CE1, or CT3)
- AC single power supply
- Power cord
- 512-MB DDR RAM main memory and 128-MB compact flash memory

You may also choose:

- Cisco IOS Software containing the features required
- Appropriate AC power cable, T1/E1 cables, and octal cables
- Optionally add a single DC or a redundant AC/DC power supply
- Optionally upgrade the main memory and compact flash memory when available
- Optionally add AMR Narrowband Codec license
- Optionally add Cisco Multiservice IP-to-IP Gateway, Gatekeeper feature license
- Optionally add Integrated SLT license

Table 3 through 6 list the easy-to-order bundles available. The bundles in **Table 3** include the number of high-density packet voice/fax feature cards and DSP modules required to support the full DS0 capacity of the bundle with all codec types: high, medium, and low complexity.

**Table 3.** Cisco AS5350XM Voice (PVDM2) High-Density Easy Order Bundles

| Part Number | Description | Number of PRI Cards | Number of High-Density Packet Voice/Fax Feature Cards and PVDM2 DSP Modules |
|---|---|---|---|
| **AS535XM-8T1-V-HC** | AS5350XM High-Density Voice w/8T1, 8 AS5X-PVDM2-64, IP+ IOS | 1 x AS535-DFC-8CT1 | • 2 x AS5X-FC<br>• 8 x AS5X-PVDM2-64 |
| **AS535XM-4T1-V-HC** | AS5350XM High-Density Voice w/4T1, 4 AS5X-PVDM2-64, IP+ IOS | 1 x AS535-DFC-4CT1 | • 1 x AS5X-FC<br>• 4 x AS5X-PVDM2-64 |
| **AS535XM-2T1-V-HC** | AS5350XM High-Density Voice w/2T1, 2 AS5X-PVDM2-64, IP+ IOS | 1 x AS535-DFC-2CT1 | • 1 x AS5X-FC<br>• 2 x AS5X-PVDM2-64 |
| **AS535XM-8E1-V-HC** | AS5350XM High-Density Voice w/8E1, 10 AS5X-PVDM2-64, IP+IOS | 1 x AS535-DFC-8CE1 | • 2 x AS5X-FC<br>• 10 x AS5X-PVDM2-64 |
| **AS535XM-4E1-V-HC** | AS5350XM High-Density Voice w/4E1, 5 AS5X-PVDM2-64, IP+ IOS | 1 x AS535-DFC-4CE1 | • 1 x AS5X-FC<br>• 5 x AS5X-PVDM2-64 |
| **AS535XM-2E1-V-HC** | AS5350XM High-Density Voice w/2E1, 3 AS5X-PVDM2-64, IP+ IOS | 1 x AS535-DFC-2CE1 | • 1 x AS5X-FC<br>• 3 x AS5X-PVDM2-64 |

The bundles in **Table 4** include the number of high-density packet voice/fax feature cards and DSP modules required to support the full DS0 capacity of the bundle using the low complexity codec set. In these configurations the Cisco AS5350XM can also process calls using medium and high complexity codecs, but there are sufficient DSP resources available to support the full DS0 capacity of the bundle using low complexity codecs only.

**Table 4.** Cisco AS5350XM Voice (PVDM2) G.711 High-Density Bundles

| Part Number | Description | Number of PRI Cards | Number of High-Density Packet Voice/Fax Feature Cards and DSP Modules |
|---|---|---|---|
| **AS535XM-CT3-V-LC** | AS5350XM Voice G.711 w/CT3, 11 AS5X-PVDM2-64, IP+ IOS | • 1 x AS535-DFC-CT3A | • 2 x AS5X-FC<br>• 11 x AS5X-PVDM2-64 |
| **AS535XM-16T1-V-LC** | AS5350XM Voice G.711 w/16T1, 6 AS5X-PVDM2-64, IP+ IOS | • 2 x AS535-DFC-8CT1 | • 1 x AS5X-FC<br>• 6 x AS5X-PVDM2-64 |
| **AS535XM-12E1-V-LC** | AS5350XM Voice G.711 w/12E1, 6 AS5X-PVDM2-64, IP+ IOS | • 1 x AS535-DFC-8CE1<br>• 1 x AS535-DFC-4CE1 | • 1 x AS5X-FC<br>• 6 x AS5X-PVDM2-64 |

**Table 5.** Cisco AS5350XM Universal Gateway Voice Bundles

| Part Number | Description | Number of PRI Cards | Number of Universal Port Cards |
|---|---|---|---|
| **AS535XM-2T1-48-V** | AS5350XM Voice; 2T1, 60 DSPs, Single AC, IP+ IOS | 1 x AS535-DFC-2CT1 | 1 x AS5X-VUFC-60NP |
| **AS535XM-2E1-60-V** | AS5350XM Voice; 2E1, 60 DSPs, Single AC, IP+ IOS | 1 x AS535-DFC-2CE1 | 1 x AS5X-VUFC-60NP |
| **AS535XM-4T1-96-V** | AS5350XM Voice; 4T1, 108 DSPs, Single AC, IP+ IOS | 1 x AS535-DFC-4CT1 | 1 x AS5X-VUFC-108NP |
| **AS535XM-4E1-120-V** | AS5350XM Voice; 4E1, 120 DSPs, Single AC, IP+ IOS | 1 x AS535-DFC-4CE1 | 2 x AS5X-VUFC-60NP |
| **AS535XM-8T1-196-V** | AS5350XM Voice; 8T1, 216 DSPs, Single AC, IP+ IOS | 1 x AS535-DFC-8CT1 | 2 x AS5X-VUFC-108NP |
| **AS535XM-8E1-210-V** | AS5350XM Voice; 8E1, 216 DSPs, Single AC, IP+ IOS | 1 x AS535-DFC-8CE1 | 2 x AS5X-VUFC-108NP |

**Note:** The AS5350XM 8E1 bundle (part number AS535XM-8E1-210-V) allows for a maximum of 216 simultaneous voice or dial calls that require 1 DSP per call.

**Table 6.** Cisco AS5350XM Universal Gateway VXML Bundles

| Part Number | Description | Number of PRI Cards | Number of Universal Port Cards |
|---|---|---|---|
| **AS535XM-VXML-48-V** | AS5350 VXML bundle; Single AC, IP+ IOS, 48 ENHVOX Lic | None | None |
| **AS535XM-VXML-72-V** | AS5350 VXML bundle; Single AC, IP+ IOS, 72 ENHVOX Lic | None | None |
| **AS535XM-VXML-96-V** | AS5350 VXML bundle; Single AC, IP+ IOS, 96 ENHVOX Lic | None | None |
| **AS535XM-VXML-120-V** | AS5350 VXML bundle; Single AC, IP+ IOS, 120 ENHVOX Lic | None | None |
| **AS535XM-VXML-192-V** | AS5350 VXML bundle; Single AC, IP+ IOS, 192 ENHVOX Lic | None | None |
| **AS535XM-VXML-240-V** | AS5350 VXML bundle; Single AC, IP+ IOS, 240 ENHVOX Lic | None | None |

**Building a System Using the Cisco AS5350XM Starter Kit**

Choose the Cisco AS5350XM starter kit (part number AS5350XM), which includes the Cisco AS5350XM chassis with default memory. You will then need to configure the following:

- The appropriate power option (AC or DC), single or redundant, and appropriate cables
- The appropriate Cisco IOS Software (based on features required)
- Trunk cards (maximum three per chassis)
- DSP feature cards—maximum six per chassis, a mix of DSP feature cards is not supported
  - High-density packet voice/fax feature card (AS5X-FC) and DSP module (AS5X-PVDM2-64)

    AS5X-FC is a feature card with six PVDM DSP module slots

    AS5X-PVDM2-64 is a 64-channel high-density packet voice/fax DSP module
  - Universal port DSP feature cards

    AS5XM-VUFC-60NP and AS5XM-VUFC-108NP cards support voice, fax and remote-access services

    AS5XM-DIAL-60NP and AS5XM-DIAL-108NP cards support remote-access services ONLY
- Optional AMR Narrowband Codec license
- Optional Cisco Multiservice IP-to-IP Gateway, Gatekeeper feature license
- Optional license—Integrated SLT
- Memory upgrade if available
- Cisco CT1/CE1 cables
- Eight PRI feature card cables

**Note:** The total number of trunk and DSP feature cards combined should not exceed three per chassis.

**Ordering Spares**

Memory

The Cisco AS5350XM chassis comes with the default memory sizes shown in Table 7.

**Table 7.** Cisco AS5350XM Memory Spares

| Memory Type | Spare Memory Sizes | Part Numbers | Default Size |
|---|---|---|---|
| **System Flash Memory** | 128-MB compact flash memory | • MEM-128CF-AS5XM= | 128 MB |
| **Main DDR RAM** | 512 MB and 1 GB | • MEM-512M-AS5XM=<br>• MEM-1024M-AS5XM= | 512 MB |

**Chassis and Feature Cards**

Order spare chassis and feature cards as required (Table 8).

**Table 8.** Cisco AS5350XM Chassis and Feature Card Spares

| Spare | Description | Part Numbers |
|---|---|---|
| **Chassis** | Cisco AS5350XM spare chassis; AC/DC power; default memory | • AS535XM-AC-PWR=<br>• AS535XM-DC-PWR=<br>• AS535XM-AC-RPS=<br>• AS535XM-DC-RPS= |
| **Trunk Cards** | Spare CT1/CE1/CT3 trunk cards for Cisco AS5350 | • AS535-DFC-2CT1=<br>• AS535-DFC-2CE1=<br>• AS535-DFC-4CT1=<br>• AS535-DFC-4CE1=<br>• AS535-DFC-8CT1=<br>• AS535-DFC-8CE1=<br>• AS535-DFC-CT3A= |
| **High-Density Packet Voice/Fax Feature Card and DSP Module** | Feature Card with Six AS5X PVDM DSP Module Slots | • AS5X-FC= |
| | 64-Channel High-Density Packet Voice/Fax DSP Module | • AS5X-PVDM2-64= |
| **Universal Port DSP Cards** | Cisco AS5000XM 60 and 108 voice or universal port feature cards | • AS5XM-VUFC-60NP=<br>• AS5XM-VUFC-108NP= |

**CT3 Trunk Card Options**

In addition to the trunk card AS535-DFC-CT3A, the Cisco AS5350XM Universal Gateway also supports AS535-DFC-CT3 trunk cards shipped after January 2005. An AS535-DFC-CT3 card supported on the Cisco AS5350XM Universal Gateway includes the following product identifier printed on a label attached to a chip on the card:

- **73-4089-07** or higher

A photograph of an AS535-DFC-CT3 label for a CT3 trunk card supported on the Cisco AS5350XM Universal Gateway is shown in Figure 1.

**Figure 1.** Cisco AS5350XM Universal Gateways Support AS535-DFC-CT3 Cards Labeled 73-4089-07 or Higher



The Cisco AS5350XM Universal Gateway does not support AS535-DFC-CT3 trunk cards shipped before January 2005. Older AS535-DFC-CT3 trunk cards include the following product identifier printed on the label:

- **73-4089-06** or lower

The Cisco AS5350XM Universal Gateway will reject older AS535-DFC-CT3 trunk cards and display an error message when an unsupported CT3 trunk card is installed.

**Miscellaneous Spares**

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

For a complete list of all orderable parts, spares, and bundles for the Cisco AS5350XM Universal Gateway, search for the Cisco AS5350XM product line on the Pricing tool at https://tools.cisco.com/qtc/pricing/MainServlet. (Cisco.com login is required)

## Example Configurations

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

### North American Voice over Broadband Service

This order is for a North American customer who is expanding the capacity of their voice over broadband network, offering G.711 (low complexity) services. The voice service provider needs a CT3 interface to the public switched telephone network (PSTN) with sufficient DSP resources to support the low complexity codec feature set only, the Cisco IOS Software IP Plus feature set, and the necessary cabling for 110-VAC power; the SP will use PRI signaling. You could use the AS5350XM CT3 low complexity easy-to-order bundle (part number AS535XM-CT3-V-LC), which automatically contains the products shown in Table 9.

**Table 9.** System Configuration for North American Voice over Broadband Service Provider

| Quantity | Part Number | Description |
| --- | --- | --- |
| 1 | AS535XM-CT3-V-LC | AS5350XM Voice G.711 w/ CT3, 11 AS5X-PVDM2-64, IP+ IOS |
| 1 | AS535XM-AC-PWR | AS5350XM AC Single Power Supply |
| 1 | CAB-AC | Power Cord, 110V |
| 1 | AS535-DFC-CT3A | AS5350 CT3 DFC card |
| 2 | AS5X-FC | AS5000 Feature Card with Six AS5X PVDM DSP Module Slots |
| 11 | AS5X-PVDM2-64 | AS5000 64-Channel High-Density Packet Voice/Fax DSP Module |
| 1 | S535CP-12404XC | Cisco AS5350 IOS IP PLUS |
| 1 | MEM-512M-AS5XM | AS5350XM and AS5400XM 512MB Main SDRAM |
| 1 | MEM-128CF-AS5XM | AS5350XM and AS5400XM 128M Compact Flash |
| 1 | FR5X-AGREEMENT-LIC | AS5000 Software License Agreement |

### European Voice Service

This order is for a European customer who is expanding the capacity of their voice network to introduce innovative new services. The voice service provider needs an 8E1 (240 DS0) interface to the public switched telephone network (PSTN) and support for a broad range of codec types. You have determined that the service provider needs a single Cisco AS5350XM with sufficient DSP resources to support, high, medium, and low complexity codecs, the Cisco IOS Software INT VOICE/VIDEO IPIPGW, TDMIP GW EPLUS feature set, and the necessary cabling for 220-VAC power; the SP will use PRI signaling. You could use the AS5350XM 8E1 high complexity easy-to-order bundle (part number AS535XM-8E1-V-HC), adding Cisco IOS Software for the Cisco Multiservice IP-to-IP Gateway features, the required software feature license, and 1 GB of main SDRAM, as shown in Table 10.

**Table 10.** System Configuration for Large European Voice Service Provider

| Quantity | Part Number | Description |
| --- | --- | --- |
| 1 | AS535XM-8E1-V-HC | AS5350XM High-Density Voice w/8E1, 10 AS5X-PVDM2-64, IP+ IOS |
| 1 | AS535XM-AC-PWR | AS5350XM AC Single Power Supply |
| 1 | CAB-ACE | Power Cord, Europe |
| 1 | AS535-DFC-8CE1 | AS5350 Octal E1/PRI DFC card |
| 2 | AS5X-FC | AS5000 Feature Card with Six AS5X PVDM DSP Module Slots |
| 10 | AS5X-PVDM2-64 | AS5000 64-Channel High-Density Packet Voice/Fax DSP Module |
| 1 | S535IVS-12409T | Cisco AS5350 Ser IOS INT VOICE/VIDEO IPIPGW, TDMIP GW EPLUS |

| 1 | FL-INTVVSRV-5X | AS5000XM Integrated VoiceVideo License: Gatekeeper IPIP GW |
| 2 | CAB-DFC-OCTAL-3MF | 3-meter 8 PRI DFC cable-Female RJ-45 |
| 1 | MEM-1024M-AS5XM | AS5350XM 1GB Main SDRAM |
| 1 | MEM-128CF-AS5XM | AS5350XM and AS5400XM 128M Compact Flash |
| 1 | FR5X-AGREEMENT-LIC | AS5000 Software License Agreement |

### Entry-Level North American ISP—Voice Service

This order is for a North American customer who is beginning an Internet service provider (ISP) business. The ISP needs a flexible universal gateway beginning with two CT1s. The customer is starting a voice-only service and anticipates rapid growth.

You have determined that the ISP needs a single Cisco AS5350XM with at least 48 universal port DSPs and the Cisco IOS Software IP Plus feature set, and the necessary cabling for 110-VAC power; the ISP will use PRI signaling.

You could use an easy-to-order bundle (part number AS535XM-2T1-48-V), which automatically contains the products shown in Table 11.

**Table 11.**  System Configuration for Entry-Level Voice Service

| Quantity | Part Number | Description |
| --- | --- | --- |
| 1 | AS535XM-2T1-48-V | Cisco AS5350XM base chassis |
| 1 | AS535XM-AC-PWR | Cisco AS5350XM AC power supply |
| 1 | AS535-DFC-2CT1 | Cisco AS5350XM 2 T1/PRI Dial Feature Card (DFC) |
| 1 | AS5XM-VUFC-60NP | Cisco AS5350XM 60 universal port cards |
| 1 | S535CP-12407 | Cisco AS5350XM with Cisco IOS IP Plus feature set |
| 1 | CAB-AC | Power cords, 110V |
| 1 | MEM-512M-AS5XM | Cisco AS5350XM 512-MB main DRAM |
| 1 | MEM-128CF-AS5XM | Cisco AS5350XM 128-MB system compact flash memory |
| 1 | FR5X-AGREEMENT-LIC | AS5000 Software License Agreement |

### Indonesia ISP—Data Only

An ISP in Indonesia wants to add capacity to an existing dialup network by adding a network access server to terminate up to 7CE1s terminating at its central office.

You have determined that the ISP needs a single Cisco AS5350XM with one octal CE1 trunk card and at least 216 universal DSP ports, 512 MB of main memory, and a DC power supply. The ISP needs a 1RU octal cable patch panel. The signaling used is E1/R2, and you have verified that the R2 country variant for Indonesia is supported and have determined that the ISP needs the Cisco IOS Enterprise Plus IP Security (IPSec) 3DES feature set.

You need to order the AS5350 8E1 bundle (part number AS535XM-8E1-210-D) and choose the DC power option, 1RU octal cable patch panel, and the Cisco IOS Enterprise Plus 3DES feature set. The complete configuration contains the products indicated in Table 12.

**Table 12.**  System Configuration for Data-Only ISP

| Quantity | Part Number | Description |
| --- | --- | --- |
| 1 | AS535XM-8E1-210-D | AS5350XM Data; 8T1, 216 DSPs, Single AC, IP+ IOS |
| 1 | AS535XM-DC-PWR | Cisco AS5350XM DC power supply |
| 1 | AS535-DFC-8CE1 | Cisco AS5350XM Octal E1/PRI DFC |
| 2 | AS5XM-DIAL-108NP | AS5000XM 108 Dial Port Feature Card |

| 1 | S535AK9-12407 | Cisco AS5350XM Cisco IOS Enterprise Plus 3DES feature set |
| 1 | CAB-DFC-OCTAL-3MF | 3-meter 8 PRI DFC cable—Female RJ-45 |
| 1 | MEM-512M-AS5XM | Cisco AS5350XM 512-MB main DRAM |
| 1 | MEM-128CF-AS5XM | Cisco AS5350XM 128-MB system compact flash memory |
| 1 | DFC-CABLE-SHELVE | DFC octal cable patch panel shelf, 1RU |
| 1 | FR5X-AGREEMENT-LIC | AS5000 Software License Agreement |

**Customer Service Call Center**

A service provider is implementing the Cisco Customer Voice Portal (CVP) solution and is looking for Cisco AS5350XM gateways to serve as VXML browsers. You have determined that the service provider needs a single Cisco AS5350XM with 240 VXML licenses and a DC power supply.

You need to order the AS5350XM VXML bundle (part number AS535XM-VXML-240-V) and choose the DC redundant power supply. The complete configuration contains the products indicated in Table 13.

**Table 13.**     System Configuration for Customer Service Call Center

| Quantity | Part Number | Description |
|---|---|---|
| 1 | AS535XM-VXML-240-V | Cisco AS5350XM base chassis |
| 1 | AS535XM-DC-RPS | Cisco AS5350XM DC redundant power supply |
| 1 | S535AK9-12407 | Cisco AS5350XM Cisco IOS IP Plus feature set |
| 1 | MEM-512M-AS5XM | Cisco AS5350XM 512-MB main DRAM |
| 1 | MEM-128CF-AS5XM | Cisco AS5350XM 128-MB system compact flash memory |
| 240 | FR535XM-ENHVOXLIC | AS5350XM IOS Enhanced Voice License Per Port |
| 1 | FR5X-AGREEMENT-LIC | AS5000 Software License Agreement |

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