Ordering Guide

How to Order a Cisco AS5400XM Universal Gateway

PRODUCT OVERVIEW

Cisco® AS5400XM 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 AS5400XM offers best-in-class voice, fax, and remote-access services in only two rack units (RU). The rich set of Cisco IOS® Software features available in the Cisco AS5400XM Universal Gateway makes the platform versatile and deployable in a wide range of network architectures.

The Cisco AS5400XM Universal Gateway chassis has seven 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 feature card options available for this platform are NP108 (108 universal ports) and NP60 (60 universal ports).

This document describes how to order the Cisco AS5400XM Universal Gateway and the relevant software licenses required for the gateway features.

BEFORE YOU BEGIN

Before you begin, have the following information ready:

- Will the customer use AC or DC redundant power supply?
- 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 AS5400XM Universal Gateway. The RJ-45 is sometimes referred to as RJ-48C.
- What trunk signaling is used?
  - The Cisco AS5400XM 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-specific variant. A list of country variants supported is available at 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 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-modem calls, ISDN digital calls, wireless (V.110 or V.120) calls, voice calls, Voice Extensible Markup Language (VXML), etc., or a combination of these?

- What applications need to be supported: Packet voice and fax, or universal port (dial/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 AS5400XM Universal Gateway is designed to handle a maximum of 672 sessions. Using the high-density packet voice/fax feature card, the Cisco AS5400XM supports up to 24 T1, 20 E1, or CT3 (672) voice or fax calls. Using universal port DSP cards, a fully loaded gateway can terminate up to 648 voice, fax, and remote access calls. 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 AS5400XM AMR narrowband codec license (part number FR54XM-AMR-LIC); pricing is per platform.
- Is the platform used along with the Cisco PGW 2200 or any other vendor's SS7 controller?
  - To access the Integrated Signaling Link Terminal (SLT) feature, order the Cisco AS5400XM with Cisco IOS Software Integrated SLT License (part number FR54XM-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.

Feature Licenses

Basic feature licenses for using dial and voice features on the Cisco AS5400XM Universal Gateway are included in the price of the DSP cards.

A feature license is required to use the AMR narrowband codec. No additional voice or dial feature licenses need to be purchased.

Optional Feature Licenses

- Feature license for the AMR Narrowband Codec on the Cisco AS5400XM Universal Gateway (part number FR54XM-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 Integrated SLT feature on the Cisco AS5400XM Universal Gateway (part number FR54XM-SLT-LIC)
  - This feature pulls existing Cisco distributed message transfer part (MTP) SS7 signaling architecture functions-previously available only on Cisco 2600-based SLTs-directly onto a single Cisco AS5400XM Universal Gateway. Like the Cisco 2600-based SLT, the Integrated SLT on a Cisco AS5400XM 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 AS5400XM Universal Gateway varies for different applications. For typical voice-only applications (G.711/20 ms), the gateway is designed to service 672 calls at up to 20 calls per second (cps). Consult your Cisco representative for performance characteristics for the specific applications that you will run on the gateway.

The Cisco AS5400XM Universal Gateway occupies two rack units (RUs), or 3.5 inches of rack space. The maximum power consumption of one Cisco AS5400XM Universal Gateway is 345W in the CT3 configuration with 672 active calls. The heat dissipation is 106 W/feet 2/vert. Feet, 683-1177 BTUs/hour.

Voice Codecs

The Cisco AS5400XM Universal Gateway offers multiple codecs to meet interoperability, compression, and latency requirements for a variety of voice applications. The Cisco AS5400XM Universal Gateway supports the voice codecs in Table 1 and Table 2:

Table 1. Codec Support: Cisco AS5400XM Universal Gateway with High-Density Packet Voice/Fax Feature Card:

DSP Feature Card	Low Complexity Codecs	Medium Complexity Codecs	High Complexity Codecs
Cisco AS5400XM High-Density Packet Voice/Fax Feature Card with Six AS5X-PVDM2-64 DSP Module Slots (AS5X-FC)	• G.711 mu-law • G.711 a-law • Fax pass-through • Modem pass-through • Clear channel codec	• G.729 a • G.729 ab • G.726 16K, 24K, 32K • T.38 Fax Relay • 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 • G.723.1 5.3K, 6.3K • G.723.1A 5.3K, 6.3K • G.728 • Modem Relay
Maximum Channel Capacity per Feature Card (AS5X-FC)	384	192	144

Table 2. Codec Support: Cisco AS5400XM Universal Gateway with Universal Port Feature Card

DSP Feature Card	Codecs
Cisco AS5400XM Voice/Universal Port Feature Card (AS5XM-VUFC-108NP, AS5XM-VUFC-60NP)	• G.711 mu-law • G.711 a-law • Fax pass-through • Modem pass-through • Clear channel codec • G.723.1 5.3K, 6.3K • G.726 16K, 24K, 32K • G.729ab, G729a • GSM-FR • T.38 Fax Relay
Maximum Channel Capacity per Universal Port Feature Card for All Codec Types	• 60 per AS5XM-VUFC-60NP • 108 per AS5XM-VUFC-108NP

ORDERING A SYSTEM

Cisco has created easy-to-order bundle options for the most commonly used voice and dial configurations. This saves you time and effort in configuring the Cisco AS5400XM Universal Gateway and offers a significant pricing advantage. You can choose to have the flexibility in configuring the system and build a system using the Cisco AS5400XM starter kit.

Ordering Bundles

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

Easy-to-order bundles contain the following products (the quantities of each 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(s) (2CT1, 2CE1, 4CT1, 4CE1, 8CT1, 8CE1 or CT3)
- Trunk feature card(s) (2CT1, 2CE1, 4CT1, 4CE1, 8CT1, 8CE1 or CT3)
- Dual AC power supply
- Power cords
- 3-meter female octal cable included when configuration uses 8 PRI feature cards
- 512-MB DDR RAM main memory and 128-MB compact flash memory

You need to choose:

- Cisco IOS Software containing the features required
- Appropriate AC power cable, CT1/CE1 cables, and octal cables
- (optional) A dual DC power supply
- (optional) Upgrade of the memory and compact flash memory when available
- (optional) AMR Narrowband Codec license
- (optional) Integrated SLT license

Table 3 through Table 10 list the bundles available for the Cisco AS5400XM.

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 AS5400XM 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
AS54XM-CT3-V-HC	AS5400XM High-Density Voice; CT3, 28 AS5X-PVDM2-64, IP+ IOS	• 1 x AS54-DFC-CT3A	• 5 x AS5X-FC • 28 x AS5X-PVDM2-64
AS54XM-16T1-V-HC	AS5400XM High-DensityVoice; 16T1, 16 AS5X-PVDM2-64, IP+IOS	• 2 x AS54-DFC-8CT1	• 3 x AS5X-FC • 16 x AS5X-PVDM2-64
AS54XM-16E1-V-HC	AS5400XM High-DensityVoice; 16E1, 20 AS5X-PVDM2-64, IP+IOS	• 2 x AS54-DFC-8CE1	• 4 x AS5X-FC • 20 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 AS5400XM 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 AS5400XM 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
AS54XM-CT3-V-LC	AS5400XM Voice G.711 w/CT3, 11 AS5X-PVDM2-64, IP+ IOS	• 1 x AS54-DFC-CT3A	• 2 x AS5X-FC • 11 x AS5X-PVDM2-64
AS54XM-16T1-V-LC	AS5400XM Voice G.711 w/16T1, 6 AS5X-PVDM2-64, IP+ IOS	• 2 x AS54-DFC-8CT1	• 1 x AS5X-FC • 6 x AS5X-PVDM2-64
AS54XM-20E1-V-LC	AS5400XM Voice G.711 w/20E1, 10 AS5X-PVDM2-64, IP+ IOS	• 2 x AS54-DFC-8CE1 • 1 x AS54-DFC-4CE1	• 2 x AS5X-FC • 10 x AS5X-PVDM2-64

The bundles in **Table 5** and **Table 6** 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 medium and low complexity codecs. In these configurations the Cisco AS5400XM can also process calls using high complexity codecs, but there are sufficient DSP resources available to support the full DS0 capacity of the bundle using medium and low complexity codecs only.

Table 5. Cisco AS5400XM Voice (PVDM2) Medium Complexity Bundles with Maximum DS0 Capacity

Part Number	Description	Number of PRI Cards	Number of High-density Packet Voice/Fax Feature Cards and DSP Modules
AS54XM-CT3-V-MC	AS5400XM Voice Med-Comp w/CT3, 21 AS5X-PVDM2-64, IP+ IOS	• 1 x AS54-DFC-CT3A	• 4 x AS5X-FC • 21 x AS5X-PVDM2-64
AS54XM-16T1-V-MC	AS5400XM Voice Med-Comp w/16T1, 12 AS5X-PVDM2-64, IP+ IOS	• 2 x AS54-DFC-8CT1	• 2 x AS5X-FC • 12 x AS5X-PVDM2-64
AS54XM-20E1-V-MC	AS5400XM Voice Med-Comp w/20E1, 19 AS5X-PVDM2-64, IP+ IOS	• 2 x AS54-DFC-8CE1 • 1 x AS54-DFC-4CE1	• 4 x AS5X-FC • 19 x AS5X-PVDM2-64
AS54XM-16E1-V-MC	AS5400XM Voice Med-Comp w/16E1, 15 AS5X-PVDM2-64, IP+ IOS	• 2 x AS54-DFC-8CE1	• 3 x AS5X-FC • 15 x AS5X-PVDM2-64

Table 6. Cisco AS5400XM Voice (PVDM2) Medium Complexity Bundles with 8T1/E1 or 4T1/E1

Part Number	Description	Number of PRI Cards	Number of High-density Packet Voice/Fax Feature Cards and DSP Modules
AS54XM-8T1-V-MC	AS5400XM Voice Med-Comp w/8T1, 6 AS5X-PVDM2-64, IP+ IOS	• 1 x AS54-DFC-8CT1	• 1 x AS5X-FC • 6 x AS5X-PVDM2-64
AS54XM-8E1-V-MC	AS5400XM Voice Med-Comp w/8E1, 8 AS5X-PVDM2-64, IP+ IOS	• 1 x AS54-DFC-8CE1	• 2 x AS5X-FC • 8 x AS5X-PVDM2-64

Part Number	Description	Number of PRI Cards	Number of High-density Packet Voice/Fax Feature Cards and DSP Modules
AS54XM-4T1-V-MC	AS5400XM Voice Med-Comp w/4T1, 3 AS5X-PVDM2-64, IP+ IOS	• 1 x AS54-DFC-4CT1	• 1 x AS5X-FC • 3 x AS5X-PVDM2-64
AS54XM-4E1-V-MC	AS5400XM Voice Med-Comp w/4E1, 4 AS5X-PVDM2-64, IP+ IOS	• 1 x AS54-DFC-4CE1	• 1 x AS5X-FC • 4 x AS5X-PVDM2-64

Table 7. Cisco AS5400XM Voice and Universal Port High-Density Bundles

Part Number	Description	Number of PRI Cards	Number of Universal Port Cards
AS54XM-16T1-384-V	AS5400XM Voice; 16T1, 384 DSPs, AC RPS, IP+ IOS	• 2 x AS54-DFC-8CT1	• 3 x AS5X-VUFC-108NP • 1 x AS5X-VUFC-60NP
AS54XM-16E1-480-V	AS5400XM Voice; 16E1, 492 DSPs, AC RPS, IP+ IOS	• 2 x AS54-DFC-8CE1	• 4 x AS5X-VUFC-108NP • 1 x AS5X-VUFC-60NP
AS54XM-CT3-648-V	AS5400XM Voice; CT3, 648 DSPs, AC RPS, IP+ IOS	• 1 x AS54-DFC-CT3A	• 6 x AS5X-VUFC-108NP

Table 8. Cisco AS5400XM Voice and Universal Port Low- and Medium-Density Bundles

Part Number	Description	Number of PRI Cards	Number of Universal Port Cards
AS54XM-8T1-192-V	AS5400XM Voice; 8T1, 216 DSPs, AC RPS, IP+ IOS	• 1 x AS54-DFC-8CT1	• 2 x AS5XM-VUFC-108NP
AS54XM-8E1-240-V	AS5400XM Voice; 8E1, 276 DSPs, AC RPS, IP+ IOS	• 1 x AS54-DFC-8CE1	• 2 x AS5XM-VUFC-108NP • 1 x AS5XM-VUFC-60NP
AS54XM-2T1-48-V	AS5400XM Voice; 2T1, 60 DSPs, AC RPS, IP+ IOS	• 1 x AS54-DFC-2CT1	• 1 x AS5XM-VUFC-60NP
AS54XM-2E1-60-V	AS5400XM Voice; 2E1, 60 DSPs, AC RPS, IP+ IOS	• 1 x AS54-DFC-2CE1	• 1 x AS5XM-VUFC-60NP
AS54XM-4T1-96-V	AS5400XM Voice; 4T1, 108 DSPs, AC RPS, IP+ IOS	• 1 x AS54-DFC-4CT1	• 1 x AS5XM-VUFC-108NP
AS54XM-4E1-120-V	AS5400XM Voice; 4E1, 120 DSPs, AC RPS, IP+ IOS	• 1 x AS54-DFC-4CE1	• 2 x AS5XM-VUFC-60NP

Table 9. Cisco AS5400XM Dial Medium Density Easy Order Bundles

Part Number	Description	Number of PRI Cards	Number of Universal Port Cards
AS54XM-8T1-192-D	AS5400XM Data; 8T1, 216 DSPs, AC RPS, IP+ IOS	• 1 x AS54-DFC-8CT1	• 2 x AS5XM-DIAL-108NP
AS54XM-8E1-240-D	AS5400XM Data; 8E1, 276 DSPs, AC RPS, IP+ IOS	• 1 x AS54-DFC-8CE11	• 2 x AS5XM-DIAL-108NP • 1 x AS5XM-DIAL-60NP

Table 10. Cisco AS5400XM Dial High Density Easy Order Bundles

Part Number	Description	Number of PRI Cards	Number of Universal Port Cards
AS54XM-16T1-384-D	AS5400XM Data; 16T1, 384 DSPs, AC RPS, IP+ IOS	• 2 x AS54-DFC-8CT1	• 3 x AS5XM-DIAL-108NP • 1 x AS5XM-DIAL-60NP
AS54XM-16E1-480-D	AS5400XM Data; 16E1, 492 DSPs, AC RPS, IP+ IOS	• 2 x AS54-DFC-8CE1	• 4 x AS5XM-DIAL-108NP • 1 x AS5XM-DIAL-60NP
AS54XM-CT3-648-D	AS5400XM Data; CT3, 648 DSPs, AC RPS, IP+ IOS	• 1 x AS54-DFC-CT3A	• 6 x AS5XM-DIAL-108NP

Building a System Using the Cisco AS5400XM Starter Kit

Choose the Cisco AS5400XM starter kit, which includes the Cisco AS5400XM chassis with 512 MB of main memory and 128 MB of compact flash memory. You should be able to configure the following:

- The appropriate redundant power option (AC or DC) and appropriate cables
- The right Cisco IOS Software (based on features required)
- Trunk cards (maximum four 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) Integrated SLT license
- (optional) AMR Narrowband Codec license
- Memory upgrade if available
- Cisco CT1/CE1 cables

Note: The total number of cards should not exceed seven per chassis.

Ordering Spares

Memory

The Cisco AS5400XM chassis comes with the memory sizes shown in Table 11; you can order spare memory as specified in the table.

Table 11. Cisco AS5400XM 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= MEM-1024M-AS5XM=	512 MB

Chassis and Feature Cards

Order spare chassis and feature cards as required (Table 12).

Table 12. Cisco AS5400XM Chassis and Feature Card Spares

Spare	Description	Part Numbers
Chassis	Cisco AS5400XM spare chassis; AC/DC power; default memory	• AS54XM-AC-RPS= • AS54XM-DC-RPS=
Trunk Cards	Spare CE1/CT1/CT3 trunk cards for Cisco AS5400XM	• AS54-DFC-2CT1= • AS54-DFC-2CE1= • AS54-DFC-4CT1= • AS54-DFC-4CE1= • AS54-DFC-8CT1= • AS54-DFC-8CE1= • AS54-DFC-CT3A=
High-Density Packet Voice/Fax Feature Card and DSP Module	• Feature Card with Six AS5X PVDM DSP Module Slots • 64-Channel High-Density Packet Voice/Fax DSP Module	• AS5X-FC= • AS5X-PVDM2-64=
Universal Port DSP Cards	60 or 108 universal port DSP cards	• AS5XM-VUFC-60NP= • AS5XM-VUFC-108NP= • AS5XM-DIAL-60NP= • AS5XM-DIAL-108NP=

CT3 Trunk Card Options

In addition to the trunk card AS54-DFC-CT3A, the Cisco AS5400XM Universal Gateway also supports AS54-DFC-CT3 trunk cards shipped after January 2005. An AS54-DFC-CT3 card supported on the Cisco AS5400XM 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 AS54-DFC-CT3 label for a CT3 trunk card supported on the Cisco AS54000XM Universal Gateway is shown in Figure 1.

Figure 1. Cisco AS5400XM Universal Gateways Support AS54-DFC-CT3 Cards Labeled 73-4089-07 or Higher

The Cisco AS5400XM Universal Gateway does not support AS54-DFC-CT3 trunk cards shipped before January 2005. Older AS54-DFC-CT3 trunk cards include the following product identifier printed on the label:

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

The Cisco AS5400XM Universal Gateway will reject older AS54-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 AS5400RM-19 or AS5400RM-24, respectively), cables, and cable shelves.

For a complete list of all orderable parts, spares, and bundles for the Cisco AS5400XM Universal Gateway, search for the Cisco AS5400XM 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.

Large North American Voice Service

This order is for a North American customer who is expanding their voice network to introduce innovative new services. The voice service provider needs a CT3 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 AS5400XM with sufficient DSP resources to support high, medium, and low complexity codecs, 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 the AS5400XM CT3 high complexity easy-to-order bundle (part number AS54XM-CT3-V-HC), which automatically contains the products shown in Table 13.

Table 13. System Configuration for Large North American Voice Service Provider

Quantity	Part Number	Description
1	AS54XM-CT3-V-HC	AS5400XM High-Density Voice; CT3, 28 AS5X-PVDM2-64, IP+ IOS
1	AS54XM-AC-RPS	Cisco AS5400XM AC Redundant Power Supply
2	CAB-AC	Power Cord, 110V
1	AS54-DFC-CT3A	AS5400 CT3 DFC card
5	AS5X-FC	AS5000 Feature Card with Six AS5X PVDM DSP Module Slots
28	AS5X-PVDM2-64	AS5000 64-Channel High-Density Packet Voice/Fax DSP Module
1	S54CP-12404XC	Cisco AS5400XM with Cisco IOS IP Plus feature set
1	MEM-512M-AS5XM	Cisco AS5400XM 512-MB main DRAM
1	MEM-128CF-AS5XM	Cisco AS5400XM 128-MB system compact flash memory
1	FR5X-AGREEMENT-LIC	AS5000 Software License Agreement

Large European Voice Service

This order is for a European customer who is expanding the capacity of their voice over broadband network, offering G.711 (low complexity) services.

You have determined that the service provider needs a single Cisco AS5400XM 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 220-VAC power; the ISP will use PRI signaling.

You could use the AS5400XM 20E1 low complexity easy-to-order bundle (part number AS54XM-20E1-V-LC), which automatically contains the products shown in Table 14.

Table 14. System Configuration for Large European Voice Service Provider

Quantity	Part Number	Description
1	AS54XM-20E1-V-LC	AS5400XM Voice G.711 w/20E1, 10 AS5X-PVDM2-64, IP+ IOS
1	AS54XM-AC-RPS	Cisco AS5400XM AC Redundant Power Supply
2	CAB-ACE	AC Power Cord, Europe
2	AS54-DFC-8CE1	AS5400 Octal E1/PRI DFC card
1	AS54-DFC-4CE1	AS5400 Quad 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	S54CP-12404XC	Cisco AS5400XM with Cisco IOS IP Plus feature set
2	CAB-DFC-OCTAL-3MF	3-meter 8 PRI DFC cable-Female RJ-45
1	MEM-512M-AS5XM	Cisco AS5400XM 512-MB main DRAM
1	MEM-128CF-AS5XM	Cisco AS5400XM 128-MB system compact flash memory
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 eight CT1 PRI, and anticipates rapid growth into other services.

You have determined that the ISP needs a single Cisco AS5400XM with 192 universal port DSPs (allowing for growth) and the Cisco IOS Software IP Plus feature set, and the necessary cabling for 110-VAC power; the ISP will use PRI signaling. This solution allows the customer to run voice, fax, and data services simultaneously.

You could use the AS5400XM 8T1 easy-to-order bundle (part number AS54XM-8T1-192-V), which automatically contains the products shown in Table 15.

Table 15. System Configuration for Entry-Level North American Voice Service Provider

Quantity	Part Number	Description
1	AS54XM-8T1-192-V	AS5400XM Voice; 8T1, 216 DSPs, AC RPS, IP+ IOS
1	AS54XM-AC-RPS	Cisco AS5400XM AC Redundant Power Supply
2	CAB-AC	Power Cord, 110V

Quantity	Part Number	Description
1	AS54-DFC-8CT1	AS5400 Octal T1/PRI DFC card
2	AS5XM-VUFC-108NP	AS5000XM 108 Voice/Universal Port Feature Card
1	S54CP-12403	Cisco AS5400XM with Cisco IOS IP Plus feature set
1	CAB-DFC-OCTAL-3MF	3-meter 8 PRI DFC cable-Female RJ-45
1	MEM-512M-AS5XM	Cisco AS5400XM 512-MB main DRAM
1	MEM-128CF-AS5XM	Cisco AS5400XM 128-MB system compact flash memory
1	FR5X-AGREEMENT-LIC	AS5000 Software License Agreement

Large Indonesia ISP-Data Only, with the Option to Support Voice Services in the Future

A large ISP in Indonesia wants to add capacity to an existing dialup network by adding a network access server to terminate up to 16 CE1s of additional traffic at its central office.

You have determined that the ISP needs a single Cisco AS5400XM with two octal CE1 trunk cards, four NP108 DSP cards and one NP60 DSP card and a DC power supply, and a 1RU octal cable patch panel. The ISP will use E1/R2 signaling, and you have verified that the R2 country variant for Indonesia is supported and that the ISP needs the Cisco IOS Enterprise Plus IP Security (IPSec) 3DES feature set. You have determined that the ISP may require voice services soon.

The two options are to configure a system using the Cisco AS5400XM starter kit or use an easy-to-order bundle (part number AS54XM-16E1-480-V) and add options for what is not present in the bundle.

The complete system configuration using the Cisco AS5400XM starter kit and adding options for DC power, Cisco IOS Software upgrade, and the cable shelf requires components listed in Table 16.

Table 16. System Configuration for Indonesia ISP

Quantity	Part Number	Description
1	AS5400XM	AS5400XM Starter Kit (inc Chassis, MB, Def Mem)
1	AS5400XM-DC-RPS	Cisco AS5400XM DC power supply
2	AS54-DFC-8CE1	AS5400 Octal E1/PRI DFC card
4	AS5XM-VUFC-108NP	AS5000XM 108 Voice/Universal Port Feature Card
1	AS5XM-VUFC-60NP	AS5000XM 60 Voice/Universal Port Feature Card
1	S54AK9-12403	Cisco AS5400XM with Cisco IOS Enterprise Plus 3DES feature set
2	CAB-DFC-OCTAL-3MF	3-meter 8 PRI DFC cable-Female RJ-45
1	MEM-512M-AS5XM	Cisco AS5400XM 512-MB main DRAM
1	MEM-128CF-AS5XM	Cisco AS5400XM 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

European ISP-Data ONLY

A large ISP in Europe wants to add capacity to an existing dialup network by adding a network access server to terminate up to 8 CE1s of additional traffic at its central office. This customer plans to support remote-access services only, and has no plans to support voice in the future.

You have determined that the ISP needs a single Cisco AS5400XM with 240 DIAL Only DSPs and the Cisco IOS Software IP Plus feature set, the necessary cabling for AC power in Europe, and the ISP will use PRI signaling. This solution allows the customer to remote access services ONLY.

You could use the AS5400XM 8E1 easy-to-order bundle (part number AS54XM-8E1-240-D), which automatically contains the products shown in Table 17.

Table 17. System Configuration for European ISP Provider (Data ONLY)

Quantity	Part Number	Description
1	AS54XM-8E1-240-D	AS5400XM Data; 8E1, 276 DSPs, AC RPS, IP+ IOS
1	AS54XM-AC-RPS	Cisco AS5400XM AC Redundant Power Supply
2	CAB-ACE	AC Power Cord, Europe
1	AS54-DFC-8CE1	AS5400 Octal E1/PRI DFC card
2	AS5XM-DIAL-108NP	AS5000XM 108 Dial Port Feature Card
1	AS5XM-DIAL-60NP	AS5000XM 60 Dial Port Feature Card
1	S54CP-12403	Cisco AS5400XM with Cisco IOS IP Plus feature set
1	CAB-DFC-OCTAL-3MF	3-meter 8 PRI DFC cable-Female RJ-45
1	MEM-512M-AS5XM	Cisco AS5400XM 512-MB main DRAM
1	MEM-128CF-AS5XM	Cisco AS5400XM 128-MB system compact flash memory
1	FR5X-AGREEMENT-LIC	AS5000 Software License Agreement

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