



Q&A

CISCO 2800 SERIES INTEGRATED SERVICES ROUTERS

PLATFORM

General

Q. What are the Cisco® 2800 Series integrated services routers?

A. The Cisco 2800 Series comprises four new platforms: the Cisco 2801, the Cisco 2811, the Cisco 2821, and the Cisco 2851 router. The Cisco 2800 Series provides significant additional value compared to prior generations of Cisco routers at similar price points by offering up to a fivefold chassis performance improvement, up to a tenfold increase in security and voice performance, new embedded service options, and dramatically increased slot performance and density while maintaining support for most of the more than 90 existing Cisco 1700 Series, 2600 Series, 3700 Series, and 3800 Series interface cards and modules.

The Cisco 2800 Series features fast, high-quality delivery of multiple, simultaneous services. Not only does the Cisco 2800 Series offer embedded encryption-acceleration and motherboard voice digital-signal-processor (DSP) slots; intrusion-protection and firewall functions; integrated call processing and voice mail; high-density interfaces for a wide range of connectivity requirements; but also sufficient performance and slot density headroom for future network expansion requirements and advanced applications.

The best-in-class Cisco 2800 Series architecture has been specifically designed to meet the requirements of small-to- medium-sized businesses, small and medium-sized enterprise branch offices, as well as service provider-managed services applications for concurrent services without compromise to router performance.

Q. Why did Cisco Systems® introduce the Cisco 2800 Series?

A. Cisco introduced the Cisco 2800 Series to allow the deployment of multiple integrated services running at wire speed, without compromising the router performance. The integrated services router portfolio is specifically designed to provide excellent performance while running simultaneous services such as voice, security, quality of service (QoS), and other routing services in one integrated routing platform.

Q. What are the versions in the Cisco 2800 Series?

A. The Cisco 2800 Series includes the Cisco 2801, the Cisco 2811, the Cisco 2821, and the Cisco 2851. The Cisco 2811, 2821, and 2851 share a single network-module slot, 4 high-density WIC (HWIC) slots, and 2 advanced-integration-module (AIM) slots. The Cisco 2801 offers 4 interface card slots where 2 out of the 4 slots are HWIC slots, 1 slot is a WIC/voice/WIC (VWIC)/voice interface card (VIC)-only slot, and the final slot is a voice-only VWIC/VIC slot. Additionally, the Cisco 2801 offers 2 AIM slots, but does not have network module slots. All versions have onboard hardware-based encryption for Digital Encryption Standard (DES), Triple DES (3DES), Advanced Encryption Standard (AES), and onboard slots for packet voice DSP modules (PVDMs), and they all include high-speed Ethernet interfaces. The Cisco 2801 supports two PVDMs, and two Fast Ethernet connections, whereas the Cisco 2811 adds one single-width network module enhanced (NME) slot as well. The Cisco 2821 offers increased performance, support for an extended single-wide network module, an extension-voice-module (EVM) slot, support for a third PVDM, fixed LAN ports supporting Gigabit Ethernet, and support for up to 36 ports of Cisco IP Phone power. The Cisco 2851 offers increased performance over the Cisco 2821, adds support for double-wide and extended double-wide network modules, and offers increased IP phone power support for up to 48 Cisco IP phones.

Q. When will the Cisco 2800 Series be available?

A. The Cisco 2800 Series is currently planned to be orderable in the middle of September , with first customer shipments expected the end of September 2004.

Q. With the introduction of these new platforms, what are the plans for the current 1700/2600/3700?

A. There are no plans to EOS the 1700/2600/3700 for at least 18-24 months from the FCS date of these new platforms. Cisco is committed to continue to develop new features for the Cisco 1700, Cisco 2600 Series and Cisco 3700 Series through Cisco IOS release 12.4T, with bug fix support through IOS 12.5 Mainline. Cisco IOS timelines are still being defined- however this should enable new feature development through the end of 2005. Additionally, to promote the Cisco 1700 Series, Cisco 2600 Series and Cisco 3700 Series longevity, Cisco raised the default memory (and reduced add-on memory pricing) on the majority of Cisco 1700 Series routers, Cisco 2600 Series routers and 3700 Series routers in fall of 2003 and, further, recently expanded the maximum memory available on the Cisco 2600XM Series to 256 MB of DRAM (from 128 MB). These actions were taken to provide customers with investment protection on their current platforms while allowing them to evaluate these new chassis and transition at their own pace. When Cisco decides to end-of-sale the Cisco 1700 Series, Cisco 2600 series and Cisco 3700 Series, Cisco will provide notice prior to the end-of-sale date along with support plans for the Cisco 1700 Series, Cisco 2600 Series and Cisco 3700 Series in accordance with Cisco's standard end-of-life policy.

Q. How do the Cisco 2800 Series compare to the Cisco 2600XM multiservice access routers?

A. The Cisco 2800 Series routers are the follow-on platforms to the current Cisco 2600 Series. The Cisco 2800 Series offers up to a five-fold chassis performance improvement, twice the default memory, and dramatically increased slot performance and services density, while maintaining support for most of the more than 90 existing Cisco 1700 Series and Cisco 2600 Series interface cards and network modules (on Cisco 2600, 2811, 2851, and 2851 only).

Q. What is the performance of the 2800 series?

A. The 2800 series of integrated service routers have been designed to deliver multiple concurrent services at wire-speed performance—up to multiple T1/E1/xDSL speeds. Chassis performance has been increased up to fivefold, and security/voice performance increased up to tenfold. The multiple T1/E1/xDSL value quoted here represent IMIX packet sizes in higher than typical 2800 services configurations. In less service-heavy environments, actual WAN throughput will be higher.

Q. What are the basic specifications for the Cisco 2800 Series?

A. Table 1 gives the specifications of the Cisco 2800 Series.

Table 1. Specifications of Cisco 2800 Series

Cisco 2800 Series Features	Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
Target deployments	Data, voice, and video	Data, voice, and video	Data, enhanced voice, and video	Data, enhanced voice, and video
Default memory—Uses external compact Flash and on Cisco 2811, 2821, and 2851 Double Data Rate (DDR) error correction code (ECC) synchronous dynamic RAM (SDRAM)	Default/maximum 64-/128-MB compact Flash 128-/384-MB SDRAM	Default/maximum 64-/256-MB compact Flash 256-/768-MB DDR SDRAM with ECC	Default/maximum 64-/256-MB compact Flash 256-MB/1-GB DDR SDRAM with ECC	Default/maximum 64-/256-MB compact Flash 256-MB/1-GB DDR SDRAM with ECC
Fixed LAN ports with an RJ-45 port	2 Fast Ethernet (10/100)	2 Fast Ethernet (10/100)	2 Gigabit Ethernet (10/100/1000)	2 Gigabit Ethernet (10/100/1000)
Fixed USB ports (Version 1.1)—for future applications	1	2	2	2

Cisco 2800 Series Features	Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
AIM slots (internal)	2	2	2	2
PVDM slots for optional PVDM2	2	2	3	3
Onboard VPN encryption acceleration—IP Security (IPSec) DES, 3DES, AES128, AES192, and AES256 Note: requires Cisco IOS Software Security feature set	Yes	Yes	Yes	Yes
NME support—Cisco 2811, 2821, and 2851 can accommodate only one network-module slot or one NME slot. The NME has the same form factor as the network module, but offers higher-density applications compared to the current network module. A NME extended version (NME-X) also can be substituted in the Cisco 2821 or Cisco 2851, which is a wider form of the NME that will enable future services and functions. The Cisco 2851 also can substitute one double-wide high-density network module (NMD) or one NME-X double-wide version (NME-XD).	Not applicable No network-module support on Cisco 2801	NM NME	NM NME NME-X	NM NME NME-X NMD NME-XD
EVM slots—The EVM offers additional voice services in a module format, using a single slot on the Cisco 2821 or Cisco 2851. Network-module or NME versions are not supported in this slot on the Cisco 2800 Series	0	0	1	1
Interface card slots—Each version can accommodate HWICs. These HWIC slots also support VICs, VWICs, and WICs. Alternatively, two side-by-side HWIC slots can be substituted to seat one double-wide HWIC (HWIC-D)	4 slots total: 2 slots support HWIC, WIC, VIC, or VWIC type modules 1 slot supports WIC, VIC, or VWIC type modules 1 slot supports VIC or VWIC type modules	4 slots, each slot can support HWIC, WIC, VIC, or VWIC type modules	4 slots, each slot can support HWIC, WIC, VIC, or VWIC type modules	4 slots, each slot can support HWIC, WIC, VIC, or VWIC type modules

APPLICATIONS

Q. What applications does the Cisco 2800 support?

A. The Cisco 2800 Series offers a comprehensive feature set ideal for applications and solutions requiring the following:

- Integrated services—With the optional integration of a wide array of services modules, the Cisco 2800 Series offers the ability to easily integrate the functions of standalone network appliances and components in a network-module form factor and support multiple services without compromising router performance. Many of these network modules, such as the network analysis, voice-mail, intrusion-detection, and content-engine modules, have embedded processors and hard drives that allow them to run largely independently of the router.
- Secure network connectivity for data, voice, and video—The Cisco 2800 Series features advanced integrated, end-to-end security for the delivery of converged services and applications. The integration of security functions directly onto the router provides optimal performance for security applications such as network admission control (NAC), Dynamic Multipoint VPN (DMVPN) solutions, IPv6 Cisco IOS Software Firewall, dynamic intrusion protection systems, and transparent Cisco IOS Firewall.
- Converged IP Communications—Cisco CallManager Express (CME) is an optional solution embedded in Cisco IOS Software that provides call processing for Cisco IP phones. This solution is ideal for customers with data-connectivity requirements interested in deploying a

converged IP telephony solution for up to 96 phones*. Customers can securely deploy data, voice, and IP telephony on a single platform for their small offices, helping enable them to streamline their operations and lower their network costs.

* Note: A maximum of only 72 phones is supported on the CISCO2851 in the initial IOS release, 12.3(8)T, but future IOS releases will support 96 phones on the CISCO2851.

- Q.** Can the Cisco 2800 Series provide in-line power to IP phones and other devices?
- A.** With the optional AC + in-line power supply, the Cisco 2800 Series can provide either IEEE 802.3af-compliant Power over Ethernet (PoE) or Cisco prestandard in-line power to devices. The platform is capable of providing up to 15 watts per port, to a total power limit of 120 watts on the Cisco 2801, 160 watts on the Cisco 2811, 240 watts on the Cisco 2821, and 360 watts on the Cisco 2851.
- Q.** Can the Cisco 2800 Series support both Cisco in-line power and IEEE 802.3af PoE devices at the same time?
- A.** Yes, up to the maximum total power available per model.

NETWORK MODULES (NM, NME, NMD, NME-X, AND NME-XD)

- Q.** What is an NME?
- A.** The NME slot is the next generation of the network module in the Cisco 2800 Series. NMEs are supported on the Cisco 2811, 2821, and 2851 routers only. The NME is available in three form factors, the single-wide (NME) is available on the Cisco 2811, 2821, and 2851 routers, the extra-wide (NME-X) is supported on the Cisco 2821 and 2851 routers, and only the extra-double-wide (NME-XD) is supported on the Cisco 2851. The NME offers additional performance over the existing network modules, as well as improved density. NME slots are also engineered to provide IEEE 802.3af-compliant PoE as well as Cisco product-based in-line power for IP telephones and Cisco Aironet® access points. The Cisco 2851 also supports current high-density services modules (HDSMs) in the NME slot.
- Q.** Are there any available modules specifically designed to the NME specifications?
- A.** At the time of the first customer shipments of the Cisco 2800 Series, there are no modules specifically designed to the NME specifications. Future modules will take advantage of the enhanced NME specifications.
- Q.** Are NME and HWIC slots backward-compatible?
- A.** Yes, you can use the current-generation network modules and WICs in the new slots, but they will not be able to take advantage of all the NME features. WICs, VWICs, and VICs are all supported in the HWIC slots.
- Q.** Is online insertion and removal (OIR) supported for modules in the NME or HWIC slots?
- A.** No, OIR of modules is not supported on the Cisco 2800 Series.
- Q.** Do the Cisco 2811, 2821, and 2851 support all the current network modules?
- A.** Most existing modules are carried forward for the Cisco 2800. Refer to the Cisco 2800 Series data sheet for a detailed listing of all supported modules. **Note:** The Cisco 2801 router does not support network modules.
- Q.** Which network modules are not supported on the Cisco 2811, 2821, and 2851?
- A.** Table 2 shows the network modules that the Cisco 2811, 2821, and 2851 routers do not support.

Table 2. Network Modules Not Supported by Cisco 2811, Cisco 2821, and Cisco 2851 routers

NM-1FE-FX	NM-2CE1U	NM-1A-OC3SMI-1V
NM-1FE-TX	NM-2CT1	NM-1A-OC3SML-1V
NM-1FE-SMF	NM-2CT1-CSU	NM-1A-OC3-MM-EP
NM-1FEFX-V2(MMF)	NM-1A-OC3MM	NM-1A-OC3SMI-EP
NM-1FE1R2W	NM-1A-OC3SMI	NM-1A-OC3SML-EP
NM-1FE2W	NM-1A-OC3SML	NM-4T
NM-1FE2W-V2	NM-1GE	NM-1V
NM-2FE2W	NM-1FE-MMF	NM-1CT1
NM-2FE2W-V2	NM-1FEFX-SMF	NM-8E1-IMA
NM-2W	NM-1CE1B	NM-8T1-IMA
NM-4E1-IMA	NM-1CE1U	NM-4T1-IMA
NM-1CT1-CSU	NM-2V	
NM-2CE1B	NM-1A-OC3MM-1V	

Q. Why are these network modules not supported on the Cisco 2811, 2821, and 2851 routers?

A. Many of these modules, such as the Primary Rate Interface (PRI) and ATM inverse-multiplexing-over-ATM (IMA) modules, have reached end of sale or have been replaced by newer modules that are supported. Others, such as the Fast Ethernet combination card (part number NM-xFExW) and OC-3 network modules (part number NM-1A-OC3), were not supported on the Cisco 2600 Series and do not carry forward into the Cisco 2811, 2821, and 2851 routers. Finally, some modules, such as the NM-2W are no longer required because the Cisco 2800 Series has higher-density interfaces and slots. No functions have been removed by not supporting these modules.

INTERFACES CARDS (WICS, VWICS, AND HWICS)

Q. What is a HWIC?

A. The HWIC is an updated and enhanced version of the current WIC in the Cisco 2600 chassis. The HWIC offers greater speeds and higher port density than the current WIC. HWIC slots can support modules that provide both Cisco product-based in-line power and PoE. HWICs are available in two form factors, a single-wide form factor that takes up one slot and a double-wide form factor that takes up two slots. Note: Two HWIC slots can be combined into one bigger slot (HWIC-D) by removing the center rail between two individual slots. The Cisco 2811, 2821, and 2851 routers can support four single-wide, the Cisco 2801 router can support two single-wide, and all versions support two double-wide HWICs.

Q. Is OIR supported for modules in the HWIC slots?

A. No, OIR of modules in the HWIC slots is not supported.

Q. Does the Cisco 2800 Series support all the current WICs?

A. Most existing modules are carried forward for the Cisco 2800 (refer to the Cisco 2800 Series data sheet for a detailed listing of all supported modules).

Q. Which WICs are not supported on the Cisco 2800 Series?

A. The WICs listed in Table 3 have been replaced with newer versions that provide the same or increased functions.

Table 3. Unsupported WICs and Their Recommended Replacements for Cisco 2800 Series

WICs Not Supported	Replacement WICs
WIC-4ESW	HWIC-4ESW or HWIC-D-9ESW
WIC-1B-S/T	WIC-1B-S/T-V3
WIC-1B-U	WIC-1B-U-V2
WIC-1B-S/T-LL	WIC-1B-S/T-V3
WIC-1DSU-T1	WIC-1DSU-T1-V2

Q. Are there any interface cards that are supported only on specific Cisco 2800 Series platforms?

A. Yes. Table 4 shows which interface cards are supported on which version of the Cisco 2800 Series.

Table 4. Interface Card Support on Cisco 2800 Series by Version

Part Number	Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
WIC-1SHDSL-V2	No	Yes	Yes	Yes
HWIC-1GE-SFP	No	Yes	Yes	Yes

Q. Does the Cisco 2800 Series support all the current multiflex trunk interface cards (VWICs)?

A. Yes, the Cisco 2800 Series supports all the current VWICs.

Q. Can the VWICs and VICs use the PVDMs that can be inserted into the PVDM slots on the motherboard for voice applications?

A. Yes, because of the integrated architecture of the Cisco 2800 Series, VWICs and VICs in integrated slots can use the onboard PVDMs.

Q. Is there ISDN PRI support on the onboard WIC slots of the Cisco 2800 Series using VWICs?

A. No. VWICs cannot be used for “data” ISDN PRI. VWICs can be used in conjunction with digital voice (part number NM-HDV) or onboard PVDMs for ISDN PRI voice, but not data. VWICs can support a two-channel group Channelized configuration, but there are significant restrictions.

VOICE INTERFACE CARDS

Q. Does the Cisco 2800 Series support all the current VICs?

A. Most existing VICs are carried forward for the Cisco 2800. In addition, some new 4-port VICs are now supported in the Cisco 2800 Series. Refer to the Cisco 2800 Series data sheet for a detailed listing of all supported VICs.

Q. Which VICs are not supported on the Cisco 2800 Series?

A. Table 5 gives the VICs that have been replaced with newer versions that provide the same or better functions.

Table 5. Unsupported VICs and Their Recommended Replacements for Cisco 2800 Series

VICs Not Supported	Replacement VICs
VIC-2FXO	VIC2-2FXO
VIC-2FXS	VIC2-2FXS
VIC-2BRI-NT/TE	VIC2-2BRI-NT/TE
VIC-2E/M	VIC2-2E/M

Q. Can the 1-port digital VIC for Japan (part number VIC-1J1) be used in an HWIC, WIC, VWIC, or VIC slot on the Cisco 2800 Series?

A. The VIC-1J1 is supported only on the Cisco 2811, 2821, and 2851 routers when inserted into the Cisco (part number NM-HDV) module. It is not supported on the Cisco 2801 router.

Q. Are the VICs supported on the integrated HWIC slots?

A. Yes, because the Cisco 2800 Series has PVDM slots on the motherboard, these DSPs are available to support VICs in the integrated HWIC slots.

ADVANCED INTEGRATION MODULES

Q. What is an AIM?

A. An AIM is a card that can be plugged into the internal AIM slot of the Cisco 1800 Series, 2600 Series, 2800 Series, 3700 Series, and 3800 Series. The AIM slot provides a way of integrating additional functions and offloading the main central processing unit (CPU) from processor-intensive functions without reducing the LAN or WAN density of the Cisco platform by otherwise occupying an external modular slot. The data-compression (part number AIM-COMPR-V2), encryption (part number AIM-VPN-EPII-Plus), ATM segmentation and reassembly (SAR) (part number AIM-ATM), and voice-mail AIM (part number AIM-CUE) cards are currently available for use in the Cisco 2811, 2821, and 2851 routers. The Cisco 2801 router currently supports only the encryption (part number AIM-VPN-EPII-Plus) and voice-mail (part number AIM-CUE) AIM cards.

Q. Does the Cisco 2800 Series support all the current AIMs?

A. Most existing modules are carried forward for the Cisco 2800 Series. Refer to the Cisco 2800 Series data sheet for a detailed listing of all supported modules.

Q. Which AIMs are not supported on the Cisco 2800 Series?

A. Table 6 lists the AIMs that are not supported on the Cisco 2800 Series with their respective successor AIMs. The AIMs that are not supported on the Cisco 2800 Series are either replaced with updated versions or their functions are now integrated onto the Cisco 2800 Series motherboard.

Table 6. AIMs Not Supported on Cisco 2800 Series and Their Recommended Replacement by Platform

AIMs Not Supported	Replacement AIMs	Replacement AIM Supported			
		Cisco 2801	Cisco 2811	Cisco 2821	Cisco 2851
AIM-COMPR2	AIM-COMPR2-V2	No	Yes	Yes	Yes
AIM-VPN/BP	AIM-VPN-EPII-PLUS	Yes	Yes	Yes	Yes
AIM-VPN/EP	AIM-VPN-EPII-PLUS	Yes	Yes	Yes	Yes
AIM-ATM-VOICE-30	Onboard PVDMs for voice AIM-ATM for ATM SAR and IMA	No	Yes	Yes	Yes
AIM-VOICE-30	Onboard PVDMs	Yes	Yes	Yes	Yes
AIM-VPN-BPII	AIM-VPN-EPII-PLUS	Yes	Yes	Yes	Yes
AIM-VPN-EPII	AIM-VPN-EPII-PLUS	Yes	Yes	Yes	Yes
AIM-VPN-BPII-PLUS	AIM-VPN-EPII-PLUS	Yes	Yes	Yes	Yes

Q. How many internal AIM slots are available on the Cisco 2800 Series?

A. The Cisco 2800 Series has two AIM slots on the motherboard; that is, a total of two AIM modules can be supported on the Cisco 2800 Series.

Q. Are there any limitations to installing two AIMs in the Cisco 2800 Series?

A. Yes. You cannot install two encryption AIMs or two voice-mail AIMs. You can mix encryption AIMs with compression AIMs, but they must be configured to support different traffic patterns. Two ATM AIMs can be used for 8 x T1 IMA, but they must be configured as two 4 x T1 IMA groups. At First Customer Shipment (FCS), the only combination supported on the Cisco 2801 router is the Advanced Integration Module

Encryption Card (part number AIM-VPN/EPII-PLUS) and the Cisco Unity™ Express Advanced Integration Module Card (part number AIM-CUE).

EXTENSION VOICE MODULE

Q. What is the EVM?

A. The EVM is an extension slot to allow higher density for time-division multiplexing (TDM) interfaces. This slot takes advantage of the PVDMs on the motherboard to provide additional density for analog and Basic Rate Interface (BRI) voice interfaces. The Cisco 2801 router does not support this EVM extension slot.

Q. Which models in the Cisco 2800 Series support the EVM?

A. The Cisco 2821 and the Cisco 2851 routers both have a specific slot to support the EVM.

Q. The EVM slot looks like any other NME slot, so can I install a network module into it?

A. No. Only an EVM module can be used in the EVM slot. The network module and NME will not seat in this slot, and attempting to do so may damage the module or the router. Also, an EVM module is not supported in the NME slot.

Q. I inserted the EVM into the NME slot and it seated, but the module is not recognized. Why?

A. Although the EVM module will indeed seat in the NME slot, it is not supported in that slot on any Cisco 2800 series platform. For the Cisco 2821 and Cisco 2851 routers, the EVM is supported only in the EVM slot. The EVM is not supported at all on the Cisco 2801 and the Cisco 2811.

UNIVERSAL SERIAL BUS

Q. What are the universal-serial-bus (USB) ports for?

A. The Cisco 2811, 2821, and 2851 routers have two fixed USB host ports (Version 1.1), whereas the Cisco 2801 has one fixed USB host port (Version 1.1). These ports are for future functions.

Q. Can I use the USB ports as a console port?

A. No, the USB ports will not be available for use as a console port. If your computer has only a USB interface, you need to use a USB-to-serial conversion cable to access the console port.

RELIABILITY

Q. What kind of reliability can I expect from the Cisco 2800 Series?

A. Reliability is a function of many factors, including network design, power design, and circuit design. Cisco published many documents describing best practices for these elements. With proper design, the Cisco 2800 Series can provide 99.99-percent uptime, or four 9s reliability.

Q. How does mean time between failure (MTBF) and mean time to repair (MTBR) on the Cisco 2800 Series compare to that of current models, such as the Cisco 2600 Series?

A. Calculated MTBF and MTBR for the Cisco 2800 Series is similar to that of currently shipping access router platforms.

POWER SUPPLY

Q. What type of power supplies does the Cisco 2800 Series use?

A. The Cisco 2800 Series has the following options for power supplies: AC and AC-IP (AC power supply with support for in-line power distribution (PoE (802.3af) and Cisco prestandard in-line power capable). The Cisco 2811, 2821, and 2851 support DC power as well, which is not supported on the Cisco 2801. All these options are universal internal power supplies that are applicable for all countries. There are no country-specific power supplies. Refer to the Cisco 2800 Series Integrated Services Router data sheet for detailed information about the power supplies.

Q. Does the Cisco 2800 Series support a redundant power supply (RPS)?

A. The Cisco 2811, 2821, and 2851 routers have built-in RPS connectors. You do not need to remove the existing power supply to provide fully redundant power to the platforms. This connector is designed for a cable to connect to the external RPS-675. The Cisco 2801 does not support RPS.

Q. Do I need to order a specific part number to for an RPS model for the Cisco 2811, 2821 or 2851 routers?

A. No, the Cisco 2811, 2821, and 2851 routers have the RPS interface built in. No special part numbers are needed. You need to order the Cisco RPS-675 as the second power source. The Cisco 2801 does not support RPS.

Q. Are the AC and DC power supplies field-upgradable and field-serviceable?

A. Yes, all three power supplies (AP, AP+IP, and DC) are field-replaceable and field-upgradable.

Q. Can I convert the Cisco 2811, 2821, or 2851 router from AC to DC power supplies in the field?

A. Yes, you can convert power sources in the field. In order to convert from AC to DC or DC to AC, you need to order the new power supply as a spare.

Q. Can the RPS provide redundant in-line power to IP phones and other powered devices?

A. Yes, the Cisco RPS-675 can provide redundant power to both the chassis and powered devices. The Cisco 2801 does not support RPS.

Q. What is 802.3af PoE?

A. The 802.3af standard, also known as Power over Ethernet, defines a way to build Ethernet power-sourcing equipment and powered terminals. The specification involves delivering 48 volts of AC power over unshielded twisted-pair wiring. It works with existing cable plant, including Category 3, 5, 5e, or 6; horizontal and patch cables; patch panels; outlets; and connecting hardware, without requiring modification. The IEEE 802.3af standard specifies support for two power levels, low-power powered devices at 7 watts and high-power powered devices at 15 watts per port, and both are supported on the Cisco 2800 Series.

Q. What is Cisco pre-standard in-line power?

A. Cisco implemented a pre-standard version of in-line power to Ethernet devices to support Cisco IP phones and wireless access points in the years during which the IEEE developed an industry standard. The Cisco implementation uses the Cisco Discovery Protocol to determine how much power a device needs, and can provide up to 10 watts per port, with most powered devices requiring only 7 watts. Devices that were developed to support the prestandard in-line power cannot be powered by PoE-only power supplies.

MEMORY

Q. What kind of memory does the Cisco 2800 Series use?

A. The Cisco 2811, 2821, and 2851 routers use double data rate (DDR) error-correcting code (ECC) SDRAM, whereas the Cisco 2801 Router uses SDRAM without ECC.

Q. What is ECC SDRAM?

A. ECC SDRAM is memory that can detect and correct some SDRAM errors without user intervention. ECC SDRAM replaced parity memory, which could only detect—but not correct—SDRAM errors.

Q. What kind of errors can ECC SDRAM correct?

A. Most ECC SDRAM can correct single bit errors, and detect—but not correct—larger errors. Thus, errors greater in size than 1 bit will still crash the computer.

Q. What is the default and maximum memory in the Cisco 2800 Series?

A. Table 7 shows default and maximum memory in all platforms.

Table 7. Default and Maximum Memory in Cisco 2800

Platform	Default DRAM Memory	Maximum DRAM Memory	Default Flash Memory	Maximum Flash Memory
Cisco 2801	128 MB	384 MB	64 MB	128 MB
Cisco 2811	256 MB	768 MB	64 MB	256 MB
Cisco 2821	256 MB	1 GB	64 MB	256 MB
Cisco 2851	256 MB	1 GB	64 MB	256 MB

Q. What kind of Flash memory does the Cisco 2800 Series use?

A. The Cisco 2800 Series has a single, external compact Flash memory. This is the only Flash memory for the system and should never be removed during router operation.

Q. What is the Flash memory used for?

A. Cisco IOS Software, configuration files, and other files required for router operation are stored in Flash memory. Also, Flash memory allows software upgrades to be downloaded over the WAN or LAN link to be stored on the onboard Flash memory.

Q. Can the Cisco 2800 Series compact Flash be used with other Cisco platforms?

A. Yes, the Cisco 2800 Series compact Flash can be used in the Cisco 1800, 3700, and 3800 series, and the Cisco 2691 router compact Flash slots.

Q. Can the Cisco 2811, 2821, and 2851 DRAM be used in other Cisco platforms?

A. Yes, the Cisco 2811, 2821, and 2851 DRAM can be used in the Cisco 3800 Series.

Q. Can the Cisco 2811, 2821, and 2851 router DRAM be used in the Cisco 2801 platform?

A. No, the Cisco 2811, 2821, and 2851 router DRAM is SDRAM DDR, whereas the Cisco 2801 router memory is SDRAM extended data output (EDO). The SDRAM DRR and SDRAM EDO are not compatible.

Q. What is the ROM monitor?

A. The ROM monitor is a ROM-based program that is executed upon system power up or reset. It performs various functions, including power-on confidence test, hardware initialization, system boot process, system failure debug, and file system support.

Q. What is required to upgrade the ROM monitor?

A. The ROM monitor image can be upgraded by downloading new software. The first image in ROM is a read-only image and cannot be erased. The upgrade image is a read-write image that is stored in ROM Flash memory as the second image. You can configure the router to boot from either ROM monitor image. In order to upgrade the ROM monitor on the Cisco 2800 Series, you need to have a ROM monitor image available to copy from a remote server or from the internal compact Flash memory. ROM monitor upgrades can be executed only from Cisco IOS Software.

LAN INTERFACES

Q. What LAN interfaces are integrated into the Cisco 2800 Series platforms?

A. The Cisco 2801 and the Cisco 2811 routers have two onboard Fast Ethernet interfaces that support 10- or 100-Mb connections. The Cisco 2821 and Cisco 2851 routers have two onboard Gigabit Ethernet interfaces in an RJ-45 form factor. These interfaces are 10-/100-/1000-megabit autosensing interfaces.

Q. Can the Gigabit Ethernet interfaces on the Cisco 2821 and the Cisco 2851 routers support jumbo frames?

A. Yes. The Gigabit Ethernet interfaces can support frames up to 9000 bytes.

SECURITY SUPPORT

Q. What security functions are available for the Cisco 2800 Series?

A. Cisco IOS Software supports a wide range of security features. Standard features in base feature sets include access control lists (ACLs); authentication, authorization, and accounting (AAA) features such as Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP), TACACS+, RADIUS, and token authentication and tunneling protocols such as generic routing encapsulation (GRE), Layer 2 Forwarding (L2F), and Layer 2 Tunneling Protocol (L2TP). Optional features available with a security IOS feature set include Cisco IOS Firewall, IPsec encryption using either 3DES or AES algorithms, and Network Admission Control (NAC).

Q. Can I use the Cisco 2800 Series as a firewall?

A. Yes. The Cisco IOS Firewall feature set is supported in the Cisco 2800 Series. Use of the Cisco IOS Firewall features requires the purchase of a Cisco IOS Security feature set. This feature set offers enhanced firewall functions, including context-based access control (CBAC), which enables securing a network on a per-application basis. Additional firewall security features include Java applet blocking, denial-of-service detection and prevention, and more advanced logging capabilities.

Q. Does the Cisco 2800 Series support IPsec encryption without the encryption AIM?

A. The Cisco 2800 Series has an onboard encryption accelerator that provides hardware-based encryption without the AIM. Use of the onboard encryption accelerator requires the purchase of a Cisco IOS Security feature set. The onboard encryption accelerator supports IPsec 3DES and AES, offloading the encryption process from the CPU. The result is more IPsec VPN performance and a lower overall router CPU use.

Q. What is the difference in features and performance between the encryption AIM and the onboard encryption accelerator?

A. The encryption AIM offers more than double the performance of the onboard encryption accelerator and more than five times the number of remote VPN tunnels. The encryption AIMS also offer IP Payload Compression Protocol (IPPCP), Layer 3 compression in hardware.

Q. Is the Cisco 2800 Series compatible with the Cisco VPN client?

A. Yes.

Q. Does the Cisco 2800 Series function with Cisco Easy VPN remote client and server mode?

A. Yes. The term Easy VPN server is used to denote any headend model that supports the Cisco Unity workgroup specification for VPN server. The term Easy VPN client is used to denote any customer premises equipment (CPE) that receives IPsec configuration from an Easy VPN server. The Cisco 2800 Series can serve as both an Easy VPN server and as an Easy VPN client. That is, the Cisco 2800 Series can push IPsec configurations to an Easy VPN client and can receive IPsec configurations from another Easy VPN server.

Q. Can the Cisco 2800 Series perform software Lempel-Ziv-Stac (LZS) compression with the AIM VPN encryption module?

A. Yes. The Cisco Advanced Integration Module VPN module supported on the Cisco 2800 Series (part number AIM-VPN-EPII-PLUS) performs IPPCP compression at Layer 3 in hardware prior to encryption, maximizing the use of bandwidth with security.

VOICE SUPPORT

Q. What voice features does the Cisco 2800 Series support?

A. The Cisco 2800 Series provides a full range of voice features. All platforms have onboard PVDM slots that can support voice, fax, and echo-cancellation functions. Increased performance while running QoS and other services, along with increased density and the ability to support voice interfaces in all slots, make the Cisco 2800 Series ideal for voice applications. The Cisco 2821 and Cisco 2851 support the EVM for enhanced analog density.

Q. What is the requirement for the chassis to support digital voice with the onboard HWIC slots?

A. The Cisco 2800 Series allows digital voice support through the new, onboard PVDMs using the multiflex VWIC in the onboard WIC/VIC/HWIC slots.

Q. Is Cisco CME for providing local call-processing features supported on the Cisco 2800 Series?

A. Yes, Cisco CME is supported on the Cisco 2800 Series.

Q. How many phones can I support using Cisco CME on a Cisco 2800 Series router?

A. It depends on the platform. Table 8 provides an overview of the number of phones supported per platform:

Table 8. Maximum Number of Phones Supported Using Cisco CME

Platform	Maximum No. of Phones with Cisco CME 3.2	Maximum No. of DN with Cisco CME 3.2
Cisco 2801	24	120
Cisco 2811	36	144
Cisco 2821	48	144
Cisco 2851	96**	288

** Note: A maximum of only 72 phones is supported on the CISCO2851 in the initial IOS release, 12.3(8)T, but future IOS releases will support 96 phones on the CISCO2851.

Q. Is Cisco Survivable Remote Site Telephony (SRST) supported on the Cisco 2800 Series?

A. Yes, Cisco SRST is supported. Refer to SRST documentation for detailed feature description

http://www.cisco.com/warp/public/cc/pd/unco/srstl/prodlit/srstd_ds.pdf

Q. How many phones can I support using SRST on a Cisco 2800 Series router?

A. It depends on the platform. Table 9 provides an overview of the number of phones supported per platform:

Table 9. Maximum Number of Phones Supported Using Cisco SRST

Platform	Maximum No. of Phones with Cisco SRST 3.2	Maximum No. of DN with Cisco SRST 3.2
Cisco 2801	24	120
Cisco 2811	36	144
Cisco 2821	48	192
Cisco 2851	96***	384

*** Note: A maximum of only 72 phones is supported on the CISCO2851 in the initial IOS release, 12.3(8)T, but future IOS releases will support 96 phones on the CISCO2851.

Q. Does the Cisco 2800 Series support Cisco Unity Express?

A. Yes. All the Cisco 2800 Series routers support the Cisco Unity Express AIM (part number AIM-CUE). Additionally, the Cisco 2811, 2821, and 2851 routers have a network-module form-factor (part number NM-CUE) option.

Q. What are the part numbers for the PVDMs supported in the Cisco 2800 Series motherboard PVDM slots?

A. Table 10 lists the PVDM modules supported in the Cisco 2800 Series platforms.

Table 10. PVDM Modules Supported in Cisco 2800 Series

Product Number	Description
PVDM2-8	8-channel fax and voice DSP module
PVDM2-16	16-channel fax and voice DSP module
PVDM2-32	32-channel fax and voice DSP module
PVDM2-48	48-channel fax and voice DSP module

PVDM2-64

64-channel fax and voice DSP module

Q. Are Session Initiation Protocol (SIP), Media Gateway Control Protocol (MGCP), and Voice Extensible Markup Language (VXML) supported on Cisco 2800 Series?

A. SIP Version 2.0 and MGCP Version 1.0 as well as VXML are currently supported on the Cisco 2800 Series.

NETWORK MANAGEMENT

Q. How is the Cisco 2800 Series managed?

A. Like all Cisco routers, the Cisco 2800 Series can be managed with Simple Network Management Protocol (SNMP), with a Telnet session, and through a directly connected terminal or PC running terminal emulator software.

Q. Does the Cisco 2800 Series router support CiscoView and CiscoWorks?

A. Yes, the Cisco 2800 Series supports CiscoWorks Resource Manager Essentials and CiscoView, both of which are part of the CiscoWorks Family.

Q. Does the Cisco Router and Security Device Manager (SDM) support the Cisco 2800 Series?

A. Yes, Cisco SDM is supported on the Cisco 2800 Series starting with Version 2.0. Cisco SDM is included on all Cisco 2800 Series router-based 2800 Cisco IOS Software images.

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204106.9_ETMG_CM_10.04

Printed in the USA

