

## Cisco IAD2435-8FXS Business Class Integrated Access Device

### Product Overview

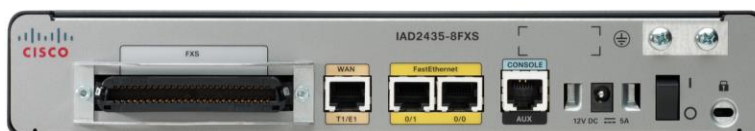
The Cisco® IAD2435-8FXS Integrated Access Device is part of the Cisco IAD2400 Series of smart Integrated Access Devices. These devices offer best-in-class customer premises equipment (CPE) to service providers delivering managed, integrated voice and data services to small and medium-sized businesses (SMB).

The Cisco IAD2435-8FXS (Figure 1) is a secure, cost-effective device that can help accelerate migration from traditional time-division multiplexing (TDM) voice to voice over IP (VoIP) by supporting quality of service (QoS) and IP service-level agreements (IP SLAs). A quiet, space-saving desktop form factor makes it ideal for small business deployments.

Powered by Cisco IOS® Software, the Cisco IAD2435-8FXS supports both analog voice and VoIP, with multiple call-control protocols, including Session Initiation Protocol (SIP), Media Gateway Control Protocol (MGCP), and H.323, along with diverse VoIP codecs. In addition to industry-leading voice features, the Cisco IAD2435-8FXS uses the features of Cisco IOS Software to provide IP routing, an on-board encryption engine, Dynamic Host Configuration Protocol (DHCP), Network Address Translation (NAT), and advanced security features.

The Cisco IAD2435-8FXS is a fixed-configuration platform; Table 1 lists the standard features of the device.

**Figure 1.** Cisco IAD2435-8FXS Integrated Access Device



**Table 1.** Standard Features of the Cisco IAD2435-8FXS Integrated Access Device

Model	WAN Interface	Analog Voice	Fast Ethernet Ports	Flash	DRAM
IAD2435-8FXS	1 T1/E1	8 FXS	Two 10/100 Mbps	128 MB	256 MB

The model also comes with one console/auxiliary port for troubleshooting and an external 60W power supply.

### Primary Features and Benefits to Service Providers

#### Network Intelligence

Cisco IOS Software enables the Cisco IAD2435-8FXS to deliver the same rich IP feature set that powers more than 80 percent of the Internet infrastructure. These proven voice and data features allow service providers to effectively deploy profitable, value-added services to small and medium-sized businesses. Auto-installation technology in the Cisco Configuration Express tool makes true plug-and-play installation possible at the service provider's customer site.

### **Transparent Service Migration**

The Cisco IAD2435-8FXS enables service providers to migrate end customers transparently from TDM-based GR.303 voice services to call agent-based packet voice services without the need for a truck roll to the customer site. The provider can choose between H.323, MGCP, and SIP for VoIP protocols, based on the services that will be delivered to the customer.

### **Flexibility**

The Cisco IAD2435-8FXS offers both analog and packet voice support, with rich support for VoIP signaling protocols. Combined with the option for call agent and softswitch-based network designs, the Cisco IAD2435-8FXS offers unrivaled flexibility for the design of next-generation multiservice networks.

### **Operational Efficiencies**

The Cisco IAD2435-8FXS increases operational efficiencies by reducing or eliminating complete hardware upgrades, warehousing, truck rolls, and involvement by highly skilled technicians. When deployed with other Cisco equipment and Cisco IOS Software, service providers can cost-effectively extend training, administration, and maintenance activities across the entire network.

### **End-to-End Solution**

Compatibility with a wide range of industry-leading softswitches and voice gateways, combined with the world-class data features of Cisco IOS Software, enables service providers to deploy a highly efficient, highly scalable end-to-end multiservice network. The Cisco IAD2435-8FXS is an integral part of Cisco packet voice solutions.

### **Primary Benefits to End Users**

#### **Robust Voice Quality**

Cisco experience in delivering products that provide toll-quality packet-voice services helps ensure that the Cisco IAD2435-8FXS provides the clear, robust voice quality end users have come to expect from telephony services.

#### **Reliability**

Cisco products are renowned for their exceptional reliability, earned through years of proven industry service. The Cisco IAD2435-8FXS extends the same standards to managed service environments to provide end users with the high levels of reliability and availability.

#### **Service Flexibility**

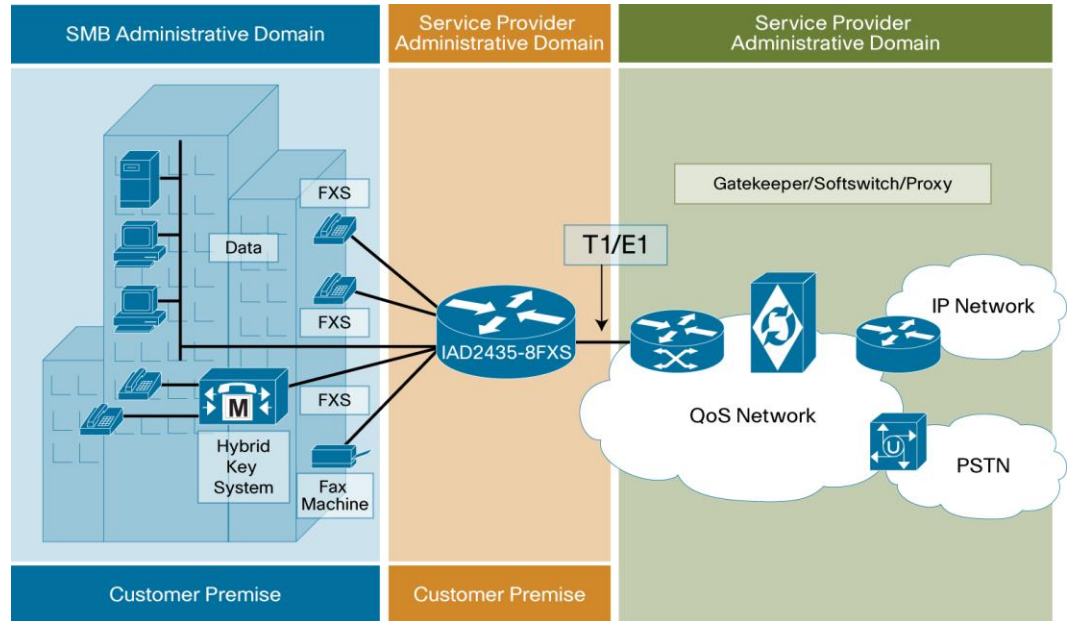
Today's rapidly changing business environment leads to constant change in the network requirements of small and medium-sized businesses. The Cisco IAD2435-8FXS simplifies such changes by allowing service providers to add or remove service offerings remotely based on end-user needs.

### Primary Applications

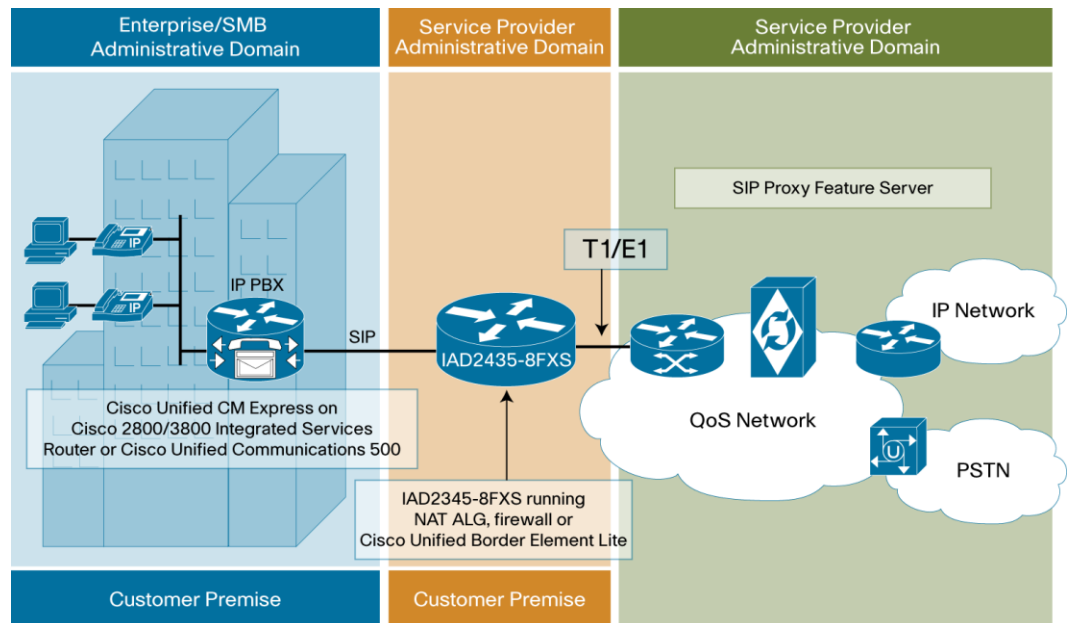
The Cisco IAD2435-8FXS is designed primarily for managed service offerings from service providers. Its feature flexibility provides an advantage to service providers, as they can standardize on one model of CPE that can be deployed in various architectures:

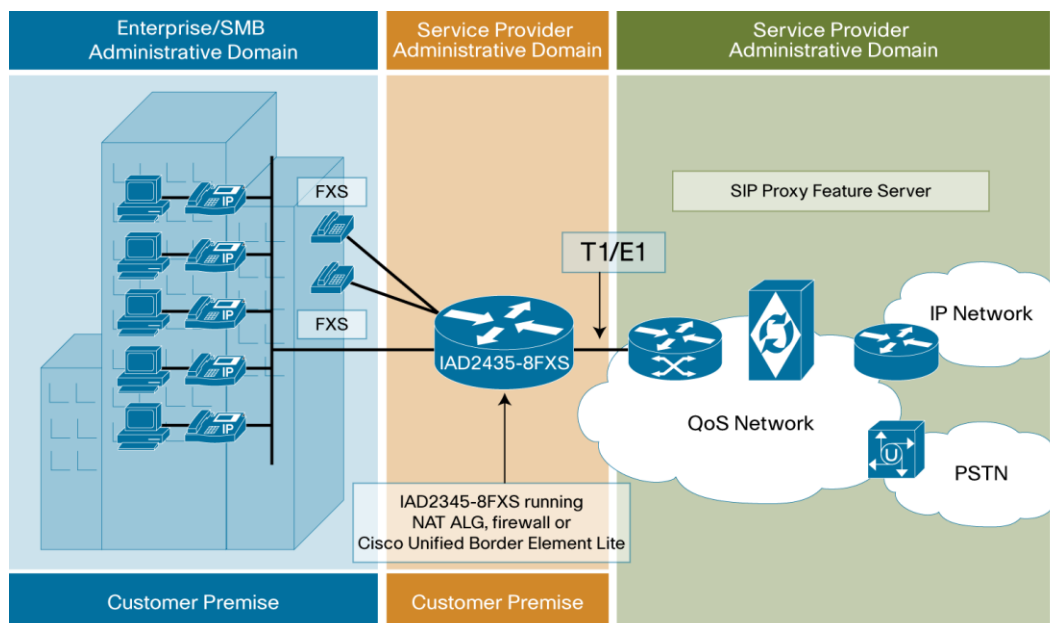
- Integrated data and voice access offering (Figure 2)
- Managed SIP trunking for IP/private branch exchange (PBX) interconnections (Figure 3)
- Hosted VoIP offering (Figure 4)

**Figure 2.** Integrated Data and Voice Access



**Figure 3.** Managed SIP Trunking for IP/PBX Interconnections



**Figure 4.** Hosted VoIP Offering**Features and Benefits**

The Cisco IAD2435-8FXS architecture has been designed specifically to meet the expanding requirements of service providers delivering managed services to commercial offices and SMBs for current and future applications. The Cisco IAD2435-8FXS provides T1/E1 connectivity options combined with leading-edge availability and reliability features. In addition, Cisco IOS Software provides support for a complete suite of transport protocols, QoS tools, advanced security, and voice applications for managed deployments. Table 2 lists the features and benefits of the Cisco IAD2435-8FXS.

**Table 2.** Features and Benefits

Feature	Benefit
<b>Compact model</b>	The IAD2435-8FXS is a desktop unit with front LEDs and I/O ports at the back. As it does not require cooling fans, it operates quietly in office environments.
<b>Embedded security hardware acceleration</b>	Standard embedded hardware cryptography accelerators; optional Cisco IOS Software upgrade to help enable WAN link security and VPN services.
<b>Integrated Dual-Port Fast Ethernet</b>	Two 10/100 Fast Ethernet ports
<b>Support for Cisco IOS Software</b>	Full support for the latest Cisco IOS Software-based QoS, bandwidth management, and security features.
<b>Onboard VPN encryption acceleration</b>	IPSec Digital Encryption Standard (DES), Triple DES (3DES), Advanced Encryption Standard (AES) 128, AES 192, and AES 256 cryptology.
<b>Intrusion Prevention System (IPS)</b>	Cisco IOS Software delivers flexible, high-performance security.
<b>Fixed voice interfaces</b>	1 RJ-21 connector providing 8 FXS analog voice ports for connecting analog phones, fax machines, and modems.
<b>VoIP protocols</b>	Support for industry-standard VoIP protocols including SIP, MGCP, and H.323; interoperability with majority of softswitch vendors
<b>Fixed digital signal processors (DSPs) on motherboard</b>	DSP modules deliver support for analog voice, transcoding, and secure Real-Time Transport Protocol (RTP) applications.

**Note:** Cisco Unified Communications Manager and Cisco Unified Communications Manager Express are not supported on the Cisco IAD2435-8FXS.

## Summary and Conclusion

As companies strive to lower the cost of running their network and increase the productivity of their end users, more intelligent solutions are required. The Cisco IAD2435-8FXS is designed to consolidate the functions of many separate devices into a single, compact package, enabling service providers to simply and effectively deploy managed services to small and medium-sized businesses. The Cisco IAD2435-8FXS Integrated Access Device delivers a flexible, adaptable infrastructure to meet customer requirements today and tomorrow.

## Product Specifications

Table 3 lists the hardware specifications for the Cisco IAD2435-8FXS.

**Table 3.** Hardware Specifications

<b>DRAM</b>	<ul style="list-style-type: none"> <li>• Default: 256 MB</li> <li>• Maximum: 256 MB</li> </ul>
<b>Internal flash</b>	<ul style="list-style-type: none"> <li>• Default: 128 MB</li> <li>• Maximum: 128 MB</li> </ul>
<b>Onboard LAN ports</b>	Two 10/100 Mbps
<b>Integrated hardware-based encryption</b>	Yes
<b>VPN hardware acceleration (on motherboard)</b>	DES, 3DES, AES 128, AES 192, and AES 256
<b>Console/Aux port (up to 115.2 kbps)</b>	1
<b>Minimum Cisco IOS Software release</b>	12.4(22)T
<b>Rack mounting</b>	Yes, using Cisco brackets
<b>Wall mounting</b>	Yes
<b>Power Requirements</b>	
<b>AC input voltage</b>	100 to 240V AC, autoranging
<b>AC input frequency</b>	47–63 Hz
<b>AC input current</b>	2A (110V) 1A (230V)
<b>AC input surge current</b>	50A maximum, one cycle (-48V power included)
<b>Power dissipation–AC</b>	60W (205 BTU/hr)
<b>Environmental Specifications</b>	
<b>Operating temperature</b>	32° to 104°F (0° to 40°C)
<b>Nonoperating temperature</b>	4° to 149°F (-20° to 65°C)
<b>Maximum operating temperature at altitude</b>	<ul style="list-style-type: none"> <li>• 40°C at sea level</li> <li>• 31°C at 6000 ft (1800 m)</li> <li>• 25°C at 10,000 ft (3000 m)</li> </ul> <b>Note:</b> Derate 1.5°C per 1000 ft
<b>Operating humidity</b>	10% to 85% noncondensing
<b>Dimensions (H x W x D)</b>	1.72 x 10.31 x 8.13 in. 43.7 x 262 x 207 mm
<b>Rack height</b>	1 rack unit (1RU)
<b>Weight (fully configured)</b>	3.38 lb
<b>Noise level (min/max)</b>	<ul style="list-style-type: none"> <li>• No fan</li> <li>• 0 dBA</li> </ul>

Regulatory Compliance	
<b>Safety</b>	<ul style="list-style-type: none"> <li>• UL 60950</li> <li>• C22.2 No. 60950</li> <li>• IEC 60950</li> <li>• EN 60950-1</li> <li>• AS/NZS 60950</li> </ul>
<b>Immunity</b>	<ul style="list-style-type: none"> <li>• EN 300386</li> <li>• EN 55024/CISPR 24</li> <li>• EN 50082-1</li> <li>• EN 61000-6-1</li> </ul>
<b>Electromagnetic compatibility (EMC)</b>	<ul style="list-style-type: none"> <li>• FCC Part 15 Class A</li> <li>• ICES-003 Class A</li> <li>• EN 55022 Class A</li> <li>• CISPR 22 Class A</li> <li>• VCCI Class A</li> <li>• EN 300386 Class A</li> <li>• EN 61000-3-3</li> <li>• EN 61000-3-2</li> </ul>
<b>Telecom</b>	<ul style="list-style-type: none"> <li>• The IAD2435-8FXS platform complies with FCC Part 68, CS-03, JATE Technical Conditions, European Directive 99/5/EC, and TBR 4, 12, and 13 and other standards.</li> <li>• Homologation requirements vary by country and interface type. For specific country information, see the online approvals database: <a href="http://tools.cisco.com/cse/prdapp/jsp/externalsearch.do?action=externalsearch&amp;page=EXTERNAL_SEARCH&amp;module=EXTERNAL_SEARCH">http://tools.cisco.com/cse/prdapp/jsp/externalsearch.do?action=externalsearch&amp;page=EXTERNAL_SEARCH&amp;module=EXTERNAL_SEARCH</a></li> </ul>

## Software Specifications

### WAN

- One T1/E1 (Point-to-Point Protocol [PPP], High-Level Data Link Control [HDLC], or Frame Relay) with integrated channel service unit/digital service unit (CSU/DSU) (RJ-48 connector)
- Two 10/100 Fast Ethernet ports for access

### Voice

- **Analog:** Eight FXS ports (RJ-21 connector)
- **Bearer:** TDM voice, VoIP (RTP [RFC1889], compressed RTP [cRTP])
- **VoIP properties:** RTP, cRTP, echo cancellation, silence suppression/comfort noise, modem pass-through, Cisco fax relay, T.38 fax relay
- **Voice protocols:** SIP, MGCP and H.323
- **DSPs:** Code-excited linear prediction (CELP) (G.729a), adaptive differential pulse code modulation (ADPCM) (G.726 (32), G.726 (16)), pulse code modulation (PCM) (G.711 uLaw, G.711 aLaw)
- **Simultaneous voice calls (analog):** eight

Table 4 lists the specifications for the FXS voice port on the Cisco IAD2435-8FXS.

**Table 4.** FXS Voice Port Specifications

<b>Disconnect supervision</b>	Power denial (calling-party control, far-end disconnect)
<b>Caller ID</b>	On-hook transmission of frequency-shift-keying data
<b>FXS loop resistance</b>	Up to 600 ohms (including phone or terminal equipment)
<b>On-hook voltage</b>	-44V
<b>Off-hook loop current</b>	25 mA (max)
<b>Ring tone</b>	Configurable for different country requirements

<b>Ringing voltage</b>	67V into 1 Ringer Equivalence Number (REN) at zero loop length (balanced)
<b>Ringing frequencies</b>	20 Hz, 25 Hz, 30 Hz, and 50 Hz
<b>REN loading</b>	5 REN/port, 12 REN/system (max)
<b>Address signaling formats</b>	In-band dual tone multifrequency (DTMF) or pulse dialing (8–12pps)
<b>FXS signaling formats</b>	Loop-start and ground-start

## Availability

The Cisco IAD2435-8FXS was orderable in late October 2008, with first customer shipments in mid-November 2008.

## Ordering Information

To place an order, visit the Cisco Ordering Home Page [Cisco Ordering Home Page](#). Table 5 provides ordering information for the Cisco IAD2435-8FXS, Table 6 gives software ordering information, and Table 7 gives licensing information.

**Table 5.** Ordering Information

Product Name	Part Number
Cisco Integrated Access Device IAD2435-8FXS	IAD2435-8FXS

To download the software, visit the [Cisco Software Center](#).

**Table 6.** Software Ordering Information

Part Number	Product Name	Supported Platform
S2435IPV-12422T	Cisco IAD 2435 IP Voice w/o Crypto	Cisco IAD2435-8FXS
S2435IPV-12422T (=)	Cisco IAD 2435 IP Voice w/o Crypto Spare	Cisco IAD2435-8FXS
S2435AISK9-12422T	Cisco IAD 2435 Advanced IP Services	Cisco IAD2435-8FXS
S2435AISK9-12422T (=)	Cisco IAD 2435 Advanced IP Services Spare	Cisco IAD2435-8FXS

**Table 7.** Feature License Ordering Information

Part Number	Product Name	Supported Platform
FL-IAD2400-INT	Firewall features for enhanced Internet access	Cisco IAD2435-8FXS
FL-IAD2400-INT (=)	Firewall features for enhanced Internet access	Cisco IAD2435-8FXS
FL-IAD2400-IPS	IPS Feature License	Cisco IAD2435-8FXS
FL-IAD2400-IPS (=)	IPS Feature License for IAD2400 Series Spare	Cisco IAD2435-8FXS

## Service and Support

Using the Cisco Lifecycle Services approach, Cisco and its partners provide a broad portfolio of end-to-end services and support that can help increase your network's business value and return on investment. This approach defines the minimum set of activities needed, by technology and by network complexity, to help you successfully deploy and operate Cisco technologies and optimize their performance throughout the lifecycle of your network.

## For More Information

For more information about the Cisco IAD2435-8FXS, visit <http://www.cisco.com/go/iad> or contact your local Cisco account representative.



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