

## Cisco 500 Series Secure Router

### Product Description and Positioning

**Q. What is the Cisco® 500 Series Secure Router?**

**A.** Part of the Cisco Smart Business Communications System (SBCS) portfolio from Cisco, the Cisco 500 Series Secure Router is a secure, flexible, easy-to-manage router for small businesses.

**Q. What are the product models?**

**A.** Table 1 lists the models in the Cisco 500 Series

**Table 1.** Cisco 500 Series Secure Router Models

Model Number	Part Number	WAN Interface	802.11b/g Wireless
Cisco SR520	SR520-FE-K9	10/100 Mbps Fast Ethernet	No
	SR520-ADSL-K9	ADSL over POTS (basic telephone service)	No
	SR520-ADSLI-K9	ADSL over ISDN (Annex B)	No
Cisco SR520W	SR520W-FE-K9	10/100 Mbps Fast Ethernet	Yes
	SR520W-ADSL-K9	ADSL over POTS (basic telephone service)	Yes
	SR520W-ADSLI-K9	ADSL over ISDN (Annex B)	Yes

**Q. What is the difference between the Cisco 500 Series Secure Router and the Cisco 870 Series Integrated Services Routers?**

**A.** The Cisco 500 Series Secure Router differs from the Cisco 870 Series in four key respects. First, as part of the SBCS portfolio, the Cisco 500 Series Secure Router is part of an integrated, easy-to-use system that is purpose-built for small business. This means an emphasis on ease of configuration, support, and operations. Management tools such as Cisco Configuration Assistant contribute to easier setup and operations. Second, the Cisco 500 Series Secure Router—like all members of the SBCS portfolio—features Smart Assist technologies that add intelligence to the system and streamline provisioning. Examples include firewall configuration policies, automatic QoS, and Smartports capability. Third, the Cisco 500 Series Secure Router eliminates certain high-end features such as Open Shortest Path First (OSPF) and support for selected legacy protocols to reduce complexity in the product. Finally, the Cisco 500 Series Secure Router has a physical look and feel that is consistent with the rest of the SBCS product portfolio.

**Q. What is the Cisco Smart Business Communications System?**

**A.** The Cisco Smart Business Communications System (SBCS) is an affordable, complete system that extends voice, data, security, and wireless networking to small and medium-sized business users. It makes highly secure access to information possible anytime, anywhere, enabling more effective, efficient ways of communicating with customers and employees. This purpose-built small and medium business network solution is easy to deploy and use while allowing for business growth. For more information on the SBCS portfolio, visit <http://www.cisco.com/go/sbcs>.

**Q. How does the Cisco SBCS platform compare to Linksys products?**

- A.** The Cisco SBCS portfolio offers a systems approach that includes voice, advanced security, mobility, and manageability rather than a set of individual “point products.” Like the rest of the Cisco portfolio, SBCS products have a consistent form, fit, and function over a multiyear lifecycle, which is not always the case with Linksys products. In addition, Linksys products do not offer the level of service and support that many business customers require.

**General Software Features****Q. What Cisco IOS® Software features are offered on the Cisco 500 Series Secure Router?**

- A.** The Cisco 500 Series Secure Routers have a single feature set. Table 2 provides details on these features.

**Table 2.** Cisco IOS Software Features Included in the Cisco 500 Series Secure Router

Feature	Included in Advanced IP Services Cisco IOS Software Image
Enhanced security	Yes
VLAN/802.1q trunking	Yes
DMVPN	No
Group Encrypted Transport VPN (GET VPN)	No
Routing protocols: Routing Information Protocol (RIPv1 and RIPv2)	Yes
Routing Protocols: Open Shortest Path First [OSPF], Enhanced Interior Gateway Routing Protocol [EIGRP], and Border Gateway Protocol [BGP]	No
Advanced QoS features such as class-based classification/marketing using differentiated services code point (DSCP), Class-Based Weighted Random Early Detection (CBWRED), Network-Based Address Recognition (NBAR), Link Fragmentation and Interleaving (LFI), Resource Reservation Protocol (RSVP), and priority and custom queuing	Yes
Multicast features	Yes
ISDN backup	No
Intrusion prevention system (IPS) / intrusion detection system (IDS)	Yes

The Cisco 500 Series Secure Router offers a single Cisco IOS Software feature set that includes stateful inspection firewall and IP security (IPSec) features. Wireless capability is available for both the DSL and Ethernet WAN models. Is there a limit to the number of users supported on these routers?

**Q. Is there a limit to the number of users supported on these routers?**

- A.** No; however, the product is recommended for up to 50 users.

**Q. How many 802.1q VLANs can be configured on the built-in 4-port switch (Fast Ethernet 0–3)?**

- A.** A maximum of four VLANs are supported.

**Q. What QoS features are supported on the Cisco 500 Series Secure Router?**

- A.** The Cisco 500 Series Secure Router supports advanced QoS features on the WAN interface to strictly prioritize different types of traffic, including voice traffic. These advanced QoS features include Class-Based Weighted Fair Queuing (CBWFQ), Low Latency Queuing (LLQ), class-based marking, policing, CBWRED, NBAR, QoS preclassify, prefragmentation, RSVP, priority and custom queuing, and LFI.

**Q. How do I manage the Cisco 500 Series Secure Router?**

- A.** Cisco 500 Series Secure Router can be configured and managed by Cisco Configuration Assistant. Cisco Configuration Assistant is downloadable from Cisco.com at no charge: <http://www.cisco.com/go/configassist>.

**Q. How do you set the router back to its factory default settings?**

- A.** To set the router back to its factory defaults, you can use Cisco Configuration Assistant, or you can go into the Cisco IOS Software command-line interface and do a "write erase" on the router itself or grab the factory default configuration from Cisco Configuration Express. In addition, when the reset button is pressed within 5 seconds of boot up and there is a valid xxx.cfg file in the flash, the router boots up with the xxx.cfg file and avoids the startup-config file in NVRAM Security Features

**Q. Is hardware-based encryption available on these routers?**

- A.** Yes. Hardware-assisted IPsec Triple Data Encryption Standard (3DES) and Advanced Encryption Standard (AES) encryption are available.

**Q. What intrusion prevention features are supported on the platforms?**

- A.** The Cisco 500 Series Secure Router supports the Cisco IOS Intrusion Prevention System (IPS) feature. Cisco IOS IPS is an inline, deep-packet inspection based feature that enables Cisco IOS Software to effectively mitigate a wide range of network attacks. Cisco IOS IPS enables the network to defend itself, with the intelligence to accurately identify, classify, and stop or block malicious or damaging traffic in real time. For more information on Cisco IOS IPS support, visit [http://www.cisco.com/en/US/products/ps6634/products\\_ios\\_protocol\\_group\\_home.html](http://www.cisco.com/en/US/products/ps6634/products_ios_protocol_group_home.html).

**Q. What authentication, authorization, and accounting (AAA) features do the platforms support?**

- A.** The Cisco 500 Series Secure Router supports RADIUS and TACACS.

**Q. What VPN features do the platforms support?**

- A.** Hardware-accelerated IPsec VPN is available. Encryption algorithms DES, 3DES, and AES are supported. In addition, the products support Cisco Easy VPN as well as Secure Sockets Layer (SSL) VPN connections.

**Q. How many IPsec tunnels do the platforms support?**

- A.** The Cisco 500 Series Secure Router supports up to 10 simultaneous IPsec tunnels.

**Q. Does the Cisco 500 Series Secure Router support 802.1x on the switch ports (Fast Ethernet 0-3)?**

- A.** Yes, the products support 802.1x VLAN Assignment, 802.1x Guest VLAN, 802.1x Spouse & Kids (on the switched virtual interface [SVI]), and 802.1x with voice VLAN ID (VID).

For more information on 802.1x support, visit

[http://www.cisco.com/univercd/cc/td/doc/product/software/ios124/124newft/124t/124t11/ht\\_8021x.htm](http://www.cisco.com/univercd/cc/td/doc/product/software/ios124/124newft/124t/124t11/ht_8021x.htm).

**Q. Do the platforms support transparent Cisco IOS Firewall?**

- A.** Yes, transparent Cisco IOS Firewall with advance application control is supported.

**Q. Do the platforms support zone-based Cisco IOS Firewall?**

- A.** Yes, they support zone-based Cisco IOS Firewall.

## Hardware Features

**Q. What is the benefit of the integrated 10/100 switch?**

**A.** All Cisco 500 Series Secure Router models have an integrated 10/100 four-port switch. The routers provide a managed switch with up to four 802.1Q VLANs in addition to a default VLAN; each switch port can be assigned to a different VLAN as needed. In addition, switch port monitoring (via Switched Port Analyzer, or SPAN) and Internet Group Management Protocol (IGMP) snooping are also supported.

**Q. How is demilitarized zone (DMZ) capability supported on the Cisco 500 Series Secure Router?**

**A.** Traffic separation can be achieved using VLANs.

**Q. Does the Cisco 500 Series Secure Router support dial backup and out-of-band management?**

**A.** No, the Cisco 500 Series Secure Router does not support dial backup or out-of-band management.

**Q. Is it possible to upgrade a nonwireless model to support Wi-Fi (802.11b/g)?**

**A.** No, a nonwireless model cannot be upgraded to support wireless.

**Q. What is the use of the reset button on Cisco 500 Series Secure Router?**

**A.** The reset button is used to restore the router to the default factory settings if pressed within 5 seconds of router power up. In addition:

- The router will not react to the reset button if pressed 5 seconds after power up.
- If the reset button is pressed within 5 seconds of boot up and there is not a valid xxx.cfg file in the flash memory, the router boots up with the factory defaults.
- If the reset button is pressed within 5 seconds of boot up and there is a valid xxx.cfg file in flash, the router boots up with the xxx.cfg file and avoids the startup-config file in NVRAM.

**Q. What is the default memory size of DRAM/flash for the Cisco 500 Series Secure Router, and what are the supported software feature sets?**

**A.** The Cisco 500 Series Secure Router supports only one Cisco IOS Software image, Advanced IP Services. The default memory configurations of 128 MB DRAM and 36 MB flash and are not upgradable.

## DSL Features

**Q. What are the DSL models in the Cisco 500 Series Secure Router?**

**A.** The Cisco 500 Series Secure Router offers two different DSL models that support ADSL over analog telephone lines (POTS or basic telephone service) and ADSL over ISDN.

**Q. What DSL chipset is used in the Cisco 500 Series Secure Router?**

**A.** The Cisco 500 Series Secure Router uses the ST Micro (previously known as Alcatel Microelectronics) MTK20190 chipset.

**Q. Do the platforms support ADSL2/2+?**

**A.** Yes, they support ADSL2/2+.

**Q. Is there a way to load different firmware, apart from that embedded with the Cisco IOS Software?**

**A.** Yes. This option is provided to allow customers to upgrade the firmware alone to fix DSL-related issues, rather than upgrading the complete Cisco IOS Software.

#### **Wireless Features**

**Q. What wireless standards do the Cisco 500 Series Secure Router support?**

**A.** The 802.11b/g standards are available on these routers; 802.11a is not available.

**Q. Is VLAN capability available for the WLAN on the new models?**

**A.** Yes, VLAN is available on WLANs.

**Q. What is the maximum number of VLANs supported on the WLAN for the Cisco 500 Series Secure Router?**

**A.** The maximum number of VLANs is 10. Each router will support up to four encrypted VLANs.

**Q. What WLAN security features are available on the Cisco 500 Series Secure Router?**

**A.** WLAN security features available include Wi-Fi Protected Access (WPA)/WPA2, 802.1X, Cisco LEAP, Protected Extensible Authentication Protocol (PEAP), EAP-Transport Layer Security (EAP TLS), EAP-Flexible Authentication via Secure Tunneling (EAP-FAST), EAP-Subscriber Identity Module (EAP-SIM), EAP-MD5 (RFC 3748) , EAP-Tunneled Transport Layer Security (EAP-TTLS), static and dynamic Wired Equivalent Privacy (WEP), Temporal Key Integrity Protocol (TKIP), and RADIUS accounting for wireless clients.

**Q. Are 802.11g access points backward compatible with both 802.11b and 802.11g?**

**A.** Yes. The 802.11g access points are backward compatible to support both 802.11b and 802.11g client devices.

**Q. How do Cisco 500 Series Secure Router wireless routers compare with Cisco Aironet® wireless products?**

**A.** The optional WLAN features on the Cisco 500 Series Secure Router incorporate access, security, and wireless in a single device for the small office. Only wireless features relevant to environments that require a single access point are supported. These routers do not support bridging or repeater functionality. The integrated access points in the Cisco 500 Series Secure Router do not support the Lightweight Access Point Protocol (LWAPP) and therefore are not supported by the Cisco Wireless LAN Controllers nor the Cisco Wireless Control System (WCS).

**Q. What software is used to configure the integrated 802.11 access points?**

**A.** Cisco Configuration Assistant or the Cisco IOS Software command-line interface (CLI) is used to configure the access points.

**Q. Is the Cisco 500 Series Secure Router part of the Cisco Unified Wireless Network?**

**A.** No.

**Q. What is the default user name and password for integrated access points in Cisco 500 Series Secure Router?**

**A.** There is no default user name and password for the access points integrated in the Cisco 500 Series Secure Router.

**Q. Can the wireless range of the Cisco 500 Series Secure Router be extended?**

**A.** No, the Cisco 500 Series Secure Router has only a single fixed antenna connected directly to the router; there are no antenna options. For more sophisticated wireless configurations, Cisco recommends the Cisco 500 Series Wireless Express Access Points, part of the Cisco SBCS portfolio. More information on the SBCS portfolio, including wireless, can be found at <http://www.cisco.com/go/sbcs>.

**Q. What frequency do the integrated access points use?**

**A.** Based on 802.11b/g specifications, the integrated access point in the Cisco 500 Series Secure Router uses channels 1 to 11 (in all regions).

**Q. What is a WEP key? What are the security issues associated with WEP, and how are they overcome?**

**A.** WEP is the encryption algorithm built into the 802.11 (Wi-Fi) standard. WEP encryption uses the Ron's Code 4 (RC4) stream cipher with 40- or 104-bit keys and a 24-bit initialization vector.

The security issues with WEP are as follows:

- Maintaining a shared WEP key involves a great deal of administrative overhead.
- WEP has the same problem as all systems based on shared keys: Any secret given to one person becomes public after a period of time.
- The initialization vector that seeds the WEP algorithm is sent in clear text.
- The WEP checksum is linear and predictable.

The collection of enhancements added to WEP to address these issues is called Temporal Key Integrity Protocol (TKIP). Like WEP, TKIP uses RC4 encryption. However, TKIP enhances WEP by adding measures such as per-packet key hashing, message integrity check (MIC), and broadcast key rotation to address known vulnerabilities of WEP. TKIP uses the RC4 stream cipher with 128-bit keys for encryption and 64-bit keys for authentication.

**Q. Is there a password recovery feature?**

**A.** To recover forgotten WEP passwords, you must go into the access point portion of the router, using the Cisco IOS Software CLI or the Cisco Configuration Assistant graphical interface, and change the WEP password.

**Q. How many clients can associate to the unit?**

**A.** For the Cisco 500 Series Secure Router, the recommendation is up to 20 clients

**Q. What is the typical range for an access point?**

**A.** The 802.11b basic range is 50 to 100 feet, and there is a 300-foot maximum. Within a typical office environment, most access points can provide good wireless coverage up to 150 feet. The 802.11b standard uses the same radio signaling frequency—2.4 GHz—as the original 802.11 standard. Being an unregulated frequency, 802.11b gear can incur interference from microwave ovens, cordless phones, and other appliances using the same 2.4-GHz range. However, by installing 802.11b gear a reasonable distance from other appliances, interference can easily be avoided.

The 802.11g standard attempts to combine the best of 802.11a and 802.11b. The 802.11g standard supports bandwidth up to 54 Mbps, and it uses the 2.4-GHz frequency for greater

range. The 802.11g standard is backward compatible with 802.11b, meaning that 802.11g access points will work with 802.11b wireless network adapters and vice versa.

**Q. Are the Cisco 500 Series Secure Routers and their integrated access points interoperable with the Cisco Aironet 340, 350, 1100, and 1200 series products?**

**A.** Yes. The Cisco 500 Series Secure Routers are interoperable with the other Cisco wireless products and Wi-Fi certified products. The routers will always work in root access point mode and do not support wireless uplink to another access point.

**Q. Do the integrated access points in the Cisco 500 Series Secure Router support Cisco LEAP?**

**A.** Yes. When you use Cisco LEAP, you should specify the same port number for the access control server (ACS) that you would use to associate with RADIUS. The default ports for RADIUS are 1645 and 1646.

For more information, visit <http://www.pantz.org/networking/tcpip/ports.shtml>.

**Q. How many Service Set Identifiers (SSIDs) are configurable on the Cisco 500 Series Secure Router?**

**A.** Up to 10 SSIDs can be configured. All the SSIDs are active at the same time; that is, client devices can associate to the access point using any of the SSIDs.

**Q. How many Multiple Broadband SSIDs (MBSSIDs) are supported?**

**A.** The Cisco 500 Series Secure Router will support up to two MBSSIDs.

**Q. What are the settings that can be configured for each SSID?**

**A.** The following settings are available:

- VLAN
- Client authentication method
- Maximum number of client associations using the SSID
- RADIUS accounting for traffic using the SSID
- Guest mode

**Q. Do the integrated access points in the Cisco 500 Series Secure Router support local survivable authentication?**

**A.** Yes. The access point can authenticate wireless client devices using Cisco LEAP, EAP-FAST, or MAC-based authentication. The access point performs up to five authentications per second.

**Q. Is there a separate wireless feature set for Cisco 500 Series Secure Router wireless models?**

**A.** No. Wireless models have built-in hardware to support wireless functionality.

**Q. What is Universal Client Mode?**

**A.** Universal Client Mode allows the access point in the Cisco 500 Series Secure Router to be configured as a wireless client that can connect to an 802.11b/g WLAN. The router can then use this wireless link to connect wired devices to the WLAN. An example is using an outdoor wireless mesh network offered by a service provider. This 802.11b/g network can be used as a WAN link for wired devices sitting behind the router.

## Performance

- Q. What are the performance characteristics of the Cisco 500 Series Secure Router?**
- A.** Aggregate performance with IPSec 3DES for the Cisco 500 Series Secure Router is up to 8 Mbps with Internet mix (IMIX) packets and up to 30 Mbps with 1400-byte packets.
- Q. Where can I find product specifications and other information about the Cisco 500 Series Secure Router?**
- A.** For product literature such as data sheets and product specifications, visit: <http://www.cisco.com/go/sr500>.

### Ordering

- Q. What are the product SKUs and prices?**
- A.** Table 3 lists the SKUs and prices for the Cisco 500 Series Secure Router.

**Table 3.** Cisco 500 Series Secure Router SKUs and Prices

Product SKU	Description	NTE Price
SR520-FE-K9	Fast Ethernet secure router	\$595
SR520W-FE-K9	Fast Ethernet secure router with 802.11g radio	\$745
SR520-ADSL-K9	ADSL over POTS secure router	\$595
SR520W-ADSL-K9	ADSL over POTS secure router with 802.11g radio	\$745
SR520-ADSLI-K9	ADSL over ISDN secure router	\$595
SR520W-ADSLI-K9	ADSL over ISDN secure router with 802.11g radio	\$745



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