Cisco Wide Area Virtualization Engine

Product Overview

Cisco® Wide Area Virtualization Engine (WAVE) appliances provide the industry's only branch-office appliance family that combines comprehensive WAN optimization with embedded virtualization for hosting branch-office services. IT departments can centralize applications and storage in the data center while maintaining LAN-like application performance, and rapidly deliver local branch-office IT services while reducing the branch-office device footprint.

Cisco WAVE appliances enable local hosting of branch-office IT services using a network-embedded virtualization architecture that maintains native performance for WAN optimization while using the same hardware platform for additional hosted services.

Cisco WAVE appliances support a wide range of deployment scenarios with a low entry price point and offer virtualization validated by Microsoft.

Features and Benefits

Cisco WAVE appliances deployed with Cisco Wide Area Application Services (WAAS) Software enable organizations to accomplish these primary IT objectives:

- Improve employee productivity by enhancing the user experience for important business applications delivered over the WAN
- Reduce the cost of branch-office operations by centralizing IT resources in the data center and lowering the cost of WAN bandwidth
- Increase IT agility by reducing the time and resources required to deliver new IT services to the branch office
- Simplify branch-office data protection for regulatory compliance purposes

Cisco WAVE appliances require Cisco WAAS Software Version 4.1 or later.

Note: The Cisco WAE-674 Wide Area Application Engine is the only branch-office appliance from the Cisco WAE platform that offers virtual blade capability for branch-office infrastructure services with Cisco WAAS Software 4.1 or later. For complete Cisco WAE-674 specifications, please see http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps6474/product_data_sheet0900aecd80329e39.html.

Product Line

Cisco WAVE appliances offer investment protection with virtual blade capability that can reduce the branch-office device footprint and rapidly deliver branch-office IT services while addressing core WAN optimization customer needs. Cisco WAVE appliances are available for small offices and small data centers (Table 1).

Table 1. Virtualization-Capable Cisco WAAS Appliances

Platform	Hardware	Deployment Scenarios	Images
Cisco WAVE-274	• 3 GB DRAM • 250-GB hard disk drive (HDD) • 2-port inline card	• Edge deployments at very small branch offices • Hosts up to 2 virtual blades*	
Cisco WAVE-474	• 3 GB DRAM • 250-GB HDD • 2-port inline card	• Edge deployments at small branch offices • Hosts up to 2 virtual blades*	

Platform	Hardware	Deployment Scenarios	Images
Cisco WAVE-574	• 3 or 6 GB DRAM • 500-GB HDD • RAID-1 • 2- and 4-port inline card options	• Edge deployments at enterprise branch offices • Core deployments at small data centers • Hosts up to 6 virtual blades*	
Cisco WAE-674	• 4 or 8 GB DRAM • 600-GB HDD • RAID-5 • 4-port inline card optional	• Edge deployments at large enterprise branch offices • Core deployments at medium-sized data centers • Hosts up to 6 virtual blades*	

* Virtual blade sizing assumes 0.5 GB of RAM per virtual blade. Most independent software vendors (ISVs), however, recommend a 1-GB RAM configuration to host their server software.

Software Versions and Licenses

Cisco WAVE products are bundled with a Cisco WAAS Enterprise license

The Cisco WAAS Enterprise license includes most application-specific optimization features that Cisco WAAS offers for applications, such as:

- Microsoft Exchange (Messaging Application Programming Interface [MAPI] Protocol)
- Microsoft Windows file sharing (Common Internet File Sharing [CIFS] Protocol)
- Web-based (HTTP) applications such as Oracle, SAP, and Microsoft SharePoint applications
- Microsoft Windows print services
- UNIX network file services (NFS)

The Cisco WAAS Enterprise license also permits a Cisco WAVE appliance to be deployed in the role of Cisco WAAS Central Manager.

Add-on license options for Cisco WAVE platforms enable:

- Live video delivery to the branch office (live Windows Media streaming)
- Cisco WAAS virtual blades to host branch-office infrastructure services

Cisco WAVE platforms do not support the Cisco WAAS Transport license option.

Hardware Specifications

Table 2 presents the hardware specifications for the Cisco branch-office appliances capable of hosting branch services on virtual blades. For more information about the Cisco WAAS network module for the Cisco Integrated Services Routers (ISR) branch-office routers, please see Cisco WAAS Modules for ISR.

Table 2. Cisco Branch-Office Appliance Hardware Specifications: Cisco WAVE-274, WAVE-474, WAVE-574, and WAE-674

Feature	Cisco WAVE-274	Cisco WAVE-474	Cisco WAVE-574	Cisco WAE-674[1]
Baseline DRAM	3 GB	3 GB	3 or 6 GB	4 or 8 GB
Usable storage[2]	250 GB	250 GB	500 GB	600 GB
Maximum HDD	One 250 GB HDD	One 250 GB HDD	Two 500 GB HDD	Three 300 GB HDD
RAID support[3]	-	-	RAID-1 (Optional)	RAID-5 (included with base configuration)
Virtual blades[4]	Up to 2	Up to 2	Up to 6	Up to 6

[1] Cisco WAE-674 hardware specifications for data center configuration can also be found at http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps6474/product_data_sheet0900aecd80329e39.html.
[2] This specification applies to Cisco WAAS only (when virtual blade function is not enabled).
[3] RAID is supported on Cisco WAVE-574 and WAE-674 with Cisco WAAS Software.
[4] Virtual blade sizing assumes 0.5 GB RAM per virtual blade. Most branch services recommend 1-GB RAM configuration.

Feature	Cisco WAVE-274	Cisco WAVE-474	Cisco WAVE-574	Cisco WAE-674[1]
Network interfaces	One 10/100/1000BASE-T	One 10/100/1000BASE-T	Two 10/100/1000BASE-T	Two 10/100/1000BASE-T
Power	One 240W AC power supply	One 240W AC power supply	One 400W AC power supply	• One 835W hot-swappable AC power supply • Redundant power available as an option
Rack units	Desktop	Desktop	1	2
Network interface card (NIC) support for inline deployment	Yes (2-port included)	Yes (2-port included)	Yes (2- or 4-port)	Yes (4-port)
Compact flash memory	1-GB internal flash module (ReadyBoost)	1-GB internal flash module (ReadyBoost)	1-GB internal USB flash drive	128 MB
Height	3.94 in. (100 mm)	3.94 in. (100 mm)	1.70 in. (43.2 mm)	3.36 in. (85.4 mm)
Width	13.4 in. (340 mm)	13.4 in. (340 mm)	16.78 in. (426.2 mm)	17.5 in. (443.6 mm)
Depth	15 in. (380 mm)	15 in. (380 mm)	28 in. (711.2 mm)	27.64 in. (702.0 mm)
Shipping dimensions (with packaging)	20.19 x 20.19 x 9.19 in. (512.8 x 512.8 x 233.4 mm); 10 boxes per pallet	20.19 x 20.19 x 9.19 in. (512.8 x 512.8 x 233.4 mm); 10 boxes per pallet	39.06 x 23.56 x 9.38 in. (992.1 x 598.4 x 238.3mm); 5 boxes per pallet	39 x 23 x 6.5 in. (990.6 x 584.2 x 254 mm); 4 boxes per pallet
Maximum weight	19.6 lb (8.9 kg)	19.6 lb (8.9 kg)	27 lb (12.27 kg)	64 lb (29.03 kg)
Universal input	• Input voltage low range: 90 to 115 VAC • Input voltage high range: 230 to 264 VAC	• Input voltage low range: 90 to 115 VAC • Input voltage high range: 230 to 264 VAC	• Input voltage low range: 100 to 120 VAC • Input voltage low range: 200 to 240 VAC	• Input voltage low range: 100 to 127 VAC • Input voltage high range: 180 to 265 VAC • Input kVA (approximate): ◦ Minimum: 0.29 kVA ◦ Maximum: 1.0 kVA
Operating Environment				
Operating temperature	50 to 95ºF (10 to 35ºC)	50 to 95ºF (10 to 35ºC)	50 to 95ºF (10 to 35ºC)	50 to 95ºF (10 to 35ºC)
Nonoperating temperature	-40 to 140ºF (-40 to 60ºC)	-40 to 140ºF (-40 to 60ºC)	-40 to 140ºF (-40 to 60ºC)	-40 to 140ºF (-40 to 60ºC)
Humidity	Nonoperating: 8 to 80%	Nonoperating: 8 to 80%	Nonoperating: 8 to 80%	Nonoperating: 8 to 80%
Altitude	Maximum altitude: Certified to 6500 ft (2000 m); designed and tested to 10,000 ft (3048 m)	Maximum altitude: Certified to 6500 ft (2000 m); designed and tested to 10,000 ft (3048 m)	Maximum altitude: Certified to 6500 ft (2000 m); designed and tested to 10,000 ft (3048 m)	Maximum altitude: 7000 ft (2133 m)
Compliance	CE marking	CE marking	CE marking	CE marking
Safety	• UL 60950 • CAN/CSA-C22.2 No. 60950 • EN 60950 • AS/NZS 60950 • IEC 60950	• UL 60950 • CAN/CSA-C22.2 No. 60950 • EN 60950 • AS/NZS 60950 • IEC 60950	• UL 60950 • CAN/CSA-C22.2 No. 60950 • EN 60950 • AS/NZS 60950 • IEC 60950	• UL 1950 • CSA-C22.2 No. 950 • EN 60950 • IEC 60950
EMC	• FCC Part 15 (CFR 47) Class A • ICES-003 Class A • EN 55022 Class A with UTP cables • CISPR22 Class A with UTP cables • AS/NZS CISPR22 Class A • VCCI Class A • EN 55024 • EN 50082-1	• FCC Part 15 (CFR 47) Class A • ICES-003 Class A • EN 55022 Class A with UTP cables • CISPR22 Class A with UTP cables • AS/NZS CISPR22 Class A • VCCI Class A • EN 55024 • EN 50082-1	• FCC Part 15 (CFR 47) Class A • ICES-003 Class A • EN 55022 Class A with UTP cables • CISPR22 Class A with UTP cables • AS/NZS CISPR22 Class A • VCCI Class A • EN 55024 • EN 50082-1	• FCC Part 15 (CFR 47) Class A • ICES-003 Class A • EN 55022 Class A with UTP cables • CISPR22 Class A with UTP cables • ASNZ 3548 Class A with UTP cables • VCCI Class A with UTP cables • EN 55024 • EN 50082-1

Ordering Information

Cisco WAVE appliances are bundled with the Cisco WAAS Enterprise license

A supported version of Cisco WAAS Software must be selected with Cisco WAVE appliances.

Table 3 presents high-level ordering information. For additional details, please contact your Cisco account team.

Table 3. Ordering Information for Cisco WAVE Hardware

Part Number	Hardware and Software Configuration Options
WAVE-274-K9	• Appliance with 1 X 250GB HDD, 3GB DRAM, 2-port inline card and Cisco WAAS Enterprise License • Mount Options: 2-post rack shelf (part number MNT-2PST-RACK) or Wall Sleeve (part number MNT-WALL-SLV) • Software Option: WAAS Video License for Live Windows Media Streaming (part number WAAS-VIDEO-WM-APL) • Software Option: WAAS Virtual Blade License (part number WAAS-VB-LIC) • Software Option: WAAS Virtual Blade License with Windows Server Core 2008 (part number WAAS-VB-W2K8-LIC)
WAVE-474-K9	• Appliance with 1 X 250GB HDD, 3GB DRAM, 2-port inline card and Cisco WAAS Enterprise License. • Mount Options: 2-post rack shelf (part number MNT-2PST-RACK) or Wall Sleeve (part number MNT-WALL-SLV) • Software Option: WAAS Video License for Live Windows Media Streaming (part number WAAS-VIDEO-WM-APL) • Software Option: WAAS Virtual Blade License (part number WAAS-VB-LIC) • Software Option: WAAS Virtual Blade License with Windows Server Core 2008 (part number WAAS-VB-W2K8-LIC)
WAVE-574-K9	• Appliance with 1 X 500 GB HDD, 3 GB DRAM and Cisco WAAS Enterprise License • Memory Option: Additional 3-GB memory (part number MEM-WAVE-UPG) • Disk Option: Additional 500 GB HDD provide RAID-1 capability (part number DISK-SATA2-500GB) • Software Option: WAAS Video License for Live Windows Media Streaming (part number WAAS-VIDEO-WM-APL) • Software Option: WAAS Virtual Blade License (part number WAAS-VB-LIC) and Windows on WAAS bundled with Virtual Blade License (part number WAAS-VB-W2K8-LIC) • Optional 2-port and 4-port NIC to support in-path (inline) deployments using Cisco WAAS (part number WAVE-INLN-2CG and WAVE-INLN-4CG respectively)
WAE-674-K9	• Appliance with 3 X 300 GB HDD and 4 GB RAM; no other HDD options are available • Software and license options: Cisco WAAS Software or Cisco ACNS Software • Memory options: Additional 4-GB memory (part number MEM-WAE-4GB) supported with Cisco WAAS only • Power and fan option: Additional (redundant) power and fan available (part number RED-PWR-FAN-674) • Optional 4-port NIC to support in-path (inline) deployments using Cisco WAAS (part number WAE-INLN-4CG)
Hardware Spares	
WAVE-INLN-2CG=	2-port NIC for WAVE-574-K9 to support in-path (inline) deployments using Cisco WAAS
WAVE-INLN-4CG=	4-port NIC for WAVE-574-K9 to support in-path (inline) deployments using Cisco WAAS
WAE-INLN-4CG=	4-port NIC for WAE-674-K9 to support in-path (inline) deployments using Cisco WAAS
DISK-SATA2-500GB=	500-GB HDD (SATA2); spare for Cisco WAVE-574
DISK-300GB-6/7SER(=)	300-GB HDD (SAS) for Cisco WAE-674, WAE-7341, and WAE-7371 only; spare
MEM-WAVE-UPG(=)	3GB Memory upgrade for WAVE-574 for additional connection count and Virtual Blades; spare
MEM-WAE-4GB(=)	2 Cisco WAE 2-GB memory modules for WAE-674 for additional connection count and Virtual Blades; spare
RED-PWR-FAN-674(=)	Redundant power and fan option for Cisco WAE-674; spare

Cisco WAE-674 high-level ordering information can be found in its data sheet at http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps6474/product_data_sheet0900aecd80329e39.html.

Web Cache Communication Protocol Support

Web Cache Communication Protocol (WCCP) is a free Cisco IOS® Software feature that runs on the following Cisco platforms:

- Cisco routers such as the Cisco 1800, 2800, and 3800 Series ISR; Cisco 1900, 2900, and 3900 Series ISR G2; Cisco 7000 Series; and Cisco ASR 1000 Series Routers
- Cisco switches such as the Cisco Catalyst® 4500 and 6500 Series Switches and Cisco Nexus® 7000 Series Switches

Services and Support

Cisco offers a wide range of services to accelerate customer success, delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. For more information about Cisco Services, see Cisco Technical Support Services or Cisco Advanced Services.

For More Information

For more information about Cisco WAAS, visit http://www.cisco.com/go/waas or contact your local account representative.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at **www.cisco.com/go/offices.**

Printed in USA C78-495801-03 08/10