

## Cisco Wide Area Virtualization Engine

### Product Overview

The Cisco® Wide Area Virtualization Engine (WAVE) appliances extend the Cisco WAN optimization appliance portfolio to provide the industry's only branch-office appliance family that incorporates comprehensive WAN optimization, embedded virtualization for local hosting, and branch-office video delivery. This solution allows IT organizations to 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 are designed to enable local hosting of branch-office IT services using a network-embedded virtualization architecture. This architecture maintains native performance for WAN optimization while using the same hardware platform for additional hosted services.

The WAVE family supports a wide range of deployment scenarios with a low entry price point and features Microsoft-validated virtualization. This approach is unlike that of other solutions, which reposition data center server virtualization technology for branch-office environments.

### Features and Benefits

Cisco WAVE appliances deployed with Cisco Wide Area Application Services (WAAS) Software enables 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 data protection for regulatory compliance purposes.

The Cisco WAVE platform supports Cisco WAAS Software Version 4.1. In addition to the benefits listed here, Cisco WAAS Software 4.1 makes WAN optimization easy to deploy while preserving existing network services; it adds application-specific acceleration, developed and validated in partnership with application vendors; it enables efficient delivery of video to the branch office without expensive bandwidth upgrades; and it supports local hosting of branch-office IT services on a single virtualized hardware platform such as Cisco WAVE. The first set of validated and supported hosted services includes Microsoft Windows Active Directory, Domain Name System (DNS), Dynamic Host Configuration Protocol (DHCP), and printing as part of the Windows Server 2008 core services.

For more information about Cisco WAAS Software 4.1, please refer to the datasheet at [http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps6870/data\\_sheet\\_c78-445372.html](http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps6870/data_sheet_c78-445372.html).

Unlike other WAN optimization products, Cisco WAVE appliances with Cisco WAAS Software provide application-specific acceleration validated by application vendors; network integration that preserves existing network services, resulting in ease of operations; and the most cost-effective solution on the market.





For detailed information about Cisco WAAS, please visit <http://www.cisco.com/go/waas>.

**Note:** Cisco WAE-674 Wide Area Application Engine is the only branch appliance from the Cisco WAE platform that offers virtual blade capability for branch-office infrastructure services with Cisco WAAS Software 4.1. Cisco WAE-674 specifications can be found in this data sheet

## Product Line

The Cisco WAVE appliances are designed to offer investment protection by using their virtual blade capability to reduce the branch-office device footprint and rapidly deliver branch-office IT services while addressing core WAN optimization customer needs. Cisco WAVE appliances currently address small offices and branch offices (Table 1).

**Table 1.** Virtualization-Capable Cisco WAAS Appliances

Platform	Hardware	Deployment Scenarios	Images
<b>Cisco WAVE-274</b>	<ul style="list-style-type: none"> <li>• 3 GB DRAM</li> <li>• 250-GB hard disk drive (HDD)</li> <li>• 2-port inline card</li> </ul>	<ul style="list-style-type: none"> <li>• Edge deployments at very small branch offices</li> <li>• Hosts up to 2 virtual blades*</li> </ul>	
<b>Cisco WAVE-474</b>	<ul style="list-style-type: none"> <li>• 3 GB DRAM</li> <li>• 250-GB HDD</li> <li>• 2-port inline card</li> </ul>	<ul style="list-style-type: none"> <li>• Edge deployments at small branch offices</li> <li>• Hosts up to 2 virtual blades*</li> </ul>	
<b>Cisco WAVE-574</b>	<ul style="list-style-type: none"> <li>• 3 or 6 GB DRAM</li> <li>• 500-GB HDD</li> <li>• RAID-1</li> <li>• 2- and 4-port inline card options</li> </ul>	<ul style="list-style-type: none"> <li>• Edge deployments at enterprise branch offices</li> <li>• Core deployments at small data centers</li> <li>• Hosts up to 6 virtual blades*</li> </ul>	
<b>Cisco WAE-674</b>	<ul style="list-style-type: none"> <li>• 4 or 8 GB DRAM</li> <li>• 600-GB HDD</li> <li>• RAID-5</li> <li>• 4-port inline card optional</li> </ul>	<ul style="list-style-type: none"> <li>• Edge deployments at large enterprise branch offices</li> <li>• Core deployments at medium-sized data centers</li> <li>• Hosts up to 6 virtual blades*</li> </ul>	

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

**Note:** Cisco WAE-674, part of the Cisco WAE platform, is the only appliance that offers virtual blade capability for hosting branch-office infrastructure services. Information about the Cisco WAE-674 datasheet, as part of Cisco WAE product family, can be found at

[http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps6474/product\\_data\\_sheet0900aecd80329e39.html](http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps6474/product_data_sheet0900aecd80329e39.html).

## Software Versions and Licenses

Cisco WAVE products can be purchased only with a Cisco WAAS Enterprise License.

The Cisco WAAS Enterprise License includes most application-specific optimization features that Cisco WAAS Software 4.1 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)

Cisco WAAS Software 4.1 offers add-on license options for Cisco WAVE platforms: one to enable live video delivery to the branch office (Live Windows Media streaming) and another to enable Cisco WAAS virtual blades to host branch-office infrastructure services.

Cisco WAVE platforms do not support the Cisco WAAS Transport License option. There is no separate Cisco WAAS Central Manager license for Cisco WAVE platforms; however, a Cisco WAVE platform can be configured as a Cisco WAAS Central Manager when purchased with the Cisco WAAS Enterprise License.

Table 2 presents a version and license matrix for Cisco WAVE deployed with Cisco WAAS.

**Table 2.** Cisco WAVE Deployed with Cisco WAAS: Version and License Matrix

Product	Cisco WAVE-274	Cisco WAVE-474	Cisco WAVE-574	Cisco WAE-674	Notes
Cisco WAAS Software Version 4.1.1	Yes	Yes	Yes	Yes	
Cisco Enterprise License	Yes	Yes	Yes	Yes	
Central Manager function	Yes	Yes	Yes	Yes	Requires Cisco Enterprise License
Add-on video license	Yes	Yes	Yes	Yes	Requires Cisco Enterprise License
Add-on virtual blade license and Windows Server on Cisco WAAS license	Yes	Yes	Yes	Yes	Requires Cisco Enterprise License
Cisco WAAS Software Version 4.0.x	No	No	No	Yes (Version 4.0.15 and later)	Available only on Cisco WAE and Cisco WAAS integrated services router network module (NME)
Cisco Application and Content Networking System (ACNS) Software Supported	No	No	No	Yes	

## Hardware Specifications

Table 3 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 branch-office routers, please visit the Cisco [WAAS NME-WAE webpage](#).

**Table 3.** 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 <sup>1</sup>
Baseline DRAM	3 GB	3 GB	3 or 6 GB	4 or 8 GB
Usable storage <sup>2</sup>	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 <sup>3</sup>	–	–	RAID-1 (Optional)	RAID-5 (included with base configuration)
Virtual blades <sup>4</sup>	Up to 2	Up to 2	Up to 6	Up to 6
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	<ul style="list-style-type: none"> <li>One 835W hot-swappable AC power supply</li> <li>Redundant power available as an option</li> </ul>
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)

<sup>1</sup> 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](http://www.cisco.com/en/US/prod/collateral/contnetw/ps5680/ps6474/product_data_sheet0900aecd80329e39.html).

<sup>2</sup> This specification applies to Cisco WAAS only (when virtual blade functionality is not enabled).

<sup>3</sup> RAID is supported on Cisco WAVE-574 and WAE-674 with Cisco WAAS Software

<sup>4</sup> Virtual blade sizing assumes 0.5G RAM per virtual blade. Most branch services recommend 1 GB RAM configuration.

Feature	Cisco WAVE-274	Cisco WAVE-474	Cisco WAVE-574	Cisco WAE-6741 <sup>1</sup>
<b>Shipping dimensions (with packaging)</b>	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
<b>Maximum weight</b>	19.6 lb (8.9 kg)	19.6 lb (8.9 kg)	27 lb (12.27 kg)	64 lb (29.03 kg)
<b>Universal Input</b>	<ul style="list-style-type: none"> <li>Input voltage low range 90 to 115 VAC</li> <li>Input voltage high range 230 to 264 VAC</li> </ul>	<ul style="list-style-type: none"> <li>Input voltage low range 90 to 115 VAC</li> <li>Input voltage high range 230 to 264 VAC</li> </ul>	<ul style="list-style-type: none"> <li>Input voltage low range 100 to 120 VAC</li> <li>Input voltage low range 200 to 240 VAC</li> </ul>	<ul style="list-style-type: none"> <li>Input voltage low range 100 to 127 VAC</li> <li>Input voltage high range 180 to 265 VAC</li> <li>Input kVA (approximate):                             <ul style="list-style-type: none"> <li>Minimum: 0.29 kVA</li> <li>Maximum: 1.0 kVA</li> </ul> </li> </ul>
<b>Operating Environment</b>				
<b>Operating temperature</b>	50 to 95°F (10 to 35°C)	50 to 95°F (10 to 35°C)	50 to 95°F (10 to 35°C)	50 to 95°F (10 to 35°C)
<b>Nonoperating temperature</b>	-40 to 140°F (-40 to 60°C)	-40 to 140°F (-40 to 60°C)	-40 to 140°F (-40 to 60°C)	-40 to 140°F (-40 to 60°C)
<b>Humidity</b>	Nonoperating: 8 to 80%	Nonoperating: 8 to 80%	Nonoperating: 8 to 80%	Nonoperating: 8 to 80%
<b>Altitude</b>	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)
<b>Compliance</b>	CE marking	CE marking	CE marking	CE marking
<b>Safety</b>	<ul style="list-style-type: none"> <li>UL 60950</li> <li>CAN/CSA-C22.2 No. 60950</li> <li>EN 60950</li> <li>AS/NZS 60950</li> <li>IEC 60950</li> </ul>	<ul style="list-style-type: none"> <li>UL 60950</li> <li>CAN/CSA-C22.2 No. 60950</li> <li>EN 60950</li> <li>AS/NZS 60950</li> <li>IEC 60950</li> </ul>	<ul style="list-style-type: none"> <li>UL 60950</li> <li>CAN/CSA-C22.2 No. 60950</li> <li>EN 60950</li> <li>AS/NZS 60950</li> <li>IEC 60950</li> </ul>	<ul style="list-style-type: none"> <li>UL 1950</li> <li>CSA-C22.2 No. 950</li> <li>EN 60950</li> <li>IEC 60950</li> </ul>
<b>EMC</b>	<ul style="list-style-type: none"> <li>FCC Part 15 (CFR 47) Class A</li> <li>ICES-003 Class A</li> <li>EN 55022 Class A with UTP cables</li> <li>CISPR22 Class A with UTP cables</li> <li>AS/NZS CISPR22 Class A</li> <li>VCCI Class A</li> <li>EN 55024</li> <li>EN 50082-1</li> </ul>	<ul style="list-style-type: none"> <li>FCC Part 15 (CFR 47) Class A</li> <li>ICES-003 Class A</li> <li>EN 55022 Class A with UTP cables</li> <li>CISPR22 Class A with UTP cables</li> <li>AS/NZS CISPR22 Class A</li> <li>VCCI Class A</li> <li>EN 55024</li> <li>EN 50082-1</li> </ul>	<ul style="list-style-type: none"> <li>FCC Part 15 (CFR 47) Class A</li> <li>ICES-003 Class A</li> <li>EN 55022 Class A with UTP cables</li> <li>CISPR22 Class A with UTP cables</li> <li>AS/NZS CISPR22 Class A</li> <li>VCCI Class A</li> <li>EN 55024</li> <li>EN 50082-1</li> </ul>	<ul style="list-style-type: none"> <li>FCC Part 15 (CFR 47) Class A</li> <li>ICES-003 Class A</li> <li>EN 55022 Class A with UTP cables</li> <li>CISPR22 Class A with UTP cables</li> <li>ASNZ 3548 Class A with UTP cables</li> <li>VCCI Class A with UTP cables</li> <li>EN 55024</li> <li>EN 50082-1</li> </ul>

**Ordering Information**

Cisco WAVE hardware must be ordered with Cisco WAAS Software. The Cisco WAAS Enterprise License is included by default on all Cisco WAVE platforms.

Table 4 presents high-level ordering information. For details, please contact your Cisco account team, which has access to a detailed ordering guide.

**Table 4.** Ordering Information for Cisco WAVE Hardware

Part Number	Hardware and Software Configuration Options
<b>WAVE-274-K9</b>	<ul style="list-style-type: none"> <li>Fixed hardware SKU with 1 X 250GB HDD, 3GB DRAM, 2-port inline card and Cisco WAAS Enterprise License included.</li> <li>Mount Options: 2-post rack shelf (part number MNT-2PST-RACK) or Wall Sleeve (part number MNT-WALL-SLV)</li> <li>Software Option: WAAS Video License for Live Windows Media Streaming (part number WAAS-VIDEO-WM-APL)</li> <li>Software Option: WAAS Virtual Blade License (part number WAAS-VB-LIC)</li> <li>Software Option: WAAS Virtual Blade License with Windows Server Core 2008 (part number WAAS-VB-W2K8-LIC)</li> </ul>

Part Number	Hardware and Software Configuration Options
<b>WAVE-474-K9</b>	<ul style="list-style-type: none"> <li>Fixed hardware SKU with 1 X 250GB HDD, 3GB DRAM, 2-port inline card and Cisco WAAS Enterprise License included.</li> <li>Mount Options: 2-post rack shelf (part number MNT-2PST-RACK) or Wall Sleeve (part number MNT-WALL-SLV)</li> <li>Software Option: WAAS Video License for Live Windows Media Streaming (part number WAAS-VIDEO-WM-APL)</li> <li>Software Option: WAAS Virtual Blade License (part number WAAS-VB-LIC)</li> <li>Software Option: WAAS Virtual Blade License with Windows Server Core 2008 (part number WAAS-VB-W2K8-LIC)</li> </ul>
<b>WAVE-574-K9</b>	<ul style="list-style-type: none"> <li>The WAVE-574-K9SKU includes 1 X 500 GB HDD, 3 GB DRAM and Cisco WAAS Enterprise License</li> <li>Memory Option: Additional 3-GB memory (part number MEM-WAVE-UPG)</li> <li>Disk Option: Additional 500 GB HDD that gives RAID-1 capability (part number DISK-SATA2-500GB)</li> <li>Software Option: WAAS Video License for Live Windows Media Streaming (part number WAAS-VIDEO-WM-APL)</li> <li>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)</li> <li>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)</li> </ul>
<b>WAE-674-K9</b>	<ul style="list-style-type: none"> <li>The WAE-674-K9 SKU includes 3 X 300 GB HDD and 4 GB RAM; no other HDD options are available</li> <li>Software and license options: Cisco WAAS Software or Cisco ACNS Software</li> <li>Memory options: Additional 4-GB memory (part number MEM-WAE-4GB) supported with Cisco WAAS only</li> <li>Power and fan option: Additional (redundant) power and fan available (part number RED-PWR-FAN-674)</li> <li>Optional 4-port NIC to support in-path (inline) deployments using Cisco WAAS (part number WAE-INLN-4CG)</li> </ul>
<b>Hardware Spares</b>	
<b>WAVE-INLN-2CG=</b>	2-port NIC for WAVE-574-K9 to support in-path (inline) deployments using Cisco WAAS
<b>WAVE-INLN-4CG=</b>	4-port NIC for WAVE-574-K9 to support in-path (inline) deployments using Cisco WAAS
<b>WAE-INLN-4CG=</b>	4-port NIC for WAE-674-K9 to support in-path (inline) deployments using Cisco WAAS
<b>DISK-SATA2-500GB=</b>	500-GB HDD (SATA2); spare for Cisco WAVE-574
<b>DISK-300GB-6/7SER(=)</b>	300-GB HDD (SAS) for Cisco WAE-674, WAE-7341, and WAE-7371 only; spare
<b>MEM-WAVE-UPG(=)</b>	3GB Memory upgrade for WAVE-574 for additional connection count and Virtual Blades; spare
<b>MEM-WAE-4GB(=)</b>	2 Cisco WAE 2-GB memory modules for WAE-674 for additional connection count and Virtual Blades; spare
<b>RED-PWR-FAN-674(=)</b>	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](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 software feature in Cisco IOS® Software that runs on the following Cisco platforms: Cisco routers such as the Cisco 1800, 2800, and 3800 Series Integrated Services Routers; Cisco 3700 Series Multiservice Access Routers; Cisco 7000 Series Routers; and Cisco switches such as the Cisco Catalyst® 4500, 4900, and 6500 Series Switches.

## Service and Support

Cisco offers a wide range of services programs to accelerate customer success. These innovative services programs are 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](http://www.cisco.com/go/offices).

CCDE, CCSI, CCENT, Cisco Eos, Cisco HealthPresence, the Cisco logo, Cisco Lumin, Cisco Nexus, Cisco Nurse Connect, Cisco Stackpower, Cisco StadiumVision, Cisco TelePresence, Cisco WebEx, DCE, and Welcome to the Human Network are trademarks; Changing the Way We Work, Live, Play, and Learn and Cisco Store are service marks; and Access Registrar, Aironet, AsyncOS, Bringing the Meeting To You, Catalyst, CCDA, CCDP, CCIE, CCI, CCNA, CCNP, CCSP, CCVP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Collaboration Without Limitation, EtherFast, EtherSwitch, Event Center, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, iQuick Study, IronPort, the IronPort logo, LightStream, Linksys, MediaTone, MeetingPlace, MeetingPlace Chime Sound, MGX, Networkers, Networking Academy, Network Registrar, PCNow, PIX, PowerPanels, ProConnect, ScriptShare, SenderBase, SMARTnet, Spectrum Expert, StackWise, The Fastest Way to Increase Your Internet Quotient, TransPath, WebEx, and the WebEx logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0903R)