

## Cisco Wide Area Application Services Network Module

### Product Overview

The Cisco® Wide Area Application Services (WAAS) Network Module (NME) for the Cisco Integrated Services Routers (ISR) and the Cisco Integrated Services Routers Generation 2 (ISR G2), is a powerful application acceleration and WAN optimization solution that accelerates the performance of any TCP-based application delivered across a WAN, providing the benefits of branch-office server consolidation, acceleration of centralized applications, and live video delivery to the branch location. Cisco WAAS allows customers to consolidate costly branch-office servers and storage within data centers and deploy new applications centrally while still offering near-LAN performance for remote users. Cisco WAAS offers the lowest total cost of ownership (TCO) for branch-office and data center deployments, ease of integration through network transparency, reliable voice and data interoperability, and greater overall security.

Cisco WAAS is a comprehensive WAN optimization solution that accelerates applications over the WAN, delivers video to the branch office, and provides local hosting of branch-office IT services. It allows IT departments to centralize applications and storage within the data center while maintaining LAN-like application performance and to rapidly deliver local branch-office IT services while reducing the branch-device footprint.

Cisco WAAS enables organizations to accomplish these primary IT objectives:

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

Unlike other WAN optimization products, the Cisco WAAS solution provides:

- Application-specific acceleration validated by application vendors
- Network integration that preserves existing network services and results in ease of operations
- The most cost-effective solution available today

### Product Line

The Cisco WAAS hardware platforms that host the Cisco WAAS Software are available today in appliance and NME form factors.

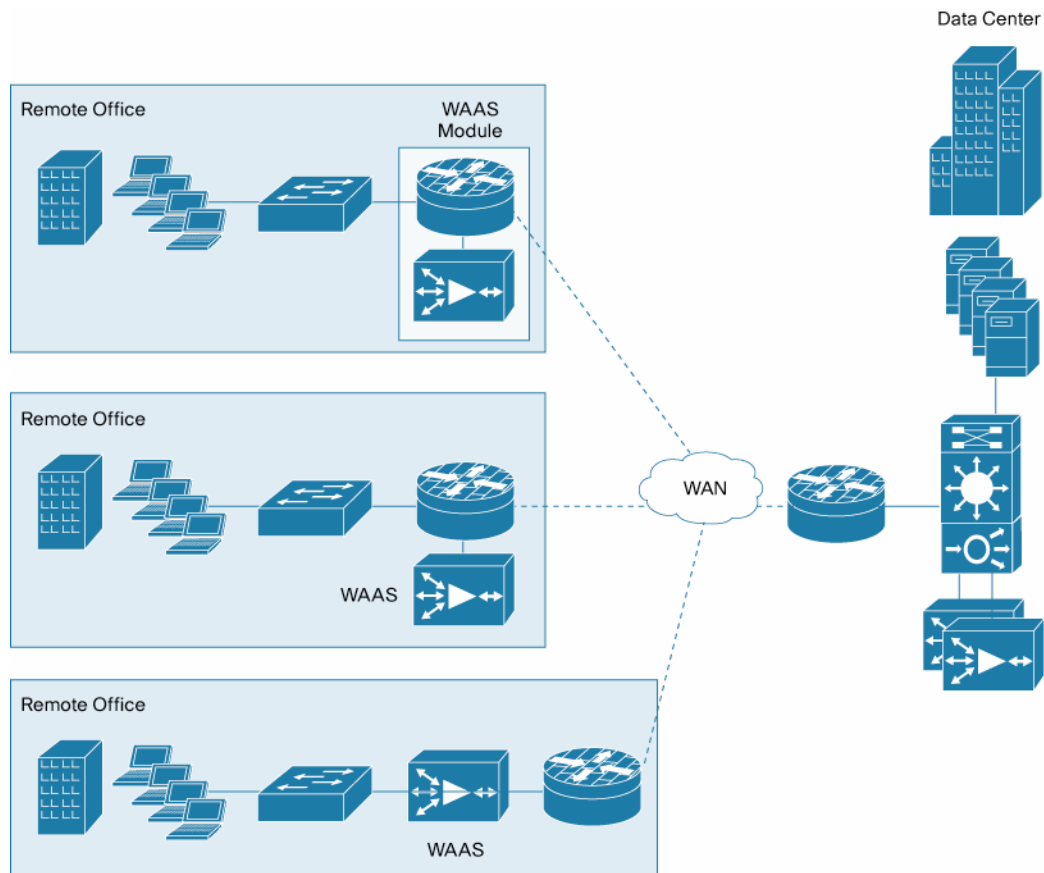
- Appliance-based product lines are categorized into Cisco Wide Area Application Engine (WAE) and Wide Area Virtualization Engine (WAVE) products.
- NMEs are physical blades that can be deployed along with Cisco ISR and ISR G2 platforms to avoid major equipment upgrades. For Cisco ISR G2 platforms, an NME adapter card is required.

Addressing varying customer needs based on branch-office size, bandwidth availability, and use patterns, the Cisco WAAS hardware product line is designed to scale from small to very large enterprisewide deployments. Cisco WAAS NMEs typically are deployed as edge devices at branch locations. The Cisco WAE and WAVE appliances are

deployed symmetrically as edge devices at branch locations and as core devices at the data center, as shown in Figure 1. For more information about Cisco WAE Appliances, please refer to the [Cisco WAE Appliance data sheet](#). The Cisco WAVE and WAE-674 appliances can host local branch IT services on Cisco WAAS virtual blades. For more information about Cisco WAVE appliances, please refer to the Cisco [WAVE Appliance data sheet](#).

Offered in multiple configurations to address the needs of enterprise branch offices, the Cisco WAAS NMEs are designed for deployment as edge devices.

**Figure 1.** Cisco WAAS Deployment Architecture



### Cisco WAAS Software License Options

Cisco WAAS Software is licensed at two levels of feature capability for deployment on the Cisco WAAS NME:

- **Transport license:** The Cisco WAAS Transport license provides the WAN optimization features of Cisco WAAS, including data redundancy elimination (DRE), Lempel-Ziv (LZ) compression, and transport flow optimization (TFO), optimizing application delivery to the branch office.
- **Enterprise license:** The Cisco WAAS Enterprise license provides Cisco WAAS Transport license functions plus application-specific accelerations for protocols including Common Internet File System (CIFS), Messaging API (MAPI), HTTP, SSL, Network File System (NFS), and Windows print services, to facilitate application acceleration, WAN optimization, and IT consolidation

## Product Line Positioning

The Cisco WAAS NMEs (Figure 2) are offered in three fixed configurations, as described in Table 1.

- The Cisco NME-WAE-302 is the entry-level offering. It supports basic WAN optimization features for small branch offices in which bandwidth constraints affect application performance. The Cisco NME-WAE-302 is supported in Cisco 2800 and 3800 Series Integrated Services Routers.
- The Cisco NME-WAE-502 offers Cisco WAAS edge functions, allowing enterprises to consolidate branch-office infrastructure, accelerate applications, optimize the WAN, and improve backup operations. The Cisco NME-WAE-502 is supported in the Cisco 2800 and 3800 Series routers and in the following Cisco ISR G2 platforms: Cisco 2911, 2921, 2951, 3925, and 3945 Integrated Services Routers. For ISR G2 platforms, an NME adapter card is required.
- The Cisco NME-WAE-522 offers greater scale and the highest investment protection for up to medium-sized enterprise branch offices. The Cisco NME-WAE-522 is supported in the Cisco 2800 and 3800 Series routers.

**Table 1.** Cisco WAAS NME Product Line Positioning

Platform	Hardware	Router Model	Positioning
<b>Cisco NME-WAE-302</b>	<ul style="list-style-type: none"> <li>• 512-MB RAM</li> <li>• 80-GB hard disk drive (HDD)</li> </ul>	<ul style="list-style-type: none"> <li>• Supported on Cisco 2800 and 3800 Series routers</li> </ul>	<ul style="list-style-type: none"> <li>• Low-cost, entry-level platform for use with Cisco WAAS Transport license for basic WAN optimization features; Cisco WAAS Enterprise license not supported</li> <li>• Edge deployments at small branch offices</li> </ul>
<b>Cisco NME-WAE-502</b>	<ul style="list-style-type: none"> <li>• 1-GB RAM</li> <li>• 120-GB HDD</li> </ul>	<ul style="list-style-type: none"> <li>• Supported on Cisco 2800 and 3800 Series routers</li> <li>• Supported on Cisco 2911, 2921, 2951, 3925, and 3945 G2 routers with an NME adapter card</li> </ul>	<ul style="list-style-type: none"> <li>• Cisco WAAS Transport and Enterprise licenses supported for edge deployment supporting application acceleration, WAN optimization, and server consolidation</li> <li>• Edge deployments at small and medium-sized branch offices</li> </ul>
<b>Cisco NME-WAE-522</b>	<ul style="list-style-type: none"> <li>• 2-GB RAM</li> <li>• 160-GB HDD</li> </ul>	<ul style="list-style-type: none"> <li>• Supported on Cisco 3800 Series routers</li> </ul>	<ul style="list-style-type: none"> <li>• Cisco WAAS Transport and Enterprise licenses supported for edge deployment supporting application acceleration, WAN optimization, and server consolidation</li> <li>• Edge deployments at up to medium-sized branch offices</li> </ul>

**Figure 2.** Cisco WAAS NME



## Product Specifications

Table 2 gives product specifications for the Cisco WAAS NMEs.

**Table 2.** Cisco WAAS NME Specifications

	Cisco NME-WAE-302-K9	Cisco NME-WAE-502-K9	Cisco NME-WAE-522-K9
<b>RAM</b>	512 MB	1 GB	2 GB
<b>Hard disk</b>	80 GB	120 GB	160 GB
<b>Router platforms</b>	Cisco 2811, 2821, 2851, 3825, and 3845 routers	Cisco 2811, 2821, 2851, 3825, and 3845 routers Cisco 2911, 2921, 2951, 3925 and 3945 G2 routers	Cisco 3825 and 3845 routers
<b>Cisco IOS® Software (on router)</b>	Cisco IOS Software Release 12.4(9)T or later	Cisco IOS Software Release 12.4(9)T or later for routers Cisco IOS Software Release 15.0(1)M for G2 routers	Cisco IOS Software Release 12.4(15)T or later
<b>Cisco WAAS license options</b>	Cisco WAAS Transport license	<ul style="list-style-type: none"> <li>Cisco WAAS Transport license</li> <li>Cisco WAAS Enterprise license</li> </ul>	<ul style="list-style-type: none"> <li>Cisco WAAS Transport license</li> <li>Cisco WAAS Enterprise license</li> </ul>
<b>Cisco WAAS Software</b>	Cisco WAAS Software Version 4.0.3 or later	Cisco WAAS 4.0.3 or later for routers Cisco WAAS 4.1.5 or later for G2 routers	Cisco WAAS 4.0.13 or later
<b>Internal network interfaces</b>	10/100/1000 Gigabit Ethernet connectivity to router backplane	10/100/1000 Gigabit Ethernet connectivity to router backplane	10/100/1000 Gigabit Ethernet connectivity to router backplane
<b>External network interfaces</b>	10/100/1000 Gigabit Ethernet	10/100/1000 Gigabit Ethernet	10/100/1000 Gigabit Ethernet
<b>Flash memory</b>	64-MB compact flash memory	64-MB compact flash memory	64-MB compact flash memory
<b>Physical characteristics</b>	<ul style="list-style-type: none"> <li>Dimensions (H x W x D): 1.55 x 7.10 x 7.2 in. (3.9 x 18.0 x 18.3 cm)</li> <li>Weight: 1.5 lb (0.7 kg) maximum</li> </ul>	<ul style="list-style-type: none"> <li>Dimensions (H x W x D): 1.55 x 7.10 x 7.2 in. (3.9 x 18.0 x 18.3 cm)</li> <li>Weight: 1.5 lb (0.7 kg) maximum</li> </ul>	<ul style="list-style-type: none"> <li>Dimensions (H x W x D): 1.55 x 7.10 x 7.2 in. (3.9 x 18.0 x 18.3 cm)</li> <li>Weight: 1.5 lb (0.7 kg) maximum</li> </ul>
<b>Operating environment</b>	<ul style="list-style-type: none"> <li>Operating temperature: 41 to 104°F (5 to 40°C)</li> <li>Nonoperating and storage temperature: -40 to 158°F (-40 to 70°C)</li> <li>Operating humidity: 5 to 85% (noncondensing)</li> <li>Operating altitude: -197 to 6000 ft (-60 to 1800m)</li> </ul>	<ul style="list-style-type: none"> <li>Operating temperature: 41 to 104°F (5 to 40°C)</li> <li>Nonoperating and storage temperature: -40 to 158°F (-40 to 70°C)</li> <li>Operating humidity: 5 to 85% (noncondensing)</li> <li>Operating altitude: -197 to 6000 ft (-60 to 1800m)</li> </ul>	<ul style="list-style-type: none"> <li>Operating temperature: 41 to 104°F (5 to 40°C)</li> <li>Nonoperating and storage temperature: -40 to 158°F (-40 to 70°C)</li> <li>Operating humidity: 5 to 85% (noncondensing)</li> <li>Operating altitude: -197 to 6000 ft (-60 to 1800m)</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>UL 60950-1, Safety of Information Technology Equipment-Safety-Part 1: General Requirements (USA); plastic materials that are exposed to the end user shall meet the requirements of fire enclosure (UL94V-1) as defined in UL 60950</li> <li>CSA 60950-1, Second Edition, Safety of Information Technology Equipment-Safety-Part 1: General Requirements (Canada)</li> <li>IEC 60950-1, Second Edition, Safety of Information Technology Equipment-Safety-Part 1: General Requirements, including all national deviations as specified in the current CB Bulletin</li> <li>EN 60950-1, Second Edition, Safety of Information Technology Equipment-Safety-Part 1: General Requirements (European Union) incorporating all Deviations, as applicable</li> <li>GB 4943-95, Safety of Information Technology Equipment (Including Electrical Business Equipment) (standard for China, equivalent to IEC 60950)</li> <li>AS/NZS 60950.1 Information technology equipment, Safety Part</li> </ul>	<ul style="list-style-type: none"> <li>UL 60950-1, Safety of Information Technology Equipment-Safety-Part 1: General Requirements (USA); plastic materials that are exposed to the end user shall meet the requirements of fire enclosure (UL94V-1) as defined in UL 60950</li> <li>CSA 60950-1, Second Edition, Safety of Information Technology Equipment-Safety-Part 1: General Requirements (Canada)</li> <li>IEC 60950-1, Second Edition, Safety of Information Technology Equipment-Safety-Part 1: General Requirements, including all national deviations as specified in the current CB Bulletin</li> <li>EN 60950-1, Second Edition, Safety of Information Technology Equipment-Safety-Part 1: General Requirements (European Union) incorporating all Deviations, as applicable</li> <li>GB 4943-95, Safety of Information Technology Equipment (Including Electrical Business Equipment) (standard for China, equivalent to IEC 60950)</li> <li>AS/NZS 60950.1 Information technology equipment, Safety Part</li> </ul>	<ul style="list-style-type: none"> <li>UL 60950-1, Safety of Information Technology Equipment-Safety-Part 1: General Requirements (USA); plastic materials that are exposed to the end user shall meet the requirements of fire enclosure (UL94V-1) as defined in UL 60950</li> <li>CSA 60950-1, Second Edition, Safety of Information Technology Equipment-Safety-Part 1: General Requirements (Canada)</li> <li>IEC 60950-1, Second Edition, Safety of Information Technology Equipment-Safety-Part 1: General Requirements, including all national deviations as specified in the current CB Bulletin</li> <li>EN 60950-1, Second Edition, Safety of Information Technology Equipment-Safety-Part 1: General Requirements (European Union) incorporating all Deviations, as applicable</li> <li>GB 4943-95, Safety of Information Technology Equipment (Including Electrical Business Equipment) (standard for China, equivalent to IEC 60950)</li> <li>AS/NZS 60950.1 Information technology equipment, Safety Part</li> </ul>

	Cisco NME-WAE-302-K9	Cisco NME-WAE-502-K9	Cisco NME-WAE-522-K9
	1: General requirements (Australia)	1: General requirements (Australia)	1: General requirements (Australia)
<b>EMC</b>	<ul style="list-style-type: none"> <li>• Emission: <ul style="list-style-type: none"> <li>◦ 47 CFR Part 15 Class A</li> <li>◦ CISPR22 Class A</li> <li>◦ EN300386 Class A</li> <li>◦ EN55022 Class A</li> <li>◦ EN61000-3-2</li> <li>◦ EN61000-3-3</li> <li>◦ SD/EMI (India)</li> <li>◦ KN22 (Korea)</li> <li>◦ VCCI Class I</li> <li>◦ AS/NZS CISPR 22 Class A</li> </ul> </li> <li>• Immunity: <ul style="list-style-type: none"> <li>◦ CISPR24</li> <li>◦ EN300386</li> <li>◦ EN50082-1</li> <li>◦ EN55024</li> <li>◦ SD/EMI (India)</li> <li>◦ KN22 (Korea)</li> <li>◦ EN61000-6-1</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Emission: <ul style="list-style-type: none"> <li>◦ 47 CFR Part 15 Class A</li> <li>◦ CISPR22 Class A</li> <li>◦ EN300386 Class A</li> <li>◦ EN55022 Class A</li> <li>◦ EN61000-3-2</li> <li>◦ EN61000-3-3</li> <li>◦ SD/EMI (India)</li> <li>◦ KN22 (Korea)</li> <li>◦ VCCI Class I</li> <li>◦ AS/NZS CISPR 22 Class A</li> </ul> </li> <li>• Immunity: <ul style="list-style-type: none"> <li>◦ CISPR24</li> <li>◦ EN300386</li> <li>◦ EN50082-1</li> <li>◦ EN55024</li> <li>◦ SD/EMI (India)</li> <li>◦ KN22 (Korea)</li> <li>• EN61000-6-1</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Emission: <ul style="list-style-type: none"> <li>◦ 47 CFR Part 15 Class A</li> <li>◦ CISPR22 Class A</li> <li>◦ EN300386 Class A</li> <li>◦ EN55022 Class A</li> <li>◦ EN61000-3-2</li> <li>◦ EN61000-3-3</li> <li>◦ SD/EMI (India)</li> <li>◦ KN22 (Korea)</li> <li>◦ VCCI Class I</li> <li>◦ AS/NZS CISPR 22 Class A</li> </ul> </li> <li>• Immunity: <ul style="list-style-type: none"> <li>◦ CISPR24</li> <li>◦ EN300386</li> <li>◦ EN50082-1</li> <li>◦ EN55024</li> <li>◦ SD/EMI (India)</li> <li>◦ KN22 (Korea)</li> <li>• EN61000-6-1</li> </ul> </li> </ul>

## Ordering Information

To order the Cisco WAE appliance hardware, please refer to the [Cisco WAE Appliance data sheet](#). Table 3 lists Cisco WAAS NME hardware part numbers and related Cisco WAAS Software options.

**Table 3.** Part Numbers for Cisco WAAS NMEs and Software

Part Number	Product Description
<b>NME-WAE-302-K9</b>	Cisco WAAS Network Module for Cisco 2800 and 3800 Series Integrated Services Routers, 512 MB RAM, 80 GB HDD, Only WAAS Transport supported
<b>NME-WAE-302-K9</b>	Cisco WAAS Network Module for Cisco 2800 and 3800 Series Integrated Services Routers, 512 MB RAM, 80 GB HDD (spare), Only WAAS Transport supported
<b>NME-WAE-502-K9</b>	Cisco WAAS Network Module for Cisco 2800 and 3800 Series ISR, and Cisco 2911, 2921, 2951, 3925 and 3945 ISR G2,
<b>NME-WAE-502-K9</b>	1 GB RAM, 120 GB HDD. WAAS Transport and WAAS Enterprise supported
<b>SM-NM-ADPTR</b>	Cisco WAAS Network Module for Cisco 2800 and 3800 Series ISR, 1 GB RAM, 120 GB HDD (Spare). WAAS Transport and WAAS Enterprise supported
<b>SF-WAAS-4.0-NM-K9</b>	Cisco Service Module Network Module Adapter Card for 1 NME-WAE-502-K9 required for deployment in ISR G2 2911, 2921, 2951, 3925 and 3945 routers.
<b>SF-WAAS-4.1-NM-K9</b>	Cisco WAAS 4.0 Software image (separate license required)
<b>WAAS-TRN-NM</b>	Cisco WAAS 4.1 Software image (separate license required)
<b>WAAS-ENT-NM</b>	Cisco WAAS Transport license for 1 network module
<b>WAAS-VIDEO-WM-NM</b>	Cisco WAAS Enterprise license for 1 NME-WAE-502-K9
<b>WAAS-ENT-NM-BUN</b>	Cisco WAAS Video License for Windows Live Media Streaming for 1 network module

## WCCP Support

Web Cache Communications Protocol (WCCP) is a free software feature in Cisco IOS Software that runs on Cisco routers, including the Cisco 1800, 1900, 2600, 2800, 2900, 3600, 3700, 3800, 3900, and 7000 Series, and on Cisco switches such as the Cisco Catalyst® 4500, 4900, and 6500 Series.

## 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 helps 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, refer to [Cisco Technical Support Services](#) or [Cisco Advanced Services](#).

## For More Information

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

For more information about Cisco Integrated Services Routers, visit <http://www.cisco.com/go/isr>, <http://www.cisco.com/go/isrg2>, and <http://www.cisco.com/go/sre> or contact your local Cisco account representative.



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