Cisco 7600 Multiprocessor WAN Application Module for Broadband Aggregation

Product Overview

The Cisco 7600 Series Multiprocessor WAN Application Module (MWAM) provides high-performance, scalable distributed service processing. MWAM enables service providers for the network edge to deploy, provision, and manage value-added services to business and subscriber customers. This innovative service module delivers the most comprehensive set of edge aggregation services for carriers and service providers worldwide.

The Cisco MWAM is ideal for feature-rich IP/Multiprotocol Label Switching (MPLS) services deployment such as PPP termination aggregation (PTA), L2TP access concentrator (LAC), and L2TP Network Server (LNS) and wireless edge deployments (Figure 1).

The Cisco 7600 Series MWAM is a broadband subscriber management line card supported on the Cisco 7600 to deliver the performance, density, and scalability required for comprehensive IP service delivery in large-scale deployments. It combines subscriber management functions with Tier 1 class routing and innovative IP quality of service (QoS) to enable service providers to deliver new, competitive IP services to their subscribers.

The Cisco 7600 Series is the industry's only edge router that delivers robust, high-performance features for a range of service provider edge and enterprise metropolitan-area network (MAN) and WAN applications. Coupled with the broadest set of interfaces and innovative adaptive network processing technology, the Cisco 7600 Series leads the industry with integrated Ethernet and private-line aggregation capabilities. This unique combination enables carriers and enterprises alike to improve operational efficiency at the network edge while maximizing return on investment.

The Cisco 7600 Series MWAM can be deployed by carriers in the central office or by service providers at a point of presence (POP), and it can aggregate data traffic with transparency to access technologies. It is a subscriber management platform, providing both basic subscriber services and service profile assignment and network routing. The 7600 Series MWAM provides a foundation for the service providers to offer the following services to their customers:

- Captive portal
- Web-based subscriber authentication
- Walled garden service creation
Features and Benefits Overview

Table 1 gives the features and benefits of the Cisco 7600 Series MWAM.

<table>
<thead>
<tr>
<th>Cisco 7600 Series MWAM Features</th>
<th>Service Provider Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-performance dynamic individual customer-specific services</td>
<td>Allows service providers to deliver individualized value-added services that are recognized by customers as unique to them</td>
</tr>
<tr>
<td>High-performance throughput of up to three gigabits per line card</td>
<td>Delivers high-performance throughput to subscribers and supports delivery of QoS policies for performance-sensitive applications such as voice and real-time video</td>
</tr>
<tr>
<td>Comprehensive IP QoS capabilities</td>
<td>Allows delivery of differentiated IP services created for the subscribers, including: – Guaranteed throughput – Differentiated traffic classification (gold, silver, bronze) – Customer-specific traffic grooming – Application-specific traffic management</td>
</tr>
<tr>
<td>Distributed router</td>
<td>Provides higher network security with isolated routing for fault isolation</td>
</tr>
<tr>
<td>Modular CPU architecture</td>
<td>Offers distributed CPU processing for better fault isolation</td>
</tr>
<tr>
<td>High-density subscriber edge aggregation</td>
<td>Provides revenue-generating network edge services such as per-user stateful firewall</td>
</tr>
<tr>
<td>Integrated module</td>
<td>Allows increased density over traditional aggregation devices with a “pay-as-you-grow” approach by adding performance and subscribers as you add line cards</td>
</tr>
</tbody>
</table>

Critical Applications

High-performance delivery of broadband triple play (data, voice, and video)—With the Cisco 7600 Series MWAM, service providers can eliminate incremental equipment upgrades that deliver inconsistent edge services. The Cisco 7600 Series MWAM offers an architecture that enables a flexible, single-system deployment. Installation of the 7600 Series MWAM allows support of edge services from a single aggregation device, eliminating the need for buying separate Layer 2 and Layer 3 equipment for broadband-specific applications.

Cisco Systems, Inc.
All contents are Copyright © 1992–2003 Cisco Systems, Inc. All rights reserved. Important Notices and Privacy Statement.
• **Distributed routing (virtual routers plus security)**—A cost-effective and scalable alternative to virtual routers, the Cisco 7600 Series MWAM eliminates the need for sharing resources at the service provider edge POP and allows the network architecture to be vulnerable to denial-of-service (DoS) attacks and starvation of resources for subscribers.

• **Dynamic service selection**—The Cisco 7600 Series MWAM enables service providers to rapidly create and deploy new revenue-generating services, individualize and enhance their subscribers’ experience, and at the same time retain full control of their underlying networks.

• **Network security**—Security is essential to any business or organization that relies on digital communications. The growing frequency, scope, and sophistication of cyber threats require a comprehensive security toolkit. Routine trade-offs between a security policy, service offerings, and network performance are no longer acceptable.

• **Modular QoS**—The strong QoS features in the Cisco 7600 Series MWAM allow service providers to offer Differentiated Services (DiffServ) to their subscriber bases.

**Distributed Routing (Virtual Routers plus Security)**

The distributed routing model is a cost-effective and scalable alternative to virtual routers, eliminating the need for sharing resources at the service provider edge POP and allowing the network architecture to be vulnerable to DoS attacks and starvation of resources for subscribers. The Cisco 7600 Series MWAM provides a secure alternative by allowing each routing table to have a dedicated CPU and memory resource allocated.

Unlike traditional virtual routers that share centralized resources (CPU plus memory) and are localized to a single device, the Cisco 7600 Series MWAM allows wholesale service providers to dedicate a distributed CPU and memory resources to a single routing domain. This allows each domain to have dedicated interfaces, routing tables, routing processes, and RADIUS servers.

**Figure 2**
Distributed Routing
Dynamic Service Selection

The Cisco 7600 Series MWAM provides support for the Cisco Subscriber Access and Management, which is capable of creating a powerful services-based business model for use within subscriber markets such as broadband, mobile wireless, and wireless LANs. Service providers use Cisco Service Selection Gateway (SSG) and Cisco Subscriber Edge Services Manager (SESM) to offer customizable, on-demand services, branded Web portals, service-based authorization accounting, and service subscriber management.

Cisco SSG is a Cisco IOS® Software module that enables service providers to create new revenue-generating, on-demand services. The Cisco SSG is able to provide RADIUS authentication and accounting for interactive user-based policy routing to different IP destinations.

Network Security

The Cisco 7600 Series MWAM is capable of applying security policies on a per-packet basis; these security policies dictate the actions required to meet each customer’s security profile or to guarantee the integrity of each packet. Supported features include the following:

- Network-based application recognition (NBAR)
- URL filtering
- Per-user stateful firewall
- Intrusion detection system (IDS) and access control lists (ACLs)
- DoS detection and prevention
- Antispoofing
- Real-time alerts and alarms
**Modular QoS**

The strong QoS features in the Cisco 7600 Series MWAM allow service providers to offer DiffServ to their subscriber bases. The Cisco 7600 Series MWAM combines fine-grained classification abilities with flexible, highly scalable queuing, and support for both DiffServ and MPLS-based service transport models, designed to ensure that service providers can reliably deliver (and measure) the differentiated services they wish to deliver.

**Highly Scalable Architecture**

Each Cisco 7600 Series MWAM contains six processors. These CPUs are used to run Cisco IOS Software. Each CPU on a given MWAM blade acts as an independent logical Cisco IOS router connected to the Cisco 7600 switch fabric by a gigabit Ethernet port. The interfaces used by these Cisco IOS routers are gigabit Ethernet 802.1Q trunk ports, which carry virtual-LAN (VLAN) encapsulated traffic to and from the network through the Cisco 7600 switch fabric.

**System Requirements**

- Cisco IOS Software Release 12.2(9)ZA on the Cisco 7600 Supervisor Engine 2 with Multilayer Switch Feature Card 2 (MSFC2)
- Cisco 7600 Series Router
- Cisco IOS Software Release for MWAM application software
- Space in one slot in a Cisco 7600 Series Router

**Ordering Information**

Table 2 gives part numbers for the Cisco 7600 Series MWAM.

**Table 2  Part Numbers for the Cisco 7600 Series MWAM**

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WS-SVC-MWAM-1</td>
<td>Multiprocessor WAN application module for the Cisco 7600 Series</td>
</tr>
<tr>
<td>WS-SVC-MWAM-1=</td>
<td>Multiprocessor WAN application module for the Cisco 7600 Series (spare)</td>
</tr>
</tbody>
</table>
Cisco 7600 Series MWAM Architecture Benefits

Integrated Module
Installed inside a Cisco 7600 Series Router, the MWAM allows increased session density versus traditional solutions. This becomes especially important where rack space is at a premium.

Compatibility with Future Versions
The flexible Cisco IOS Software-based approach of the MWAM means that the solution will be able to meet future requirements without requiring a system overhaul. Multiple MWAMs can be added to the Cisco 7600 Series to meet growing demands.

Lower Cost of Ownership
Because the Cisco 7600 Series MWAM is integrated in the chassis, there are fewer devices to manage, and adding new cards rather than complete systems can increase capacity.

Physical Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (H x W x D):</td>
<td>1.18 x 15.51 x 16.34 in. (30 x 394 x 415 mm)</td>
</tr>
<tr>
<td>Weight:</td>
<td>Minimum: 3 lb (1.36 kg)</td>
</tr>
<tr>
<td></td>
<td>Maximum: 5 lb (2.27 kg)</td>
</tr>
<tr>
<td>Environmental conditions:</td>
<td></td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>32 to 104°F (0 to 40°C)</td>
</tr>
<tr>
<td>Nonoperating temperature:</td>
<td>−40 to 167°F (−40 to 75°C)</td>
</tr>
<tr>
<td>Humidity:</td>
<td>10 to 90%, noncondensing’</td>
</tr>
</tbody>
</table>

Regulatory Compliance

Safety
UL 1950
CSA C22.2 No. 950-95
EN60950
EN60825-1
TS001
CE Marking
IEC 60950
AS/NZS3260
Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the Cisco Web site at www.cisco.com/go/offices.

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the Cisco Web site at www.cisco.com/go/offices.

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

All contents are Copyright © 1992–2003 Cisco Systems, Inc. All rights reserved. Cisco, Cisco IOS, Cisco Systems, the Cisco Systems logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

All other trademarks mentioned in this document or Web site 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.