

Pedal to the Metal

Latest Content Networking Components Can Triple Cisco IOS Performance

THE ABILITY OF NETWORKS TO RECOGNIZE specific applications, or *content*, is becoming vital as enterprises increasingly rely on Internet business models for competitive advantage. Differentiating among traffic flows using Cisco Content Networking delivers greater control to enterprises over the network experiences of their customers, internal users, and business partners. The Cisco Content Networking architecture has been recently enhanced to accelerate the performance of network classification, Cisco IOS® services, and policy management.

Content Networking can be deployed in an enterprise network to optimize the performance of each traffic flow according to the organization's business priorities and the service-level requirements of the application. E-commerce, for example, demands a network with the intelligence to distinguish a multi-million-dollar order transaction from a routine print command and then assign the appropriate priority to each. In addition, distinguishing voice packets from a file transfer or e-mail is necessary to ensure that the strict latency requirements of a voice session are met.

Beyond Recognition

But the ability of the network to recognize content alone is not enough. The network must also classify traffic and apply the appropriate service treatment to it based on corporate policy and the application's specific latency and packet-loss sensitivities—all in a way that optimizes performance.

Recent enhancements to Cisco Content Networking embrace both hardware and software and substantially increase the performance of certain Cisco IOS services. "Studies show an increase in performance of the execution of these features ranging from 50 to 350 percent," says Seenu Banda, Marketing Manager in Cisco's Enterprise WAN Business Unit.

The new Content Networking components include the following:

Network Service Engine (NSE)-1 processor for the Cisco 7200 series router—The NSE-1 hardware-based accelerator provides a massive performance boost for quality of service (QoS) and other Cisco IOS network services. The NSE-1 was specifically designed to accelerate Content Networking-oriented Cisco IOS services.

WHAT IS CONTENT NETWORKING?

Cisco Content Networking delivers the intelligent network services required to drive the Internet business model by enabling end-to-end security, performance, and network availability. Cisco Content Networking has three main components:

- *Intelligent network classification* and network services delivered by Cisco IOS software
- *Intelligent network devices* that integrate Internet applications with network services
- *Intelligent policy management*, which handles configuration, monitoring, and accounting

"The key concept behind Cisco Content Networking is that once an application is recognized, it gets the network resources it needs," explains Terry Bernstein, product manager in Cisco's Enterprise WAN Business Unit.

Central to that recognition and to Content Networking is the Network Based Application Recognition (NBAR) engine within Cisco IOS software. First available in Cisco IOS 12.0(5)XE, NBAR inspects network traffic at Layers four through seven (transport through presentation) to distinguish types of network traffic. Doing so enables an incoming order from the Web to receive a higher priority than a screen refresh for an internal user. NBAR is currently available on the Cisco 7100 and 7200 routers and will be added to other Cisco router platforms.

When installed in a Cisco 7200 router, the NSE's distributed parallel processing architecture can significantly increase the performance of discrete Cisco IOS features such as Weighted Fair Queuing (WFQ), Weighted Random Early Detection (WRED), Network Address Translation (NAT), and Access Control Lists (ACLs).

Distributed network services on the Cisco 7500 router—This enhancement alleviates the processing burden of the central CPU and enhances scalability. High-speed packet forwarding and the processing of Cisco IOS network services, such as QoS, caching, and multicasting, are distributed across multiple RISC-based Versatile Interface Processors (VIPs) in the router. Attached to each VIP are one or two port adapters that provide media-specific interfaces to the network.

Integrated server load balancing on Cisco 7100 and 7200 routers and Catalyst® 6000 switches—Balancing traffic across multiple servers improves performance and availability, and the integrated nature of the solution reduces customer hardware requirements and management complexity.

Cache Engine 570 and 590 models—The caching of frequently accessed network content in servers near users improves application response time and can significantly reduce WAN costs.

Cisco QoS Device Manager (QDM)—This Web-based network management application for configuring and monitoring device-level QoS manages congestion in the network to improve overall application and network performance.

Merging Old and New Processes

The improved performance delivered by the latest Content Networking products supports new ways of conducting business, says Steve Collen, Marketing Director in Cisco's Enterprise Line of Business.

Citing an example of a bookstore, Collen describes how Content Networking is fundamental to the success of a business in transition. "When a company moves away from bricks and mortar and starts selling 1000 books a day on line to geographically dispersed customers, it will need multiple servers available 24 hours a day, secure transaction processing, and fast response times. It can get that with server load balancing, QoS, and network security."

Collen goes on to explain that when the customer grows its business to selling 20,000 books a day, the demands of the infrastructure will become significantly greater. "That's when the enterprise will need the acceleration capabilities of the latest Cisco Content Networking components," he concludes. ▲▲