

Cisco IOS Multicast Solutions for Internet Broadcast

The Challenge

Yesterday the challenge was providing robust e-mail and web services. Today it is the Internet Economy and ensuring that E-business is reliable. Tomorrow's challenge will be reaching people anywhere in the world with data, voice, and video—quickly and efficiently. Unless the network is agile, scalable and available, customers will lose their competitive advantage. Internet broadcast is the next tornado in the revolution of the Internet and makes content delivery via the Internet a compelling proposition.

Increasingly, customers will rely on Internet broadcasting to bring enhanced value to a broad new spectrum of platforms and applications—interactive videoconferencing, digital TV, digital audio, online movies and concerts, networked gaming, Internet-enabled PDAs and home appliances, content synchronization, and broadband access.

The Solution

Cisco IOS[®] Software makes Internet broadcasting a reality. The Cisco solution is proven, flexible, reliable, and scalable. It provides a comprehensive end-to-end architecture to exploit the explosive growth of the Internet and eliminates bandwidth constraints inherent in distributed group applications.

Multicast technology is the key to preventing a network meltdown and Cisco IOS Multicast is the gateway to the New World of Internet broadcasting. Several Internet service providers (ISPs) run native multicast successfully. ISPs and content providers worldwide are using Cisco IOS Multicast solutions to host popular events such as live concerts, radio shows, and football games.

Cisco IOS Multicast Applications

Businesses rely on Cisco IOS Multicast for timely delivery of information to their employees. The most common multicast applications are based on the “one-to-many” model of

information dissemination—a single host sending to several receivers. One-to-many applications are used for streaming multimedia, training and corporate communications, data warehousing, distributing financial information, and other push-based functions. Cisco IOS Multicast is the tool of choice for real-time content distribution from stock market data feeds to catalog updates to collaborative multimedia activities.

Other multicast applications are based on the “many-to-one” and “many-to-many” model of communication. Many-to-one applications involve any number of receivers sending data back to a source via unicast or multicast. These typically involve two-way request/response applications where either end may generate the request—resource discovery auctions, polling, and moderated applications.

Many-to-many multicast applications involve any number of hosts sending to the same multicast group address as well as receiving from it. Examples include multimedia conferencing, collaboration, distance learning, chat groups, multi-player games, etc. The demand for many-to-many is increasing with the introduction of useful collaboration and videoconferencing tools.

Benefits

Cisco IOS Multicast allows you to respond rapidly to customer requests for new features and applications that scale. Cisco IOS Multicast enables customers to:

- Efficiently deploy and scale distributed group applications across the Internet.
- Create a ubiquitous, enterprise-wide content distribution model.
- Solve traffic congestion problems.
- Be a service provider.

Implementing Cisco IOS Multicast positively impacts the customers' bottom-line. It saves network costs by conserving bandwidth and server processing, positions networks for easy implementation of critical emerging multi-point applications, and saves resources in travel time and lost productivity.

Solutions

Cisco multicast technology delivers solutions for every market and opens new business opportunities. Cisco IOS Multicast solutions are classified as Multicast-Lite, Core Multicast, and Enhanced Multicast, and are the building blocks for Internet broadcast. Customers can start with Multicast-Lite, then add more sophisticated interactive communication capabilities, as needed.

- Multicast-Lite provides for one-to-many broadcast capability with no back channel. This solution is eminently suitable for content distribution and broadcasting over the Internet. It does not require setting up of source discovery across domains and autonomous systems. Multicast Lite includes Protocol Independent Multicast version 2 (PIMv2), Internet Group Management Protocol (IGMPv1/v2/v3) and/or Universal Resource Locator Rendezvous Directory (URD).
- Core Multicast provides interactive, reliable campus multicast for interactive distance learning, corporate videoconferencing, inventory updates, software distribution, and content distribution. Core Multicast includes PIM, IGMP, Cisco Group Management Protocol (CGMP), and now Pragmatic General Multicast (PGM).
- Enhanced Multicast provides interactive Internet Multicast across domains for network gaming, inter-company conferencing, Internet software distribution, and extranet content distribution. Enhanced Multicast includes Multicast Border Gateway Protocol (MBGP) and Multicast Source Discovery Protocol (MSDP) in addition to all the protocols supported in Core Multicast.

Technical Specifications

Cisco supports the following protocols:

- PIMv2—Protocol Independent Multicast (PIM-sparse mode, dense mode, dense-sparse and Bi-Directional) provides intradomain multicast forwarding support for all underlying unicast routing protocols. Provides support for both explicit join (sparse mode) and flood and prune (dense mode) multicast.
- Multiprotocol extensions to Border Gateway Protocol 4 (MBGP4) provides interdomain multicast routing.
- Multicast Source Discovery Protocol (MSDP) provides third party source discovery arbitration and gives customers flexibility regarding Rendezvous Point (RP) placement across network domains.
- Internet Group Management Protocol (IGMP) Snooping and Cisco Group Management Protocol (CGMP) provide management of group membership on the switched LAN.
- Pragmatic General Multicast (PGM) provides reliable Multicast transport.

Availability

- Currently available across all Cisco IOS Software-based platforms, including Cisco routers and Catalyst family switches.
 - Routing platforms include the following: Cisco 1003, Cisco 1004, Cisco 1005, Cisco 1600 series, Cisco 2500 series, Cisco 2600 series, Cisco 2800 series, Cisco 2900 series, Cisco 3600 series, Cisco 3800 series, Cisco 4000 series (Cisco 4000, 4000-M, 4500, 4500-M, 4700, 4700-M), Cisco 7200 series, Cisco 7500 series, and Cisco 12000
 - Also available on Catalyst 6000 and 8500 platforms.
- Pricing for this service is included in Cisco IOS Software images.

Important Link

<http://www.cisco.com/go/ipmulticast>

Figure 1 Cisco Delivers Multicast Solutions for Every Market

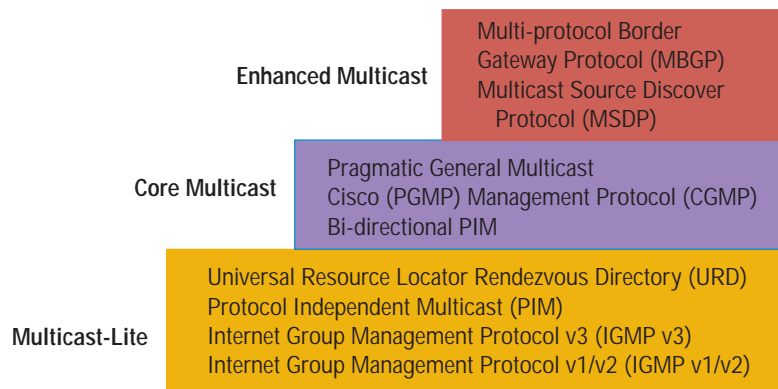
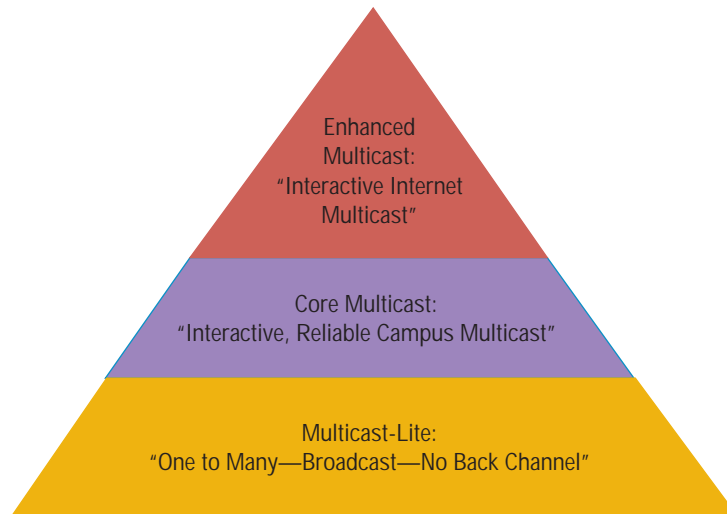
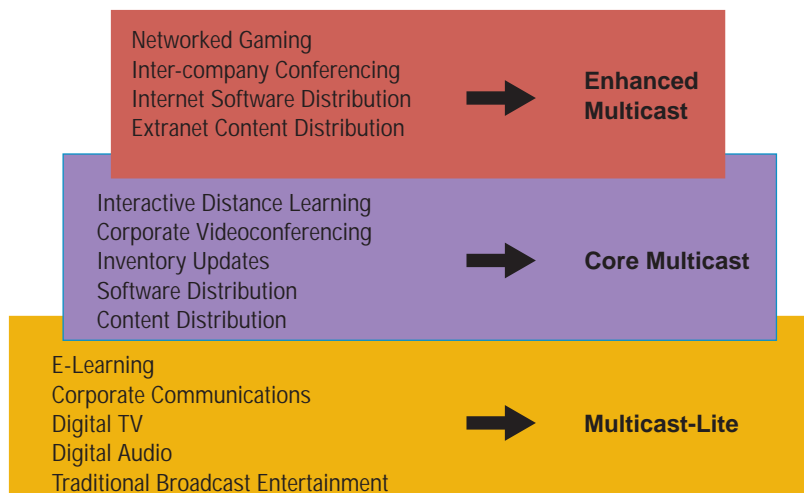


Figure 2 Cisco Delivers Multicast Solutions for New Business Opportunities





Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters
Cisco Systems Europe
11, Rue Camille Desmoulins
92782 Issy Les Moulineaux
Cedex 9
France
<http://www-europe.cisco.com>
Tel: 33 1 58 04 60 00
Fax: 33 1 58 04 61 00

Americas
Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-7660
Fax: 408 527-0883

Asia Headquarters
Nihon Cisco Systems K.K.
Fuji Building, 9th Floor
3-2-3 Marunouchi
Chiyoda-ku, Tokyo 100
Japan
<http://www.cisco.com>
Tel: 81 3 5219 6250
Fax: 81 3 5219 6001

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

Argentina • Australia • Austria • Belgium • Brazil • Canada • Chile • China • Colombia • Costa Rica • Croatia • Czech Republic • Denmark • Dubai, UAE
Finland • France • Germany • Greece • Hong Kong • 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 • Singapore
Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela

Copyright © 2000, Cisco Systems, Inc. All rights reserved. Catalyst, Cisco, Cisco IOS, Cisco Systems, the Cisco Systems logo, and EtherChannel are registered trademarks of Cisco Systems, Inc. or its affiliates in the U.S. and certain other countries. All other trademarks mentioned in this document are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any of its resellers. (9912R)
4/00 LW