DATA SHEET

# CISCO IOS IPv6 MULTICAST TECHNOLOGIES

**Companies now require the ability to maximize Network investment. IP Multicast applications enable efficient use of existing network infrastructure.**

Cisco IOS® Software is the foundation networking software that allows customers to deliver Cisco IP Network Services on a flexible infrastructure that is scalable, reliable, and secure. It provides industry-leading, standards-based technologies proven in use across the broadest and largest networks in operation today.

IP Multicast technologies enable scalable distribution of data, voice, and video streams efficiently to hundreds, thousands, even millions of users. Cisco IOS Multicast enables corporate communications, financial trading, Hoot & Holler, video conferencing, E-learning, commercial Television and Radio over IP, streaming media applications and Multicast enabled VPN services.

## MULTICAST ARCHITECTURES

Multicast deployments require three elements: the application, the network infrastructure, and client devices. Cisco IOS Multicast technologies reside in the network infrastructure within Cisco routers and switches. IP Multicast utilizes a single data stream, which is replicated by routers at branch points throughout the network. This mechanism uses bandwidth much more efficiently and greatly decreases load on content servers, reaching more users at a lower cost per user.

## BENEFITS OF IP MULTICAST

Cisco IOS Multicast technologies make it easier for enterprises and service providers to leverage their network resources for massively scalable content distribution applications. Cisco IOS Multicast enables customers to:

- Efficiently deploy and scale distributed group applications across the network
- Create a ubiquitous, enterprise-wide content distribution model
- Solve traffic congestion problems
- Allow service providers to deploy value-added services that leverage their existing infrastructure
- IPv6 brings specific multicast benefits such as scope management

**Figure 1**
IPv6 Multicast Components

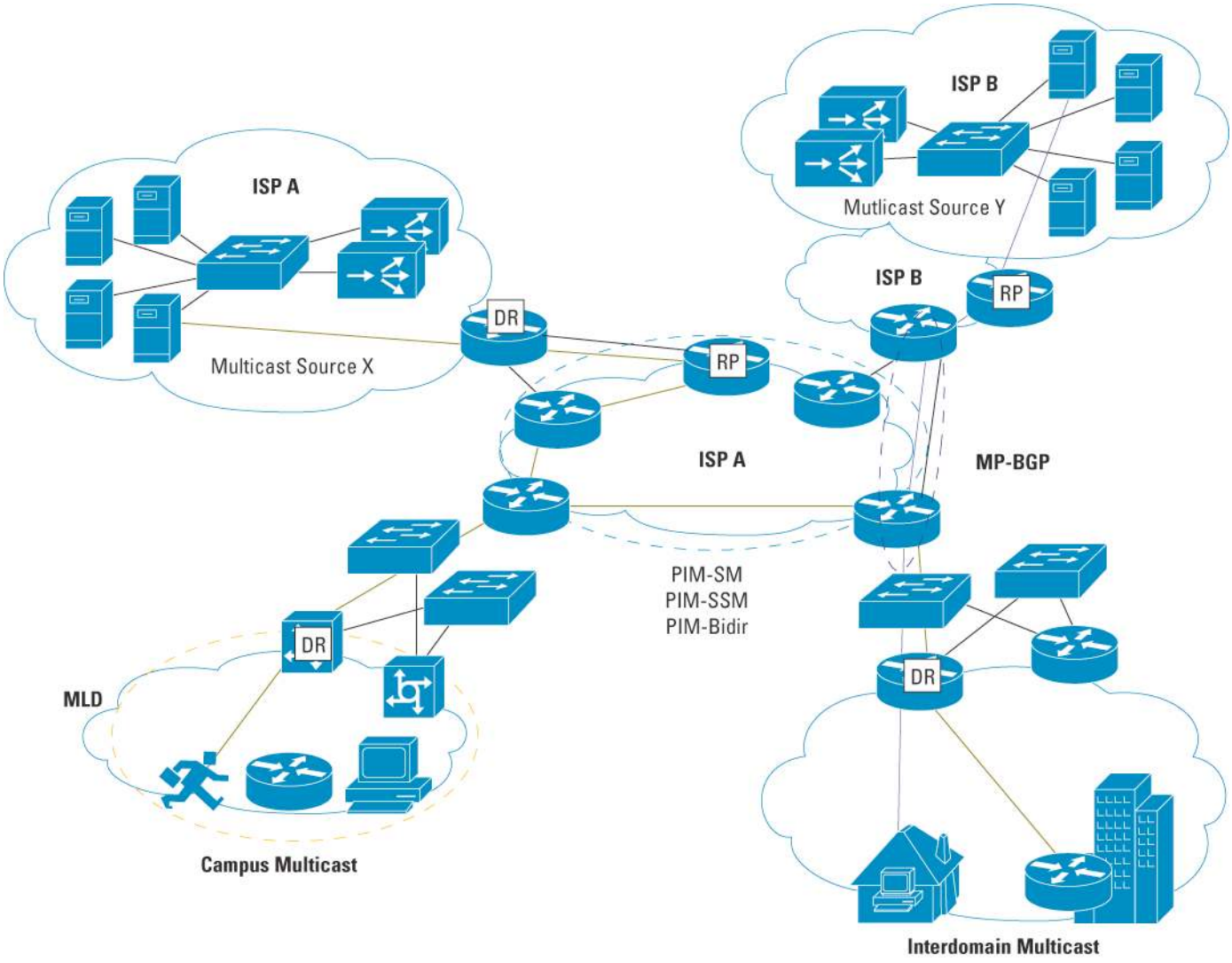

**Table 1.** Cisco IOS Multicast Features

| Feature | Description |
|---|---|
| Protocol Independent Multicast v2 (PIMv2) | Provides intradomain multicast forwarding for all underlying unicast routing protocols<br>Independent from any underlying unicast protocol such as Open Shortest Path First (OSPF) or Multiprotocol Border Gateway Protocol (MP-BGP)<br>Supports explicit join (sparse mode), flood-and-prune (dense mode), or hybrid sparse-dense modes<br>Sparse Mode: relies upon an explicit joining method before attempting to send multicast data to receivers of a multicast group |
| Multicast Listener Discovery (MLD) v1 and v2 | Protocol used by IPv6 hosts to communicate multicast group membership states to local multicast routers<br>Version 2 of MLD adds source awareness to the protocol. This allows the inclusion or exclusion of sources. MLDv2 is required for Source Specific Multicast (SSM)<br>Cisco IOS Software also supports the explicit tracking of MLDv2 receivers |
| PIM Source Specific Multicast | SSM forwarding uses only source-based forwarding trees. SSM range is defined for inter domain use, and Cisco IOS Software allows other groups to be configured using the SSM forwarding model. |
| Multiprotocol Border Gateway Protocol | Multiprotocol extensions to the BGP unicast inter-domain protocol that carry multicast specific routing information.<br>Adds capabilities to BGP to enable multicast routing policy throughout the Internet and connect multicast topologies within and between Border Gateway Protocol (BGP) autonomous systems<br>Carries IP multicast routes. MP-BGP carries multiple instances of routes, for unicast and for multicast routing<br>PIM uses routes associated with multicast routing to join Reverse Path Forwarding (RPF) decisions at the inter domain borders |
| PIM Bi-dir | A variant of the PIM, whereby data flows both up and down the same distribution tree<br>Bi-directional PIM uses only shared tree forwarding, thereby reducing state creation |
| Boot Strap Router (BSR) | BSR is a mechanism where a PIM router learns the set of group-to-RP mappings required for PIM SM |
| BSR flooding | The ability to flood BSR messages without processing them |
| Embedded Rendezvous Point | Utilizes unicast based prefix addressing to include within the group address (the Rendezvous Point address) |
| Static Rendezvous Point | Allows the manual configuration of the IPv6 PIM SM RP address |
| Routable Address Option | In IPv6 a router may have multiple addresses on a link. PIM assumes that the neighbor address and the next hop address for Joins or other messages are the same. This feature allows the PIM message to include all the addresses on the interface on which the PIM hello message is advertised |
| IPv6 multicast over IPv4 tunnels | An aid to IPv6 Multicast deployment<br>This feature allows IPv6 multicast to be forwarded through IPv4 tunnel |
| IPv6 multicast over IPv6 tunnels | An aid to IPv6 Multicast deployment<br>This feature allows IPv6 multicast to be forwarded through a non multicast supportive IPv6 infrastructure |

## ADDITIONAL INFORMATION

For more information about Cisco IOS Multicast, contact your Cisco account manager or global service manager or visit:

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

http://www.cisco.com/go/ios


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

**European Headquarters**
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

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

**Asia Pacific Headquarters**
Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799


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