



DECnet Overview

Cisco IOS software supports a variety of network protocols. The *Cisco IOS DECnet Configuration Guide* discusses the following network protocol:

- DECnet

The *Cisco IOS IP Configuration Guide* discusses the following network protocols:

- IP
- IP Routing

This overview chapter provides a high-level description of DECnet. For configuration information, see the appropriate section in this publication.

DECnet

Digital Equipment Corporation designed the DECnet stack of protocols in the 1970s as part of its Digital Network Architecture (DNA). DNA supports DECnet routing over Ethernet, Token Ring, FDDI, HDLC, PPP, Frame Relay, Switched Multimegabit Data Service (SMDS), X.25, and IEEE 802.2.

DECnet supports both connectionless and connection-oriented network layers implemented by Open System Interconnection (OSI) protocols. The most recent product release of DECnet is called Phase V, which is equivalent to International Organization for Standardization (ISO) Connectionless Network Service (CLNS). Phase V is compatible with the previous release, Phase IV. Phase IV was similar to OSI routing, but Phase V implements full OSI routing, including support for End System-to-Intermediate System (ES-IS) and Intermediate System-to-Intermediate System (IS-IS) connections. An end system (ES) is a nonrouting network node; an intermediate system (IS) refers to a router. ES-IS support allows ESs and ISs to discover each other. IS-IS provides routing between ISs only.

DECnet Phase IV Prime supports inherent MAC addresses, which allows DECnet nodes to coexist with systems running other protocols that have MAC address restrictions.

DECnet support on Cisco routers includes local-area and wide-area DECnet Phase IV routing over Ethernet, Token Ring, FDDI, and serial lines (X.25, Frame Relay, SMDS). The following are the specifics of the Cisco support:

- Cisco routers interoperate with Digital routers, and Digital hosts do not differentiate between a Cisco router and a Digital router.



- Cisco IOS software uses HDLC framing rather than Digital Data Communications Message Protocol (DDCMP) framing for point-to-point lines.
- If you construct a network using both Cisco and Digital equipment, you must ensure that each point-to-point line has the same type of equipment on both ends.
- Cisco and DECnet Phase IV routers have incompatible X.25 support.
- As with point-to-point lines, you must use equipment from a single vendor on the X.25 portion of your network.
- You can configure your Cisco router running software Release 9.1 or later to interoperate with Digital equipment, or you can configure your Cisco router to operate with other Cisco routers that use prior versions Cisco IOS software.
- Cisco IOS software gives you additional security options through access lists.
- Cisco IOS software supports the address translation gateway (ATG), which allows the router to participate in multiple, independent DECnet networks. In case of duplicate addressing, ATG establishes a user-specified address translation table for selected nodes between networks.
- Digital uses some nonroutable protocols that are not part of the DECnet stack. For example, neither Cisco nor Digital routers can route the Maintenance Operation Protocol (MOP) and local-area transport (LAT); instead, these protocols must be bridged.
- The parameters in the Cisco implementation of DECnet are a subset of the parameters you can modify in the Digital Network Control Program (NCP). Cisco uses the same names, the same range of allowable values, and the same defaults wherever possible. You must use the configuration commands to set DECnet parameters. The Cisco DECnet implementation does not set parameters by communicating with NCP.
- Cisco supports DECnet Phase IV-to-Phase V conversion:
 - Cost information is represented in native mode for the Phase IV or Phase V protocols.
 - Digital has defined algorithms for mapping a subset of the Phase V address space onto the Phase IV address space, and for converting Phase IV and Phase V packets back and forth to support Phase IV hosts in Phase V networks, and vice versa.
- The Cisco implementation and Digital implementation differ in the following ways:
 - You can add Phase V support without modifying your existing Phase IV support.
 - The Cisco implementation delays converting packets from Phase IV to Phase V; while the Digital implementation converts as soon as possible.

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