



Installing the Echo Canceler Expansion Modules on Cisco Interface Cards

This chapter provides information about the hardware-based echo canceler expansion modules that are available on the enhanced multiflex trunk interface cards on the Cisco 1760 router.

Multiflex Trunk Interface Cards

The following multiflex trunk interface cards on the Cisco 1760 support hardware-based echo cancellation features through an optional echo canceler expansion module installed on the main board of the interface card:

- 1-Port RJ-48 Multiflex Trunk T1/E1—VWIC2-1MFT-T1/E1, with voice-only support
- 2-Port RJ-48 Multiflex Trunk T1/E1—VWIC2-2MFT-T1/E1, with voice-only support



Note

For additional information about the Cisco 1- and 2-port T1/E1 multiflex trunk interface cards, refer to the [Cisco 1- and 2-port T1/E1 Multiflex Voice/WAN Interface Cards for the Cisco 1751 and 1760 Routers](#).

Echo

Echo occurs when the speech energy being generated and transmitted down the signal path is coupled into the receive path from the far end. This causes a speaker to hear the sound of his or her own voice, delayed by the total echo path delay time.

In a traditional voice network, voice can reflect back, but it usually goes unnoticed because the delay is so low. In a Voice over IP (VoIP) network, echo is more noticeable because packetization and compression contribute to delay.

Echo cancellation technology is a functional component of a voice gateway that is used to reduce the effects of echo. An echo canceler monitors a caller's speech. If that caller's speech echoes, the echo canceler generates and transmits a signal that is sent back to the caller to cancel out the echo. The amount of time that it takes the echo canceler to locate the echo and to generate its opposite signal is called *convergence time* (typically, a few seconds). During convergence, the caller hears echo, which should gradually decrease in amplitude to zero when convergence is complete.

For additional information about echo and echo cancellation, refer to [Echo Analysis for Voice over IP](#).

Echo Canceler Expansion Modules

The echo canceler expansion modules are user-installable, plug-in modules. The expansion modules provide a hardware-based echo cancellation feature that simultaneously offloads the work of the DSPs on the Signal Processing Mini-Module (SPMM) on the motherboard. By offloading this processing, hardware-based echo cancellation results in more robust echo cancellation.

The echo canceler expansion modules enable high performance hardware-based echo cancellation for up to 64 voice calls.

The following echo canceler expansion modules are available for voice-only support on the 1-port RJ-48 multiflex trunk T1/E1 (VWIC2-1MFT-T1/E1) and on the 2-port RJ-48 multiflex trunk T1/E1 (VWIC2-2MFT-T1/E1) interface cards on the Cisco 1760 router.

- 32-channel echo canceler expansion module for multiflex trunk (EC-MFT-32)
- 64-channel echo canceler expansion module for multiflex trunk (EC-MFT-64)

Installing and Configuring the Echo Canceler Expansion Modules

For information about installing the echo canceler expansion modules on the 1-port RJ-48 T1/E1 multiflex trunk and on the 2-port RJ-48 T1/E1 multiflex trunk interface cards, refer to the *Installing Echo Canceler Expansion Modules on Cisco Interface Cards*.

For detailed information about configuring 1- and 2-port multiflex trunk interface cards with echo cancellation, refer to *T1/E1 Multiflex Voice/WAN Interface Cards with Echo Cancellation Module*.

