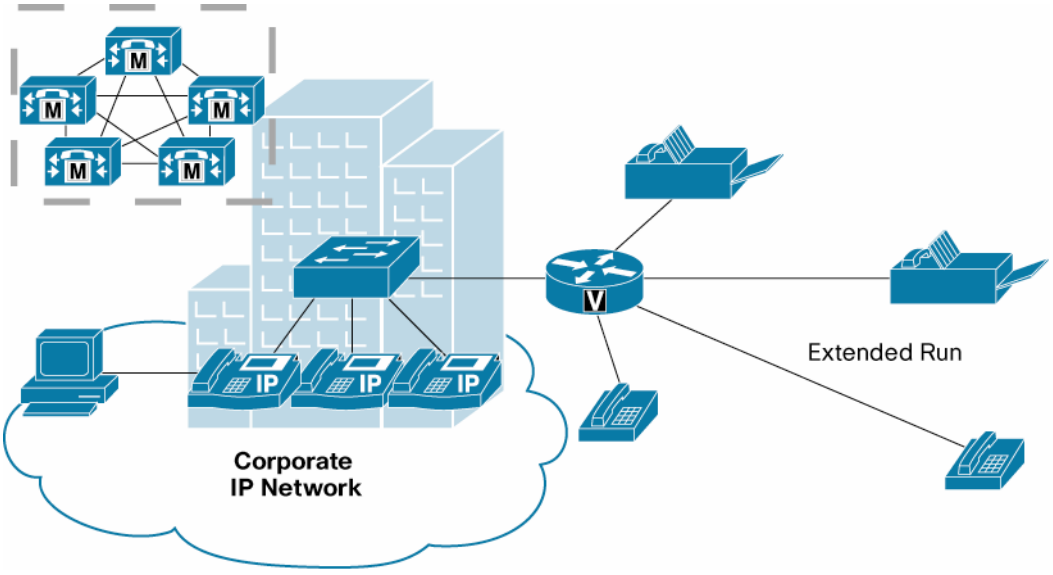
Extended Loops for Distant Phones and Fax Machines, Higher Ringing Voltage and Loop Current

Overview

Enterprises are turning to voice-over-IP (VoIP) and IP telephony solutions for voice communications in corporate and branches so that they can reap the benefits of converged networks and feature-rich IP-based telephone systems. While enterprises are making the migration to IP telephony, on many occasions legacy analog phones, modems, and fax machines continue to be important and vital components in the network.

Applications exist that require extended loops between the analog phones and the gateway. Examples include phones in multi-story buildings, on large campuses, in large railroad yards, in large industrial plants, and in remote locations such as utilities applications. Other applications require accommodations for specialty phones, including elevator phones, emergency kiosk phones, and neon-lamp phones. Figure 1 illustrates a basic architecture of the typical applications.

Figure 1. Application Example



Cisco® has added the Enhanced Foreign Exchange Station / Direct Inward Dialing (FXS/DID) Voice Interface Card (VIC3-2FXS-E/DID) to its FXS portfolio to address the need for longer loop lengths and to accommodate specialty phones. The VIC3-2FXS-E/DID offers higher ringing voltage for longer loops and increased FXS feed current for specialty phones. It is thus able to accommodate remotely located phones, fax machines, or modems up to 11,000 feet (3.4 kilometers). It is able to drive many specialty phones requiring higher loop power for proper operation.

Features

The VIC3-2FXS-E/DID module supports all the voice features that exist on VIC and VIC2 modules. In addition, the VIC3-2FXS-E/DID module also supports:

- Mixed FXS and DID ports within the same VIC module
- Higher ringing voltage—65 Vrms (no load)
- Higher loop current 35 mA—to accommodate specialty phones
- Longer loop length—for loops with 26 AWG wire, up to 11,000 feet (3,400 meters)
- Device security—to distinguish between Cisco genuine and non-genuine Cisco modules
- Surge and Transient Protection per Network Equipment Building Standards (NEBS) (GR1089) Level 3 Type 1 and 3

Technical Specifications

The VIC3-2FXS-E/DID module allows longer loops—up to 1400-Ohms loop resistance (off-hook phone / terminal equipment included), with maximum loop lengths up to 11,000 feet (3,400 meters). Loops using smaller diameter wires will have higher resistance and may reduce the allowable loop length. FXS loops longer than 11,000 feet (3,400 meters) are not supported, regardless of wire size or resistance.

Table 1 shows the Ringer Equivalent Number (REN) supported on the Enhanced FXS VIC module and other VIC3 modules.

Table 1. FXS REN: Maximum Loading

SKU	FXS only	Mixed FXS & DID ports	Max REN per VIC
VIC3-2FXS-E/DID	2 REN per FXS port	2 REN per FXS port	4 REN per VIC
VIC3-2FXS/DID	5 REN per FXS port	2 REN per FXS port	8 REN per VIC
VIC3-4FXS/DID	5 REN per FXS port	2 REN per FXS port	8 REN per VIC

The 2 REN load maximum limitation for VIC3-2FXS-E/DID ensures proper ring trip operation for short as well as extended loops.

The higher ringing voltage supported by the VIC3-2FXS-E/DID is large enough to illuminate neon lamps in many neon-lamp analog telephones during the ringing On period. Visual indication of incoming calls is advantageous in call center environments.

The higher (35 mA) FXS off-hook loop current supported by VIC3-2FXS-E/DID accommodates many specialty phones that require higher power to operate. The other VICs limit off-hook loop current to 25 mA.

Caveats

The Enhanced Voice/Fax VIC module, VIC3-2FXS-E/DID, is designated as an Off-Premise Extension Lite product offering. This means that while the module addresses a subset of the off-premise extension applications, the module is not in full compliance for off-premise usage. Care should be exercised so that the product is deployed and operated within its specifications. Appropriate external primary protection must always be applied to Tip/Ring conductors prior to their exiting a building should the loop be extended off-premise.

Cisco Platforms and Cisco IOS Releases

The VIC3-2FXS-E/DID module is supported on the following Cisco IOS® Software platforms: Cisco 2800 and 3800 Series Integrated Services Routers.

The Enhanced Voice/Fax VIC module is also supported on the NM-HD-1V, NM-HD-2V, and NM-HD-2VE, and NM-HDV2 carrier modules.

The recommended Cisco IOS Software releases for the Enhanced Voice/Fax VIC module are 12.4.15XZ, 12.4(20)T, or later.

Homoligation

The following internal and Cisco.com sites have the latest homologation updates:

Internal site: http://wwwin-tools.cisco.com/cse/prdapp/jsp/home.do?page=HOME

Cisco.com site: http://tools.cisco.com/cse/prdapp/jsp/externalsearch.do?action=externalsearch&page=EXTERNAL_SEARCH

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