

GDC OCM-1000 Software

Installation and Operation, Version 3.0



General DataComm

Copyright

©1999 General DataComm, Inc. ALL RIGHTS RESERVED.

This publication and the software it describes contain proprietary and confidential information. No part of this document may be copied, photocopied, reproduced, translated or reduced to any electronic or machine-readable format without prior written permission of General DataComm, Inc. The information in this document is subject to change without notice. General DataComm assumes no responsibility for any damages arising from the use of this document, including but not limited to, lost revenue, lost data, claims by third parties, or other damages.

If you have comments or suggestions concerning this manual, please contact:

Technical Publications Department
General DataComm, Inc.
Park Road Extension
Middlebury, Connecticut USA 06762-1299

Telephone: 1 203 758 1811

Trademarks and Patents

General DataComm, the General DataComm logo and the following are trademarks of General DataComm, Inc. in the United States and other countries: ACCULINE, ANALOOP, AUTOFRAME, BERT 901, DATACOMM SECURE-PAK, DATALOOP, DIGIDIAL, ENmacs, FASTPRO, FIRST RESPONSE, GDC, GDC APEX, GENERAL DATACOMM X-PRESS, GEN*NET, GEN*PAC, IMAGE*TMS, KILOMUX, LAN*TMS, MEGA*BRIDGE, MEGAMUX, MEGAMUX TMS, MEGANET, MEGASPLIT, MEGASWITCH, MEGAVIEW, MULTIMODEM, NETCON, NETSWITCH, NMC, QUIKSHIPPERS, SERVI-CHECK, SERVI-SNAP.

Ethernet is a trademark of the Xerox Corporation. HP OPENVIEW is a trademark of Hewlett-Packard Company. IBM PS/2 is a trademark of International Business Machines Corporation. Microsoft is a trademark of the Microsoft Corporation. NetWare is a trademark of Novell, Inc. Novell is a trademark of Novell, Inc. XENIX is a trademark of Microsoft Corporation.

All other brand or product names are trademarks or registered trademarks of their respective companies or organizations.

Revision History

This manual has been updated to GDC 036R612-V300-01 to support software revision V3.0.0.

Previous versions: V1.3, V2.0.0, V2.0.2, V2.1.0

Revision history for this version includes:

Issue Number	Release Date	Description of Changes
01	1/99	Updated compliance section (inside cover, boilerplate). Added new chapter on startup and Windows GUI. Updated all procedures to reflect new GUI. Added new content on configuring VTP channels. Deleted references to OPP channels.

Warranty

General DataComm warrants that its equipment is free from defects in materials and workmanship. The warranty period is one year from the date of shipment. GDC's sole obligation under its warranty is limited to the repair or replacement of the defective equipment provided it is returned to GDC, transportation prepaid, within a reasonable period. This warranty will not extend to equipment subjected to accident, misuse, or alterations or repair not made by GDC or authorized by GDC in writing. *The foregoing warranty is exclusive and in lieu of all other warranties, express or implied, including but not limited to, warranties of merchantability and fitness for purpose.*

Warning

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to CISPR 22, which is designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be required to correct the interference. The user is cautioned that any changes or modifications not expressly approved by General DataComm void the user's authority to operate the equipment.

This digital apparatus does not exceed Class A limits for radio noise emissions from digital apparatus described in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Safety Guidelines

- Always use the following guidelines when unsafe conditions exist or when potentially hazardous voltages are present:
- Always use caution and common sense.
- To reduce the risk of electrical shock, do not operate equipment with the cover removed.
- Repairs must be performed by qualified service personnel only.
- Never install telephone jacks in a wet location unless the jack is designed for that location.
- Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
- Use caution when installing telephone lines and never install telephone wiring during an electrical storm.

Antistatic Precautions

Electrostatic discharge (ESD) results from the buildup of static electricity and can cause computer components to fail. Electrostatic discharge occurs when a person whose body contains a static buildup touches a computer component.

The equipment may contain static-sensitive devices that are easily damaged and proper handling and grounding is essential. Use ESD precautionary measures when installing parts or cards and keep the parts and cards in antistatic packaging when not in use. If possible, use antistatic floor pads and workbench pads.

When handling components, or when setting switch options, always use an antistatic wrist strap connected to a grounded equipment frame or chassis. *If a wrist strap is not available, periodically touch an unpainted metal surface on the equipment.* Never use a conductive tool, like a screwdriver or a paper clip, to set switches.

FCC Part 68 Compliance

Connection of data communications equipment to the public telephone network is regulated by FCC Rules and Regulations. This equipment complies with Part 68 of these regulations which require all of the following.

For single or multi-line equipment that connects to the telephone network via a plug and jack, the plug and jack must comply with the FCC Part 68 rules. This device is designed to be connected to the telephone or premises wiring, using a compatible modular jack which is Part 68 compliant. See installation chapter for details.

If the unit causes harm to the telephone network, the telephone company may discontinue your service temporarily and if possible, you will be notified in advance. If advance notice is not practical, you will be notified as soon as possible and will be advised of your right to file a complaint with the FCC. The telephone company may change its communication facilities, equipment, operations and procedures

where reasonably required for operation. If so, the telephone company will notify you in writing. All repairs or modifications to the equipment must be performed by General DataComm. Any other repair or modification by a user voids the FCC registration and the warranty.

The APEX DDS1 has a DSX-1 interface. To use the public telephone network, it must be connected to a registered CSU.

To connect the APEX DDS1 to the public telephone network the customer is required to provide the following information:

FCC Registration Number: AG6USA-23156-XD-N

Telephone Company jack type: Provided by the registered CSU.

Facility Interface Codes:

T1 Interface - 04DU9-BN, 04DU9-DN, 04DU9-1KN, 04DU9-1ZN

Service Order Code:

T1 Interface - 6.0N

Industry Canada Notification

The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operation and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Notice: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

Electromagnetic Compatibility

This Class A digital apparatus complies with Canadian ICES-003.

Avis D'industrie Canada

L'étiquette d'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents concernant les exigences techniques relatives au matériel terminal. Le Ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par le four-

nisseur. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

Avertissement: L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques, ou à un électricien, selon le cas.

Avis: L'indice d'équivalence de la sonnerie (IES) assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface. La terminaison d'une interface téléphonique peut consister en une combinaison de quelques dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

La Compatibilité d'Électro-magnétique

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada..

Deutschland

Installations Anweisungen: Installieren Sie die Telefonleitungen nicht während eines Gewitters. Installieren Sie die Telefonleitungen nicht in einem feuchten Raum, außer die Dose entspricht den Vorschriften für Feuchträume. Berühren Sie unisolierte Telefonleitungen oder Einrichtungen nicht, außer diese sind vom Telefonnetz getrennt. Vorsicht bei der Installierung oder Änderung von Telefonleitungen. *Achtung:* Es gibt keine durch den Benutzer zu wartende Teile im Gerät. Wartung darf nur durch qualifiziertes Personal erfolgen.

EC Declaration of Conformity

We: General DataComm Limited
Molly Millars Lane
Wokingham, Berkshire RG41 2QF, United Kingdom

On behalf of: General DataComm Inc.
1579 Straits Turnpike
Middlebury, CT 06762-1299, U.S.A.

The products to which this declaration relates are in conformity with the following relevant harmonized standards, the reference numbers of which have been published in the Official Journal of the European Communities;

Electromagnetic Compatibility - (EMC Directive 89/336/EEC)

EN55022: 1994

Specification for limits and methods of measurement of radio interference characteristics of information technology equipment.

EN 50082-1: 1992

Generic immunity standard Part 1 Residential, Commercial, and Light Industry.

In addition:

- The affixing of the CE mark is based on compliance with directive 89/336/EEC as amended by directive 93/68/EEC.
- *EN 55022* (based on CISPR 22) - Specification for limits and methods of measurement of radio interference characteristics of information technology equipment.
- *EN 55024* - Limits and methods of measurement of the immunity to Electro-Magnetic interference for information technology equipment.

- *EN 50081-1* (based on IEC 801) - Electromagnetic compatibility generic emissions standard Part 1: Residential, Commercial and light industry.
- *EN 50082-1* - Electromagnetic compatibility generic immunity standard Part 1: Residential Commercial and light industry.

Safety

EN 60950: 1995 A1 through A3

Low Voltage Directive relating to electrical equipment designed for use within certain voltage limits.

Low Voltage Directive - (LVD 73/23/EEC)

- The affixing of the CE mark is based on compliance with directive 73/23/EEC as amended by directive 93/68/EEC.
- *EN 60950* - Safety of Information Technology Equipment including Electrical Business Equipment.
- *EN 41003* - Particular Safety Requirements for Equipment to be connected to Telecommunications Networks.

Table of Contents

Table of Contents

List of Figures

List of Tables

Preface

Scope	xv
Organization.....	xv
Document Conventions	xvi
Service Support and Training	xvii
Related Publications	xviii
Equipment Lists	xix

Chapter 1: System Description

Scope	1-1
Technical Summary	1-2
Capacity	1-2
Sequential Channels	1-2
Ground Start for DPV	1-3
Year 2000	1-3
Configuring Channels A, B, C, and D	1-3
Clocking Priority on LIMs.....	1-3
Point-to-Multipoint	1-3
Multiple Subaggregates.....	1-3
OCM (Proprietary).....	1-3
Network	1-4
Fault Tolerance	1-4
Voice Compression	1-4
DPV Channel	1-4
VTP Channel.....	1-4
Network Management.....	1-4
SpectraComm Card Support	1-4
Diversity Support	1-5
Dissimilar LIMs	1-5

Functional Overview	1-6
Summary	1-7
What's Next?	1-7
Chapter 2: Installation	
Scope	2-1
Minimum Requirements	2-2
Hardware	2-2
Software	2-2
Installing the Software	2-2
Verifying and Setting Monitor Display Resolution	2-3
Summary	2-3
What's Next?	2-3
Chapter 3: Getting Started	
Scope	3-1
Starting and Exiting OCM-1000 Software	3-2
Understanding and Using the OCM-1000 Window	3-2
Understanding and Using OCM-1000 Symbols and Objects.....	3-3
Using the Menu Bar	3-5
Using the Tool Bar and Status Bar.....	3-7
Opening/Closing Branches and Selecting Objects.....	3-8
Using Pop-up Menus.....	3-8
Using Dialog Boxes and Entering Data	3-8
Performing Setup and Administrative Tasks	3-10
Setting COM Ports and Baud Rates	3-10
Modifying the System Password.....	3-11
Setting System Parameters	3-11
Managing Configuration Files	3-12
Saving Configuration Changes.....	3-13
Creating a New Configuration	3-14
Opening a Configuration File.....	3-14
Summary	3-15
What's Next?	3-15
Chapter 4:	
Performing Network Operations	
Scope	4-1
Configuring a Network: Overview	4-2
Configuring Slots	4-3
Available and Remaining Bandwidth	4-4
Creating, Modifying, and Deleting Networks	4-4
Creating a Network	4-4
Modifying Network Properties.....	4-5
Deleting a Network	4-6

Creating, Modifying, and Deleting Nodes	4-6
Creating a Remote Node	4-6
Modifying Node Properties	4-7
Deleting a Node.....	4-8
Creating, Modifying, and Deleting LIMs	4-8
Configuring Single, Redundant, or Diverse LIMs	4-8
Configuring Dual, Non-Redundant LIMs	4-9
Creating a Single or Redundant LIM	4-9
Creating a Diverse LIM.....	4-12
Modifying LIM Properties	4-17
Deleting a LIM	4-19
Creating, Modifying, and Deleting Subaggregates	4-19
Configuring Subaggregates for Point-to-Multipoint Communications.....	4-20
Creating a Subaggregate.....	4-21
Modifying Subaggregate Properties.....	4-26
Deleting a Subaggregate.....	4-27
Creating, Modifying, and Deleting Channels.....	4-27
Configuring Data and Voice Channels.....	4-27
Creating a Channel.....	4-28
Configuring Data Channel Cards: Sync, Async, Isoc, T-Encode	4-33
Configuring G.703 Data Channels.....	4-35
Configuring Turbo Data Channels.....	4-36
Configuring Voice Channel Modules (VCMs): ADPCM, PCM, CELP, VLBRV	4-37
Configuring DPV Channels	4-40
Configuring VTP Channels.....	4-46
Configuring Voice Channel Combinations: VLBR, CELP, DPV, VTP, with Sync.....	4-48
Configuring SpectraComm Cards	4-51
Modifying Channel Properties	4-51
Deleting a Channel	4-54
Maintaining Networks.....	4-54
Setting the Active Network	4-54
Scanning Networks	4-55
Using Scan Networks.....	4-55
Using Automatic Network Scan	4-56
Downloading Software and Configurations	4-56
Using Download As Required	4-56
Using Configuration Download.....	4-57
Using Software Download.....	4-58
Verifying Software Integrity	4-59
Using the Software Revision List	4-61
Summary.....	4-61
What's Next?	4-61

Chapter 5: Status/Diagnostics and Alarms

Scope	5-1
Overview	5-2
Status/Diagnostic Information and Functions	5-2
Diagnostic Tests	5-3
Diagnosing Network Problems	5-4

Network, Node, CCM Status and Diagnostics	5-5
Assessing Network Communication Status	5-5
Viewing Network Status Information in the OCM-1000 Window	5-6
Displaying Network Alarm History	5-8
Placing Redundant CCMs in and out of Service.....	5-11
Displaying CCM Diagnostic Status Detail.....	5-11
Performing a CCM Self Test.....	5-12
LIM Status and Diagnostics.....	5-13
Viewing LIM Status Information in the OCM-1000 Window.....	5-13
Placing Redundant LIMs in and out of Service	5-14
Displaying LIM Hardware Switch Status	5-15
Displaying LIM Diagnostic Status Detail	5-17
Performing a LIM Self Test	5-18
Performing a LIM Data Path Test	5-18
Displaying ESF Statistics	5-20
Subaggregate Status and Diagnostics	5-22
Viewing Subaggregate Status Information in the OCM-1000 Window	5-22
Displaying Subaggregate Diagnostic Status Detail.....	5-23
Performing a Subaggregate Data Path Test.....	5-24
Data Channel Status and Diagnostics	5-26
Viewing Data Channel Status Information in the OCM-1000 Window	5-27
Displaying Data Channel Diagnostic Status Detail.....	5-29
Performing a Data Channel Self Test.....	5-30
Performing a Data Channel Data Path Test	5-30
Performing a Data Channel Control State Test	5-33
Voice Channel Status and Diagnostics.....	5-35
Viewing Voice Channel Status Information in the OCM-1000 Window	5-36
Displaying Voice Channel Hardware Switch Status.....	5-38
Displaying Voice Channel Diagnostic Status Detail.....	5-42
Performing a Voice Channel Self Test.....	5-43
Performing a Voice Channel Data Path Test	5-44
Performing a Voice Channel Signalling Test	5-46
Performing a Voice Channel dB Test	5-49
Performing a Voice Channel Echo Cancellers Test.....	5-52
Losing Power to an OCM During a Diagnostic Test	5-56
Summary.....	5-56

Glossary

Index

List of Figures

Figure 1-1	Typical Point-to-Point OCM Network	1-6
Figure 1-2	One OCM Controller Managing Multiple Point-to-Point OCM Networks 1-6	
Figure 1-3	One OCM Controller Managing Multiple Multipoint OCM Networks	1-7
Figure 3-1	Welcome to OCM-1000 Dialog Box	3-2
Figure 3-2	OCM-1000 Window	3-3
Figure 3-3	OCM-1000 Window Menu Bar	3-5
Figure 3-4	OCM-1000 Toolbar	3-7
Figure 3-5	COM Port Settings Dialog Box	3-10
Figure 3-6	Change OCM Password Dialog Box	3-11
Figure 3-7	System Parameters Dialog Box	3-12
Figure 3-8	Save As Dialog Box	3-13
Figure 3-9	Open Dialog Box	3-14
Figure 4-1	New Network Dialog Box	4-4
Figure 4-2	Network Properties Dialog Box	4-5
Figure 4-3	New Remote Node Dialog Box	4-6
Figure 4-4	Node Properties Dialog Box	4-7
Figure 4-5	New LIM Page	4-10
Figure 4-6	T1 LIM Settings Page	4-11
Figure 4-7	E1 LIM Settings Page	4-11
Figure 4-8	V.xx (and Subrate) LIM Settings Page	4-12
Figure 4-9	T1 LIM Settings (Network) Page	4-12
Figure 4-10	Diverse LIM Settings Dialog Box	4-13
Figure 4-11	LIM Type V.11, V.35, and Subrate Timing and Clocking Selections	4-17
Figure 4-12	LIM Properties Dialog Box (E1 LIM)	4-18
Figure 4-13	New SubAgg Page	4-21
Figure 4-14	OCM SubAgg Setup Page	4-22
Figure 4-15	Network SubAgg Setup Page	4-22
Figure 4-16	Bypass SubAgg Setup Page	4-23
Figure 4-17	Subagg Properties Dialog Box	4-26
Figure 4-18	New Channel Page	4-29
Figure 4-19	Sync Channel Setup Page	4-33
Figure 4-20	CELP (VCM) Channel Setup Page	4-37
Figure 4-21	DPV-DPV Channel Setup Page	4-40
Figure 4-22	DPV-DPV Channel Setup (Continued) Page	4-41
Figure 4-23	VTP-VTP Channel Setup Page	4-46
Figure 4-24	New SpectraComm Card Dialog Box	4-51
Figure 4-25	Scanning All Networks Dialog Box	4-55
Figure 4-26	Software Integrity Status Dialog Box	4-59
Figure 4-27	Software Revision List Dialog Box	4-61
Figure 5-1	Network Status Display	5-6

Figure 5-2	Network Alarms Dialog Box	5-8
Figure 5-3	CCM Diagnostics Dialog Box	5-12
Figure 5-4	LIM HW Settings Tab	5-15
Figure 5-5	LIM Diagnostics Tab	5-17
Figure 5-6	LIM Data Path Test Dialog Box	5-19
Figure 5-7	ESF Statistics Dialog Box	5-20
Figure 5-8	Subaggregate Diagnostics Tab	5-24
Figure 5-9	Subaggregate Data Path Test Dialog Box	5-25
Figure 5-10	Data Channel Diagnostics Tab	5-29
Figure 5-11	Data Channel Data Path Test Dialog Box	5-31
Figure 5-12	Control State Test Dialog Box	5-34
Figure 5-13	VCM (ADPCM) HW Settings Tabs	5-39
Figure 5-14	DPV HW Settings Tabs	5-41
Figure 5-15	VTP HW Settings Tabs	5-42
Figure 5-16	Voice Channel Diagnostics Tab	5-43
Figure 5-17	Voice Channel Data Path Test Dialog Box	5-44
Figure 5-18	Signalling Test Dialog Box	5-47
Figure 5-19	dB Test Dialog Box	5-49
Figure 5-20	Echo Cancellers Test Dialog Box	5-52

List of Tables

Table 3-1	OCM-1000 Symbols and Object Attributes	3-3
Table 3-2	OCM-1000 Menus and Commands	3-5
Table 3-3	Toolbar Commands	3-7
Table 3-4	Dialog Box Operations	3-9
Table 4-1	Network Configuration Overview	4-2
Table 4-2	Slot Configuration Factors	4-3
Table 4-3	Settings for T1D1SX1 and CSU/T1 LIM Types	4-14
Table 4-4	Settings for E1 LIM Types	4-15
Table 4-5	Settings for V.11, V.35, and Subrate LIMs	4-16
Table 4-6	Diverse LIM Settings (All Types)	4-16
Table 4-7	Settings for Subaggregates	4-24
Table 4-8	Subaggregate Link Rates for V.11 and V.35 LIMs	4-25
Table 4-9	Subaggregate Link Rates for Subrate LIMs	4-25
Table 4-10	Data Conditioning Settings for Network or Bypass Subaggregate	4-25
Table 4-11	Signal Conditioning Settings for Network or Bypass Subaggregate	4-25
Table 4-12	New Channel Wizard Setup Pages	4-30
Table 4-13	Settings for New Channels (All Types)	4-31
Table 4-14	Selectable Data Rates for Data Channels	4-32
Table 4-15	Selectable Data Rates for Voice Channels	4-32
Table 4-16	Settings for Data Channels	4-34
Table 4-17	XMT EIA Controls Selections	4-35
Table 4-18	G.703 Data Channel Technical Characteristics	4-35
Table 4-19	Turbo Data Channel Technical Characteristics	4-36
Table 4-20	Settings for Voice Channel Modules	4-38
Table 4-21	Remote Signaling Type Settings for Voice Channel Modules	4-38
Table 4-22	Signal Conditioning Settings for Voice Channel Modules	4-39
Table 4-23	Receive VF Delta dB Settings for Voice Channel Modules	4-40
Table 4-24	Receive Signaling Settings for Voice Channel	4-40
Table 4-25	Settings for DPV Channels	4-42
Table 4-26	Remote Signaling Type Settings for DPV Channels	4-43
Table 4-27	Signal Conditioning Settings for DPV Channels	4-44
Table 4-28	XMT and Receive VF Delta dB Settings for DPV Channels	4-45
Table 4-29	Receive Signaling Settings for DPV Channel	4-45
Table 4-30	Country Codes for DPV Channels	4-45
Table 4-31	Settings for VTP Channels	4-47
Table 4-32	Signal Conditioning Settings for VTP Channels	4-47
Table 4-33	Signaling Type Settings for DPV-VTP Channels	4-48
Table 4-34	Signal Conditioning for DPV-VTP Channels on E1 LIMs	4-49
Table 4-35	Signal Conditioning for DPV-VTP Channels on T1 LIMs	4-49
Table 4-36	SpectraComm Card Channel Settings	4-51
Table 4-37	Channel Property Pages	4-52

Table 4-38	Download As Required Tasks	4-57
Table 4-39	Configuration Downloading Progression Messages	4-58
Table 4-40	Configuration Download Failure Messages	4-58
Table 4-41	Software Download Progression Messages	4-59
Table 4-42	Software Download Failure Messages	4-59
Table 4-43	Software Integrity Status Information	4-60
Table 5-1	OCM-1000 Diagnostic Tests	5-4
Table 5-2	Network Communication Status and Diagnostics	5-5
Table 5-3	Active Network Status Indicators	5-6
Table 5-4	Network Alarm History Information	5-9
Table 5-5	CCM Alarms	5-10
Table 5-6	LIM Alarms	5-10
Table 5-7	OCM Data/Voice Channel Module Alarms	5-11
Table 5-8	Self Test Status Messages	5-13
Table 5-9	LIM Status and Diagnostics Indicators	5-14
Table 5-10	LIM Hardware Switch Settings	5-16
Table 5-11	LIM Data Path Test Settings	5-20
Table 5-12	ESF Statistics	5-21
Table 5-13	Subaggregate Status and Diagnostics Indicators	5-23
Table 5-14	Subaggregate Data Path Test Settings	5-26
Table 5-15	Data Channel Status and Diagnostics Indicators	5-27
Table 5-16	Data Channel Data Path Test Settings	5-32
Table 5-17	Interactions for Data Channel Data Path Test Settings	5-33
Table 5-18	Control State Test Settings and Status Indicators	5-34
Table 5-19	Voice Channel Status and Diagnostics Indicators	5-36
Table 5-20	VCM Hardware Switch Settings	5-39
Table 5-21	DPV Hardware Switch Settings	5-41
Table 5-22	VTP Hardware Switch Settings	5-42
Table 5-23	Voice Channel Data Path Test Settings	5-45
Table 5-24	Interactions for Voice Channel Data Path Test Settings	5-46
Table 5-26	2-State Signalling State Test Options	5-48
Table 5-25	Signalling Test Settings and Status Indicators	5-48
Table 5-27	4-State Signalling Test Options	5-49
Table 5-28	dB Test Settings and Status Indicators for VCM Cards	5-50
Table 5-29	dB Test Settings and Status Indicators for DPV/VTP Cards	5-51
Table 5-30	Echo Cancellers Test Settings, Status Indicators for VCM Cards	5-54
Table 5-31	Echo Cancellers Test Settings, Status Indicators for DPV/VTP Cards	5-55

Preface

Scope

This manual describes how to install and operate OCM-1000 software. OCM-1000 is designed and produced by General DataComm, Inc. (GDC) of Middlebury, Connecticut 06762-1299.

The information contained in this manual has been carefully checked and is believed to be entirely reliable. However, as General DataComm improves the reliability, function, and design of their products, the possibility exists that information may not be current.

If you require updated, or any other General DataComm product information, contact the address or number below or visit our web site at: <http://www.gdc.com>

General DataComm, Inc.
Park Road Extension
Middlebury, Connecticut 06762-1299 USA

Telephone: 1 203 758 1811
Toll Free: 1 800 794 8246

Organization

This manual is organized as follows:

- *Chapter 1 - System Description* provides an overview of OCM-1000 software features and capabilities.
- *Chapter 2 - Installation* describes how to install OCM-1000 software on an IBM or on an IBM-compatible computer.
- *Chapter 3 - Getting Started* describes how to start and quit OCM-1000 software, use the OCM-1000 window, and perform setup and administrative tasks.
- *Chapter 4 - Performing Network Operations* describes how to use the OCM-1000 software to configure and maintain networks.
- *Chapter 5 - Status/Diagnostics and Alarms* describes how to monitor equipment, perform diagnostic tests, and handle alarms.
- *Glossary*
- *Index*

Document Conventions

Level 1 paragraph headers introduce major topics.

Level 2 paragraph headers introduce subsections of major topics.

Level 3 paragraph headers introduce subsections of secondary topics.

This typewriter font indicates output that is displayed on the screen.

This bold text font is used when referring to screen names and objects such as menus, commands, buttons, and text boxes.

This bold typewriter font indicates specific input that you type using the keyboard.

Note Notes present special instructions, helpful hints, or general rules.

The following mouse conventions are used in this manual:

- **Mouse Buttons.** If you are using a multiple-button mouse, “left mouse button” refers to the primary mouse button and “right mouse button” refers to the secondary mouse button (unless you have configured your mouse differently).
- **Point.** “Point” means to position the tip of the mouse pointer over a screen object.
- **Click.** “Click” means to press and immediately release the left mouse button.
- **Double-Click.** “Double-click” means to click the left mouse button twice rapidly.
- **Right-Click.** “Right-Click” means to press and immediately release the right mouse button.
- **Drag.** “Drag” means to hold down the left mouse button as you move the mouse.

Keyboard conventions used in this manual include:

- **Pressed Keys.** Keys that you press are highlighted in bold uppercase type. Example: press **TAB** to advance to the next field.
- **Key Sequences.** Keys that you press in sequence are separated by commas. For example, press **N, W** means press (and release) the “N” key, then press (and release) the “W” key.
- **Key Combinations.** Key combinations are linked by a “plus” (+) sign and refer to two keys that you press at the same time. Example: press **ALT+F** means hold down the “ALT” key while pressing the “F” key.

Dialog box conventions used in this manual include:

- **Wizards.** Wizards are special dialog boxes that take you through a series of steps to create new objects such LIMS, subaggregates, and channels.
- **Type.** “Type” means to use the keyboard to fill in a text box.
- **Select.** “Select” means to highlight text or a list item or to mark a check box. You select elements either by clicking or dragging the mouse or by using keyboard equivalents.

While primarily a mouse-oriented user environment, the OCM-1000 software also supports keyboard interactions. The procedures and instructions in this manual emphasize mouse interaction. Keyboard alternatives, as well as other mouse alternatives, appear in parentheses. Example: click **OK** (or press **ENTER**) to save your changes.

Service Support and Training

VITAL Network Services, a General DataComm company, is committed to providing the service support and training needed to install, manage, and maintain your GDC equipment.

GDC's VITAL Network Services provides hands-on training courses through **VITAL Network Services Global Technology Training Services**. Courses range from basic data communications, modems and multiplexers, to complex network and ATM systems. Training courses are available at our centers in the US, UK, France, Singapore and Mexico, as well as at a customer's site.

For more information regarding GDC's VITAL Network Services' service programs, training courses, or for assistance with your support requirements, contact GDC's VITAL Network Services at the address or phone number listed below, or visit our website at:

<http://www.vitalnetsvc.com>

VITAL Network Services World Headquarters

6 Rubber Avenue
Naugatuck, Connecticut 06770 USA

North America:	1 800 243 1030
	1 888 248 4825
	1 203 729 2461
Training Information:	1 203 729 0271
French Speaking Canada:	1 800 361 2552
North America Fax:	1 203 723 5012
	1 203 729 7611

VITAL Network Services Regional Sales and Service Offices:

Europe, Middle East, Africa

VITAL Network Services
Molly Millars Close
Molly Millars Lane
Wokingham, Berkshire RG41 2QF UK

Telephone:	+44 1189 657200
Training:	+44 1189 657240
Fax:	+44 1189 657279

Central America, Latin America

VITAL Network Services
Periferico Sur 4225, Desp. 306
C.P. 14210, Mexico D.F., Mexico

Telephone:	+52 5 645 2238
Training:	+52 5 645 2238
Fax:	+52 5 645 5976

Asia Pacific

VITAL Network Services
501 Orchard Road 05-05
Wheelock Place, Singapore 238880

Telephone:	+65 735 2123
Training:	+65 735 2123
Fax:	+65 735 6889

International Calling Code (+)

When calling from outside the country of origin, use the appropriate International Calling Code where the + symbol is shown.

Related Publications

The following documents may help you when you use OCM-1000 software:

- *Office Communications Manager Installation and Operation Manual*, GDC 036R340-000
- *IMS User Guide*, GDC S-078R001-nnn

GDC publication numbers (e.g., GDC 036R303-000) and the associated issue number (Issue 01) are used to track and to order technical manuals.

The part number format is the following: GDC NNNRnnn-000 or GDC NNRnnn-Vnnn, where:

- NNN - Identifies the product family (e.g. TMS).
- R - Denotes a technical publication.
- nnn - A number assigned by Technical Publications.
- 000 - Identifies a hardware product and does not change.
- Vnnn - The software version associated with a product may be updated periodically.

The Issue number is the most current issue of the document.

Other specialized publications such as Release Notes or Addenda may be available depending on the product. When ordering documentation, request the most current revision and issue available.

Equipment Lists

OCM-1000 Point-to-Point

036M488-00X	OCM-1000 Enclosure with CCM
036M483-00X	OCM-1210 Shelf with CCM
036M491-00X	OCM-1510 Split Shelf

Note X denotes power supply variations.

OCM*TMS 1000/2000 LIM Cards

036M410-001	T1
036M410-002	E1
036M410-003	CSU-T1
036M411-001	T1 Network LIM
036M411-002	E1 Network LIM
036M411-003	CSU-TI Network LIM
036P436-002	V.35 LIM
036P436-001	V.11 LIM
036P437-001	Subrate LIM (RS-232/V.28)

Data Channel Cards

036P410-001	High Speed Data Module (RS-232)
036P410-002	High Speed Data Module (V.35)
036P410-003	High Speed Data Module (RS-422)
036P410-004	High Speed Data Module (RS-423)
036P410-005	High Speed Data Module (X.21)
036P413-001	Dual Data Module (RS-232)
036P413-003	Dual Data Module (RS-232 with RTS Delay)
036P416-001	OCM G.703 Data Channel

Data Rate Upgrade Kits for OCM G.703:

036K288-001	128 K
036K289-001	192 K
036K290-001	256 K
GS936P417-001	Turbo Data Channel - 256 Module
GS936P417-002	Turbo Data Channel - 512 Module

Alarm Card

048P067-001	Alarm Card
-------------	------------

Voice Cards

036M420-001	2-wire FXS ADPCM with Echo Cancellation
036M420-002	2-wire FXO ADPCM with Echo Cancellation
036M420-003	2-wire/4-wire E&M ADPCM with Echo Cancellation
036M420-004	2-wire FXS ADPCM
036M420-005	2-wire FXO ADPCM
036M420-006	2-wire/4-wire E&M ADPCM
036M420-007	2-wire FXO VLBRV with FAX
036M420-008	2-wire FXS VLBRV with FAX
036M420-009	2-wire/4-wire E&M VLBRV with FAX
036M420-010	2-wire FXO VLBRV
036M420-011	2-wire FXS VLBRV
036M420-012	2-wire/4-wire E&M VLBRV
036M420-013	2-wire FXS CELP with FAX
036M420-014	2-wire FXO CELP with FAX
036M420-015	2-wire/4-wire E&M CELP with FAX
036M420-016	2-wire FXS CELP
036M420-017	2-wire FXO CELP
036M420-018	2-wire/4-wire E&M CELP
036M420-023	2-wire FXS CELP 9.6 with FAX
036M420-024	2-wire FXO CELP 9.6 with FAX
036M420-025	2-wire/4-wire E&M CELP 9.6 with FAX
036M420-026	2-wire FXS CELP 9.6
036M420-027	2-wire FXO CELP 9.6
036M420-028	2-wire/4-wire E&M CELP 9.6
036P480-001	Voice Transcoder Platform (VTP)

Dual Private Voice Modules

036P460-001	Dual Private Voice 2W FXS
036P460-002	Dual Private Voice 2W FXS/FAX
036P461-001	Dual Private Voice 2W E&M
036P461-002	Dual Private Voice 2W E&M/FAX
036P462-001	Dual Private Voice 2W FXO
036P462-002	Dual Private Voice 2W FXO/FAX
036P463-001	Dual Private Voice 2W FXO/FAX Ground Start

Common Control Modules

036M040-005	CCM-5
036M040-007	CCM-7
036P404-001	CCM-10

Chapter 1: System Description

Scope

This chapter describes the global functions and capabilities of the OCM-1000 time-division multiplexer. Specifically, this chapter emphasizes the software that supports the OCM-1000 and covers the following topics:

Technical Summary	1-2
Functional Overview	1-6

Note *This manual is for technical personnel with training and/or experience installing and operating network or communications products and who have a working knowledge of the Microsoft Windows 98/NT operating system.*

Technical Summary

This technical summary section, provides information about the following:

- system capacity
- point-to-multipoint communications
- sequential channels
- network names on Network Scan Menu
- ground start (DPV)
- year 2000
- configuring channels A and B
- clocking priority
- multiple subaggregates
- fault tolerance
- voice compression
- voice comparison
- DPV Channel
- VTP Channel
- network management
- SpectraComm card support
- diversity support
- dissimilar LIMs

Capacity

OCM-1000 can integrate up to 120 channels of data, voice, fax, or local area network (LAN) traffic via a high-speed digital circuit. High-speed digital circuits can be the following:

- analog (9.6 Kbps - 28.8 Kbps, 56 or 64 Kbps, N x 56/64 Kbps)
- fractional T1/E1 (N x 56/64 Kbps)
- full T1 and E1 links

Data channel rates range from 300 bps to 1.984 Mbps. Also, you can use OCM over satellite links at aggregate data rates of 9.6 Kbps to 2.048 Mbps.

Sequential Channels

Sequential channels allow you to configure channels to terminate in different slots at either end (2b to 5a, 5b to 7b, etc.). The channels cannot, however, be crossed over within the same sub-aggregate (2a to 3a and 3a to 2a are not permitted). Channels that are over different proprietary sub-aggregates can be crossed over. Refer to the slot field in the channel configuration section of this manual for information on how to configure sequential channels.

In previous releases channels were always symmetrical (2a to 2a, 5b to 5b, etc.).

Ground Start for DPV

The DPV cards can be selected for Ground start or with Loop start. Ground start only applies to FXS to FXO applications; no other combinations are allowed. Ground start operation requires the following software and hardware:

- DPV software version 220C or later.
- FXO DPV card must be hardware revision 2 or higher.

Year 2000

The OCM-1000 is now fully year 2000 compliant.

Configuring Channels A, B, C, and D

When you select an undefined slot that contains a dual channel card (dual data or DPV), or a four-channel VTP card, from the slot list, it defaults to the “A” side. You can, however, select the source node slot field and select the “B” slot to configure without configuring the “A” side.

In previous versions the user was required to configure the “A” side of a dual channel card in order to configure the “B” side of the card.

Clocking Priority on LIMs

LIM configuration dialog boxes allow you to set the clocking priority of each LIM to either a HIGH or LOW level. This is useful when there are two LIMs configured in the system. Both can be selected for clocking and the LIM with the higher priority, provided it is in sync, will be the one selected for clocking.

Point-to-Multipoint

You can configure OCM-1000 in a point-to-multipoint application. In a point-to-multipoint application, the local node communicates directly with the PC and can have two configured LIMs. Each LIM is connected to a remote node (Remote 1 and Remote 2). Although you can configure channels from the local node to either remote (depending on the subaggregate path), you are unable to configure channels between the remotes.

Note Another application is to connect two LIMs between two nodes.

Multiple Subaggregates

OCM (Proprietary)

OCM-1000 can have up to two proprietary subaggregates (subaggs) across one LIM (E1 and T1/T1CSU LIMs) or one on each of two LIMs. Only one subagg can be configured over each V.11/V.35/subrate LIM.

Note When a LIM is configured for diversity, you can configure only one proprietary subagg.

Network

Network subaggs can be configured over E1 and T1/T1CSU LIMs. You can configure each subagg from 1 to 24 (T1) or 31 (E1) DS0s (each remote node must have an OCM subagg configured to it for supervisory communications).

Fault Tolerance

OCM-1000 has a fault-tolerant design which lets you make failure points redundant. Failure points can be equipment such as power supplies, Common Control Modules (CCMs), or Line Interface Modules (LIMs). Also, OCM-1000 software supports LIM diversity. If a link fails, OCM switches the traffic on the downed link to a second link.

Voice Compression

OCM-1000 has three voice compression algorithms. For toll quality voice, Adaptive Differential Pulse Code Modulation (ADPCM) is available at data rates of 32, 24, and 16 Kbps, and Pulse Code Modulation (PCM) is available at 64 Kbps. Codebook Excited Linear Prediction (CELP) is available at data rates of 9.6, 6.4, and 4.8 Kbps for high quality or high efficiency applications and can transmit Group III FAX at 6.4 and 9.6 Kbps. OCM Dual Private Voice (DPV) cards convert incoming voice signals into compressed speech using CS-ACELP (Conjugate-Structure Algebraic Code Excited Linear Prediction) and can also transmit Group III FAX at 2.4, 4.8, 7.2 (Down Speed only), and 9.6 Kbps.

DPV Channel

The DPV (Dual Private Voice Module) can be configured at rates of 8 and 9.6 K. The DPV is available as an FXS, FXO, or E&M in either 2-wire or 4-wire.

VTP Channel

The VTP (Voice Transcoder Platform Module) will compress incoming signals using Conjugate-Structure Algebraic Code Excited Linear Prediction (CS-ACELP) and can be configured at rates of 8 and 9.6 K.

Network Management

OCM-1000 has sophisticated user-friendly network management software which can run on almost any IBM-compatible PC. From the PC, you can monitor and control as many as 31 OCM networks. The software lets you configure the system, retrieve alarms, and perform diagnostics.

SpectraComm Card Support

Although OCM-1000 can use SpectraComm cards, OCM-1000 software can not manage these cards. Supported, unmanaged SpectraComm cards include the following:

- 500A
- DSU
- V.F. 28.8 modem
- FastRoute Ethernet Bridge

- Alarm Card

Note Each card has a manual. For more information, contact your local GDC representative.

Diversity Support

Diversity is being able to automatically switch data from one communications link to another when the first link fails. Although both links operate at the same data rate and connect the same nodes, only one link transfers data at a time.

Diversity was designed with digitally switched services in mind. In these services, the secondary link is connected to the secondary LIM. The secondary LIM and its link are activated automatically when the primary link fails in one or both directions. The link is activated by supplying a signal to the digital switching device to initiate a digital dial backup for the secondary link. This switching signal is asserted as the OCM switches all circuits from the primary to secondary LIM (even if the secondary link is down and stays down). When the primary link recovers, the signal that terminates the dial backup is unasserted, and switches all circuits to the primary LIM.

If a secondary LIM is missing or defective, then the primary LIM remains active even if the primary link is down. (A 'defective' LIM is one that the CCM has determined is not operational, or one that has failed a self-test.) In this case the state of the switching signal is indeterminate. If the primary LIM is missing or defective, the secondary LIM is activated. If both LIMs are missing or defective, diversity switching ceases.

The switching signal is driven by the secondary LIM. V.11 LIMs use the "C" control signal, while V.35 LIMs use RTS. Currently, the DSX1 LIM interface does not supply the digital dial backup signal. Although DSX1 LIMs cannot initiate a dial backup, they can be configured for diversity and perform diversity switching in the same way.

Dissimilar LIMs

The OCM-1000 can link the Local to Remotes nodes using the same type of LIM at both ends, or using dissimilar LIM types. Sub-aggregate links can be configured between any combination of E1, T1, V.35 or V.11 LIMs. For example, an E1 LIM in the Local node can be configured as a sub-aggregate link to a V.35 LIM in Remote 1.

Functional Overview

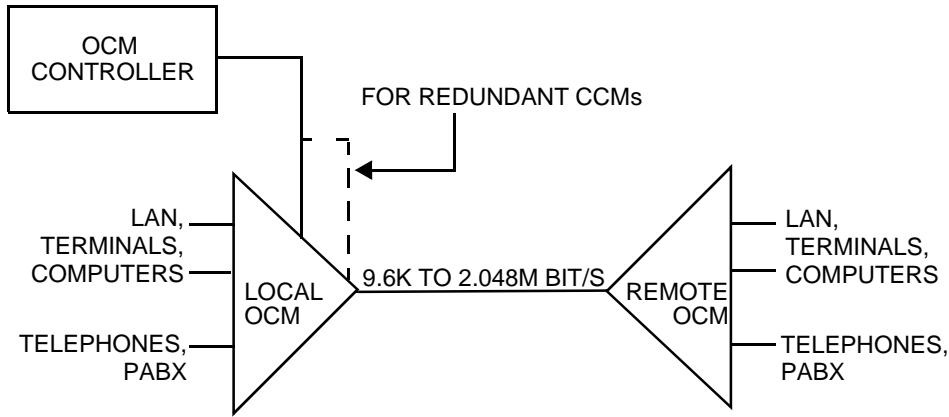


Figure 1-1 Typical Point-to-Point OCM Network

OCM-1000 software runs on an IBM-compatible 486/25MHz (or higher) computer. It controls a point-to-point network consisting of local and remote GDC OCMs that use one or two aggregate links, depending on whether diversity and/or redundancy operation is disabled or enabled (see *Figure 1-1*). By using a Multiple Access Unit (MAU) or “wire-OR’ed” bus cabling, OCM-1000 software can control more than one point-to-point OCM network (see *Figure 1-2*).

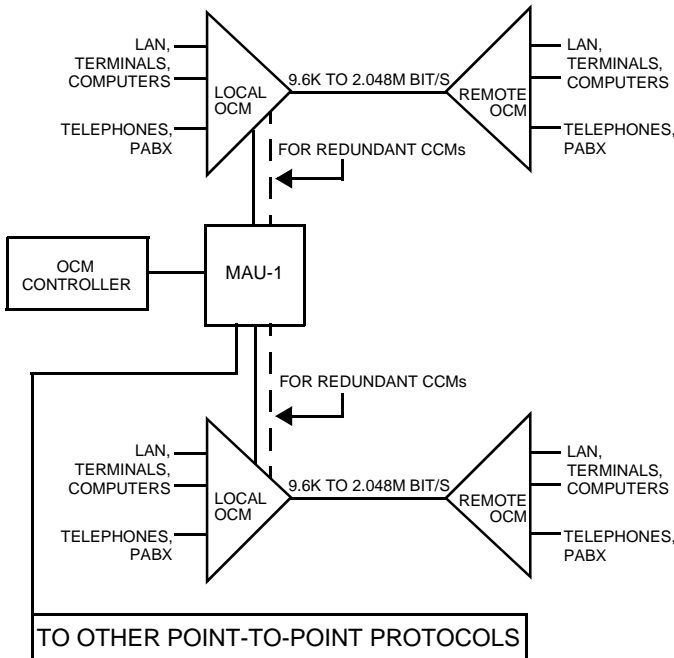


Figure 1-2 One OCM Controller Managing Multiple Point-to-Point OCM Networks

OCM-1000 also handles up to two remote OCM nodes from each local node in a multipoint configuration (*Figure 1-3*).

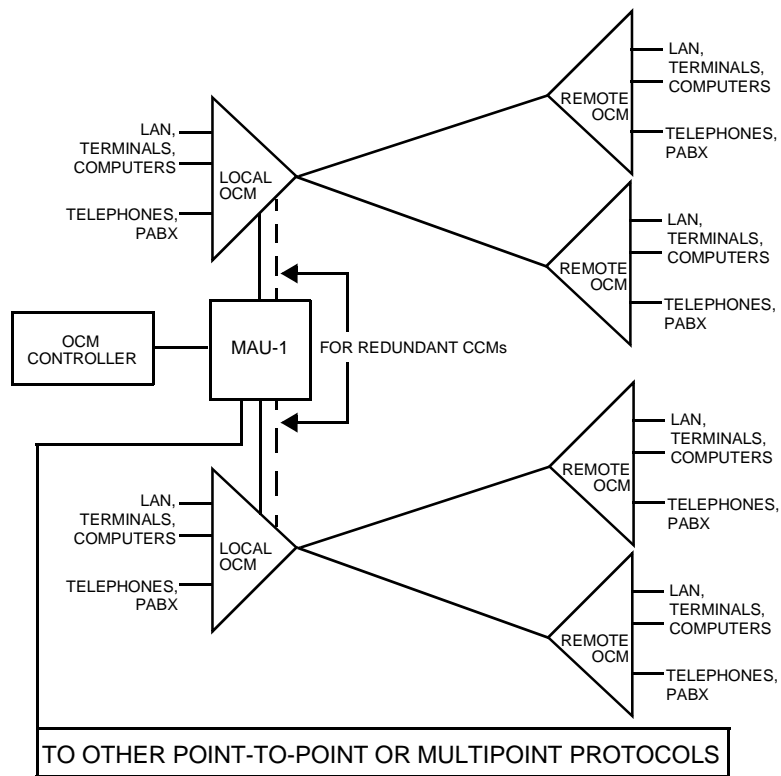


Figure 1-3 One OCM Controller Managing Multiple Multipoint OCM Networks

The primary functions of the software are the following:

- create/delete networks and network configurations
- change network configurations
- download network configurations and the software to the network
- examine alarms generated in the network
- maintain controller security
- monitor the state of a network
- select the desired network to be controlled
- set controller communications parameters
- test the network

Summary

This chapter provided an overview of OCM-1000 software features and capabilities.

What's Next?

The next chapter describes how to install OCM-1000 software on a PC-based Windows platform.

Chapter 2: Installation

Scope

This chapter describes how to install OCM-1000 software on PC-based Windows platform. Specifically, this chapter covers the following topics:

Minimum Requirements	2-2
Installing the Software.....	2-2
Verifying and Setting Monitor Display Resolution.....	2-3

Minimum Requirements

The following are the minimum hardware and software requirements for installing OCM-1000.

Hardware

- Pentium 200 MHz computer, 32 Mbyte RAM
- VGA color monitor
- one CD-ROM drive
- hard disk with 8 Mbyte of free space
- battery-backed clock
- one serial COM port (COM port 1 or 2)

Software

- Windows 98 or Windows NT 4.0 (or higher)

Installing the Software

To install the OCM-1000 software:

1. Insert the CD containing the OCM-1000 software into the appropriate drive.
2. If necessary, on the Windows taskbar, click **Start**, then click **Run**.
3. In the **Open** box, type the letter of the drive containing your product media followed by a colon (:), a backslash (\), and the word **setup**. For example if your CD is in drive d, you would enter:

d:\setup

Alternatively, you can click **Browse**, navigate to the appropriate drive, and select **setup.exe**.

4. Click **OK** to start the OCM-1000 software setup wizard.
To exit the setup wizard at any time, without installing the OCM-1000 software, click **Cancel** and confirm as prompted.
5. On the **Welcome** screen, click **Next** until the **Choose Destination Location** screen appears.

The default installation procedure places the OCM-1000 software on disk drive c: in the following directory:

`c:\Program Files\General DataCom Inc\OCM-1000`

If no c:\...\\General DataCom Inc\OCM-1000 path exists on drive c:, the installation procedure creates the path.

6. If the default path is acceptable, skip to step 7. Otherwise, click **Browse** to open the **Choose Folder** dialog box select or type the path where you wish to install the OCM-1000 software, and click **OK**.
7. Click **Next** to advance to the **Select Program Folder** screen.
The default installation procedure places the OCM-1000 software program icons (shortcuts) in its own OCM-1000 program folder in the Windows Start Menu directory.
8. If the default program folder is acceptable, skip to step 9. Otherwise, type a new folder name or select a folder from the **Existing Folders** list.
9. Click **Next** to start the installation.
When the installation is successfully completed, the **Setup Complete** screen appears.
10. Click **Finish** to exit the setup wizard.

Before using the software see the *Office Communications Manager Installation and Operation Manual*, GDC 036R340-000, which describes issues to be addressed when installing the hardware.

Verifying and Setting Monitor Display Resolution

To optimize the display of dialog boxes and other OCM-1000 screen elements, monitor display resolution should be at least 800 x 600 pixels and font size should not be set to “large”.

To check and change your monitor display resolution:

1. On the Windows taskbar, click **Start**, point to **Settings**, then click **Control Panel**.
2. In the **Control Panel** window, double-click the **Display** icon to open the **Display Properties** dialog box.
3. Click the **Settings** tab to display it.
4. Under **Desktop Area**, verify the current display resolution setting shown under the slider.
5. If the resolution is less than 800 x 600, drag the slider to the right until the resolution increases to at least 800 x 600.
6. Under **Font Size**, verify the current font size is set to Small Fonts. If not, select Small Fonts from the Font Size pull-down list.
7. Click **OK** to save the settings and close the dialog box.
8. Follow any additional on-screen instructions to implement the new settings.

Summary

This chapter described how to install OCM-1000 software on a PC-based Windows platform.

What's Next?

The next chapter describes how to operate OCM-1000 software and how to configure a network.

Chapter 3: Getting Started

Scope

This chapter describes how to start and quit OCM-1000 software, use the OCM-1000 window, perform setup and administrative tasks, and work with OCM configuration files. Specifically, this chapter covers the following topics:

Starting and Exiting OCM-1000 Software	3-2
Understanding and Using the OCM-1000 Window	3-2
Performing Setup and Administrative Tasks	3-10
Managing Configuration Files	3-12

Starting and Exiting OCM-1000 Software

To start and log into the OCM-1000 software:

1. On the Windows taskbar, click **Start**, point to **Programs**, then click **OCM-1000**.

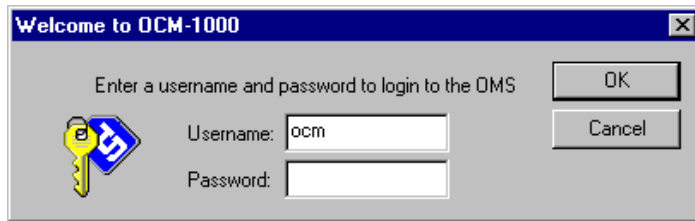


Figure 3-1 Welcome to OCM-1000 Dialog Box

2. In the **Welcome to OCM-1000** dialog box, type your Password, then click **OK** (or press **ENTER**).

When the OCM-1000 software is first installed, type **ocm** in the **Password** box to log in (Password entry must be uppercase).

Note To modify password after login, see [“Modifying the System Password” on page 3-11](#).

When login is complete, the OCM-1000 window opens.

To exit and log off the OCM-1000 software:

- Click **Exit** on the **File** menu (or press either **ALT+F4** or **ALT+F, X**).

Understanding and Using the OCM-1000 Window

The OCM-1000 window represents networks and associated components as a hierarchical tree structure with branches, analogous to folders and files in Windows Explorer. As in Windows Explorer, the left pane displays the tree view, while the right pane lists the contents (if any) and attributes of the network objects selected in the left pane. Networks are at the top level of the hierarchy. Subsequent levels contain the following network components: nodes, LIMs, subaggregates, and channels. [Figure 3-2](#) illustrates how a network is represented in the OCM-

1000 window. Callouts identify selected window objects and actions you can perform on some of these objects.

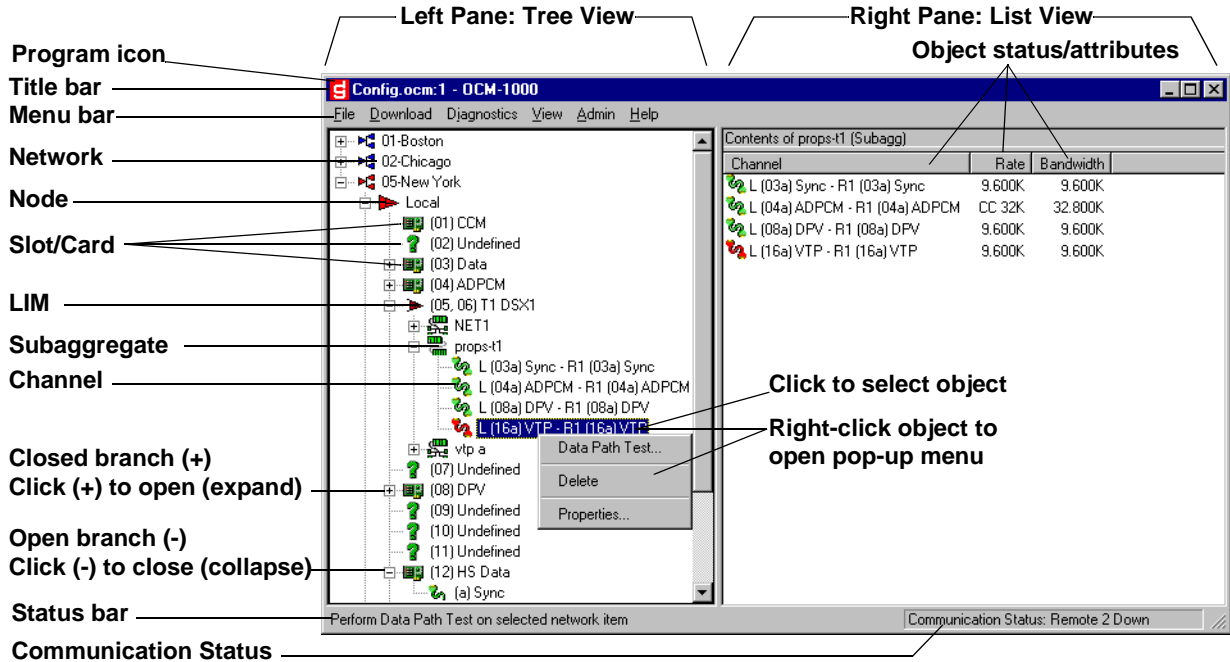


Figure 3-2 OCM-1000 Window

You can access all system objects, functions, menus and dialog boxes from this window.

Note Although you can open several OCM-1000 windows, only one window is active. One port limits you to being connected to one network at a time. For more information about daisy chain capabilities, see the Office Communications Manager Installation and Operation Manual, GDC 036R340-000.






Understanding and Using OCM-1000 Symbols and Objects

In the OCM-1000 window, network trees are represented by specific symbols or icons. [Table 3-1](#) summarizes OCM-1000 symbols, the network objects they represent, each object’s available pop-up menu functions, and selected attributes of each object.

Table 3-1 OCM-1000 Symbols and Object Attributes

Symbol/Icon	Object Name/Pop-up Menu	Attributes
	<p>Network</p> <ul style="list-style-type: none"> New Node... Set as Active Network Alarms ... Download Configuration ... Download As Required ... Delete Properties... 	<ul style="list-style-type: none"> Clicking the plus (+) sign in front a closed network branch expands the branch and displays the name and status of each configured node in the network. Status of nodes is indicated by color of icon in front of network name: green = no faults, yellow = minor faults, red = critical faults, blue = status cannot be determined. Clicking (selecting) network icon or name displays in right pane: name, status, and other properties of each node. Right-clicking network icon or name displays pop-up menu shown on left.

Table 3-1 OCM-1000 Symbols and Object Attributes (Continued)

Symbol/ Icon	Object Name/ Pop-up Menu	Attributes
	<p>Node</p> <ul style="list-style-type: none"> New SW Integrity... Delete Properties... 	<ul style="list-style-type: none"> • Clicking the plus (+) sign in front a closed node branch expands the branch and displays name, contents (CCM, LIM, or other card), and status of each slot in the node. • Status of node slots is indicated by color of icon in front of node name: green = no faults, yellow = minor faults, red = critical faults, blue = status cannot be determined. • Clicking (selecting) node icon or name displays in right pane: status, card type and other properties of each configured slot. • Right-clicking node icon or name displays pop-up menu shown on left.
	<p>CCM (Common Control Module)</p> <ul style="list-style-type: none"> Download SW... Self Test... Redundancy Toggle... Status/Diagnostics... 	<ul style="list-style-type: none"> • Status of CCM is indicated by color of icon in front of node name: green = no faults, yellow = minor faults, red = critical faults, blue = status cannot be determined. • Clicking (selecting) network icon or name displays in right pane: name, status, and other properties of each configured slot. • Right-clicking CCM icon or name displays pop-up menu shown on left.
	<p>LIM (Line Interface Module)</p> <ul style="list-style-type: none"> New Subagg... Self Test... Data Path Test... ESF Statistics... Redundancy Toggle... Delete Properties... 	<ul style="list-style-type: none"> • If the LIM contains subaggregates, clicking the plus (+) sign in front a closed LIM branch expands the branch and displays name and status of each subaggregate in the LIM. • Status of LIM is indicated by color of icon in front of LIM name: green = no faults, red = critical faults, blue = status cannot be determined. • Clicking (selecting) LIM icon or name displays in right pane: status, name, type and other properties of each configured subaggregate. • Right-clicking LIM icon or name displays pop-up menu shown on left.
	<p>Subaggregate</p> <ul style="list-style-type: none"> New Channel Data Path Test... Delete Properties... 	<ul style="list-style-type: none"> • If the subaggregate contains channels, clicking the plus (+) sign in front a closed subaggregate branch expands the branch and displays name and status of each channel on the subaggregate. • Status of subaggregate is indicated by color of icon in front of subaggregate name: green = no faults, red = critical faults, blue = status cannot be determined. • Clicking (selecting) subaggregate icon or name displays in right pane: status, name, source card type and other properties of each configured channel. • Right-clicking subaggregate icon or name displays pop-up menu shown on left.
	<p>Channel</p> <ul style="list-style-type: none"> Data Path Test... Delete Properties... 	<ul style="list-style-type: none"> • Clicking (selecting) subaggregate icon or name displays in right pane status, name, destination card type and other properties of the channel. • Status of subaggregate is indicated by color of icon in front of subaggregate name: green = no faults, red = critical faults, blue = status cannot be determined. • Right-clicking subaggregate icon or name displays pop-up menu shown on left.

Using the Menu Bar

The menu bar near the top of the OCM-1000 window provides six menus, as shown in [Figure 3-3](#).

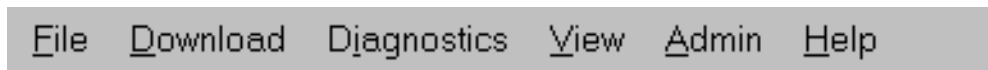


Figure 3-3 OCM-1000 Window Menu Bar

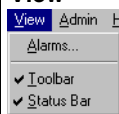
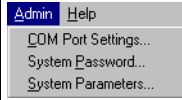
From these menus, you can choose commands that implement system-wide functions or operate on selected networks or network components (e.g., nodes, LIMs, subaggregates, or channels).

[Table 3-2](#) summarizes available menus and commands and tells you where to find more information or procedures that use these commands

Table 3-2 OCM-1000 Menus and Commands

Menu	Command	Function	More Information
File 	New	Open submenu to create: <ul style="list-style-type: none"> • New network object (node, LIM, etc.) • New configuration file 	Chapter 4 page 3-14
	Open	Open an existing OCM configuration file.	page 3-14
	Delete	Delete selected object.	Chapter 4
	Properties	View/modify properties of selected object.	Chapter 4
	Scan Networks	Scan all networks.	page 4-55
	Set Active Network	Set selected network as active.	page 4-54
	Save	Save current OCM configuration.	page 3-13
	Save As	Save new configuration or current configuration in new file.	page 3-13
	Exit	Exit OCM-1000 software.	page 3-2
	Download 	Configuration Data	Download configuration data to active network.
CCM software		Download current OCM software to selected CCM card.	page 4-58
As Required		Scan and download as required to active network.	page 4-56
Software Integrity		Verify available and active CCM, DPV, or VTP software on selected node.	page 4-59
SW Revision List		View/select available software versions for CCM, DPM, VTP cards on selected network.	page 4-61
Diagnostics 	Self-Test	Run self-test on selected card or channel.	Chapter 5
	Data Path Test	Run data path test on selected channel.	Chapter 5
	Control State Test	Run Control State Test on selected channel.	page 5-33
	Signaling Test	Run Signalling Test on selected channel.	page 5-46
	dB Test	Run dB Test on selected channel.	page 5-49
	Echo Cancellers	Run Echo Cancellers Test on selected channel.	page 5-52

Table 3-2 OCM-1000 Menus and Commands (Continued)

Menu	Command	Function	More Information
	Alarms	View alarms for active network.	page 5-8
	Toolbar	Show or hide OCM-1000 toolbar.	page 3-7
	Status Bar	Show or hide OCM-1000 status bar.	page 3-8
	COM Port Settings	Select COM port and baud rate for data transmission to network hardware.	page 3-10
	System Password	Change OCM-1000 login password.	page 3-11
	System Parameters	Turn on/off Automatic Network Scan; turn on/off and reset audible alarm.	page 3-11

To choose a menu command from the menu bar:

1. Click the menu to open it, then click the name of command you wish to implement.
2. If the command function displays a submenu, slide the mouse pointer onto the submenu and click the desired command.

Note Some commands may not be available if they require that a network object be selected or that some other condition exist.

Example. To create a new network, using the **File** menu:

1. Click the **File** menu to open it.
2. Click **New** to open a submenu.
3. From the **New** submenu, click **Network** to open the **New Network** dialog box.

Keyboard Operation. Most menu commands have keyboard equivalents or shortcuts. These are usually indicated by an underlined letter in the menu or command name or by a key combination next to a command. To choose a menu command using the keyboard, hold down the ALT key, press the underlined letter in the menu name to open it, then press the underlined letter in the command name.

Example. To create a new network, using the keyboard:

1. Press **ALT+F** to open the **File** menu.
2. Press **N** to open the **New** submenu.
3. Press **W** to open the **New Network** dialog box.

An even faster way to open the **New Network** dialog box is to press **CTRL+W**.

Using the Tool Bar and Status Bar

The toolbar near the top of the OCM-1000 window, just below the menu bar, allows you to implement file management and editing commands by clicking a button.

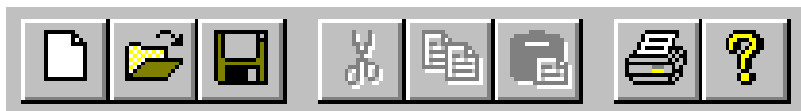










Figure 3-4 OCM-1000 Toolbar

The following commands buttons are available on the toolbar:

Table 3-3 Toolbar Commands

Button	Command	Function
	New Configuration	Create a new network configuration
	Open	Open a configuration file
	Save	Save current configuration
	Cut	[Not implemented in current version]
	Copy	[Not implemented in current version]
	Paste	[Not implemented in current version]
	Print	[Not implemented in current version]
	About	Display About dialog box

You can show or hide the toolbar, depending on how you use the system. If you frequently use the commands on the toolbar, the command buttons can be a convenience. If you don't use these commands, hiding the toolbar gives you more display area for your network configuration.

To show or hide the toolbar:

1. Click the **View** menu (or press **ALT+V**) to open it.
If a check mark (✓) precedes the **Toolbar** command, the toolbar is currently displayed. If there is no check mark, the toolbar is hidden.
2. Click **Toolbar** (or press **ALT+V, T**).
If the toolbar was previously displayed, it is now hidden. If the toolbar was previously hidden, it is now displayed.

The status bar along the bottom of the OCM-1000 window, displays system status messages. As with the toolbar, you have the option of hiding the status bar in order to gain more display area for the network configuration.

To show or hide the status bar:

1. Click the **View** menu (or press **ALT+V**) to open it.
If a check mark (✓) precedes the **Status Bar** command, the status bar is currently displayed. If there is no check mark, the status bar is hidden.
2. Click **Status Bar** (or press **ALT+V, S**).
If the status bar was previously displayed, it is now hidden. If the status bar was previously hidden, it is now displayed.

Opening/Closing Branches and Selecting Objects

To open or close a branch in a network tree or to select a network object:

- **Open Branch.** To open (expand) a closed branch and display its objects, do any of the following:
 - Click the **PLUS SIGN (+)** preceding the closed branch
 - Double-click the branch symbol or name
 - Select the branch and press the **RIGHT ARROW** key.
- **Close Branch.** To close (collapse) an open branch and hide its objects, do any of the following:
 - Click the **MINUS SIGN (-)** preceding the branch
 - Double-click the branch symbol or name
 - Select the branch and press the **LEFT ARROW** key.
- **Select Object.** To select a network object (network, node, LIM, etc.) in the left (tree) pane, click the object with the right or left mouse button. (Right-clicking an object opens its pop-up menu, if available.)

Using Pop-up Menus

In addition to using the menu bar, you can choose commands from context-sensitive pop-up menus associated with network objects you select. These pop-up menus display commands that allow you to operate on the selected object.

To choose a command from a network object's pop-up menu

1. Right-click the object in the left (tree view) pane to select it and open its pop-up menu.
2. Click (or right-click) any available command on the menu.

Using Dialog Boxes and Entering Data

You enter data into the system by selecting the appropriate option button, check box, list item, or spin setting in a dialog box or by typing text into a text box. When typing text, you can use the **Backspace** or **Delete** keys to correct an entry. To save entries or changes in a dialog box, you usually click **OK** (or press **ENTER**).

Note You may use both upper and lowercase when entering information.

While the OCM-1000 user interface is designed primarily to facilitate mouse interaction, you can also use the keyboard to navigate and interact with the OCM-1000 window and various dialog boxes.

Table 3-4 summarizes dialog box operations, using the mouse and keyboard alternatives.

Table 3-4 Dialog Box Operations

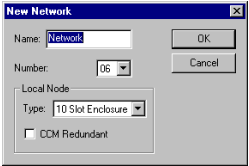



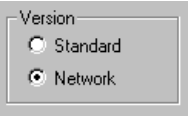

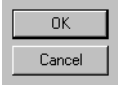
Dialog Box Operation and Illustration	Mouse Action	Keyboard Alternatives
<p>Select a dialog box field or element (text box, list box, button etc.).</p> 	<p>Click the element.</p>	<p>Press TAB or SHIFT+TAB to navigate forward or backward to the element.</p>
<p>Type into a text box</p> 	<p>Click in the text box to position the insertion point. Drag to select any text you wish to replace.</p>	<p>Press TAB or SHIFT+TAB to navigate to the text box. To select existing text, hold down the SHIFT key while pressing any of the following: END, HOME, RIGHT ARROW, LEFT ARROW, CTRL+RIGHT ARROW, CTRL+LEFT ARROW</p>
<p>Select an item from a drop-down list box</p> 	<p>Click drop-down arrow to open list. If necessary, scroll (see above) to display the item. Then click the item.</p>	<p>Press TAB or SHIFT+TAB to navigate to the list. Then press an arrow key to open list. Press PAGE DOWN or PAGE UP or use the arrow keys to move down or up the list until the item is highlighted.</p>
<p>Select or clear a check box</p> 	<p>Click the box. Click again to reverse the action.</p>	<p>Press TAB or SHIFT+TAB to navigate to the check box, then press the SPACEBAR. Press the SPACEBAR again to reverse the action.</p>
<p>Select or clear an option button</p> 	<p>Click the button. Clicking another button automatically clears all others in the group.</p>	<p>Press TAB or SHIFT+TAB to navigate to the option group box. Then press an arrow key to select an option within the group.</p>
<p>Use a spin box</p> 	<p>Click the UP ARROW to increment the counter. Click the DOWN ARROW to decrement the counter.</p>	<p>Press TAB or SHIFT+TAB to navigate to the spin box and select it. Press the UP ARROW key to increment the counter. Press the DOWN ARROW key to decrement the counter.</p>

Table 3-4 Dialog Box Operations

Dialog Box Operation and Illustration	Mouse Action	Keyboard Alternatives
Choose a command 	Click the command button.	Press TAB or SHIFT+TAB to navigate to the command button. Then press ENTER .
Close dialog box	Click OK (save changes), or click Cancel (lose changes)	Select OK , if necessary, and press ENTER (save changes), or press Esc (lose changes).

Performing Setup and Administrative Tasks

This section describes procedures for:

- Setting COM ports and baud rates
- Modifying the system password
- Setting system parameters
- Saving network configurations

Setting COM Ports and Baud Rates

The OCM-1000 software is configured to communicate through COM Port 1 at 96 baud. To change the COM ports and baud rates manually, do the following:

1. On the **Admin** menu, click **COM Port Settings** (or press **ALT+A, C**) to open the **COM Port Settings** dialog box.



Figure 3-5 COM Port Settings Dialog Box

2. In the **COM Port** box, select **COM1** or **COM2** from the drop-down list.

Note To select COM port 2, your computer must have two or more COM ports. If your computer has more than two COM ports, you can type the COM port, e.g., **COM 4**.

3. In **Baud Rate** box, select **2400**, **9600**, or **19200** baud from the drop-down list.

Note For 19,200 baud, you must have installed a CCM 10 card, which supports 9,600 and 19,200 baud. For 2400 baud, you must have installed a CCM 5 card.

- Click **OK** (or press **ENTER**) to save your settings and close the **COM Port Settings** dialog box.

Be sure that data communications equipment attached to the selected COM port is configured to operate asynchronously at the selected data rate, using 8 data bits with 1 stop bit and no parity. Also, you should be sure that option switch S1, position 6, of the CCM is set to operate at the selected data rate.

***Note** For information on setting switch S1, see the Office Communications Manager Installation and Operation Manual, GDC 036R340-000.*

Modifying the System Password

The default system password is **OCM**. Once you are logged in, you can change this password—or whatever password you used to log in.

To modify the current system password:

- On the **Admin** menu, click **System Password** (or press **ALT+A, P**) to open the **Change OCM Password** dialog box.

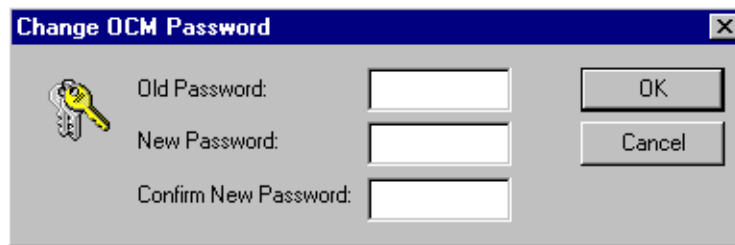


Figure 3-6 Change OCM Password Dialog Box

- In the **Old Password** box, type the current password.
- In the **New Password** box, type a new password (1 to 15 characters) and press **ENTER**.

***Note** Password fields are case sensitive. When you log in, be sure to remember and re-enter your password exactly as entered in this dialog box.*

- In the **Confirm New Password** box, retype the new password.
- Click **OK** (or press **ENTER**) to save the new password and close the **Change OCM Password** dialog box.

Setting System Parameters

System Parameters settings allow you to specify the following operating characteristics of the OCM-1000 software:

- Automatic Network Scan.** These settings allow you to turn on or off automatic network scanning and specify a wait interval between scans. (For more information about network scanning, see [“Scanning Networks” on page 4-55.](#))
- Audible Alarm.** These settings allow you to enable or disable an audible alarm—indicating problems encountered at any time—and to reset the alarm after it sounds.

To specify System Parameters settings:

1. On the **Admin** menu, click **System Parameters** (or press **ALT+A, S**) to open the **System Parameters** dialog box.

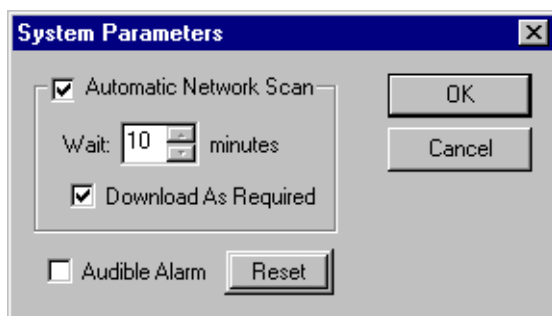


Figure 3-7 System Parameters Dialog Box

2. Click the **Automatic Network Scan** check box to select or clear it.
A check mark (✓) inside the check box indicates that the feature is selected or turned on. Turning on this feature makes available the **Wait** spin box and the **Download As Required** check box.
3. If Automatic Network Scan is turned on, you may change the default wait time, in minutes, by doing either of the following:
 - Click the arrows to select a different wait time (10 - 60 minutes)
 - Select the current value and type a different wait time (10 - 60 minutes)
4. If Automatic Network Scan is turned on, you may select (turn on) or clear (turn off) the **Download As Required** check box.
Turning on this feature tells the system to download software or network configuration information if a network scan detects a discrepancy. (For more information about this feature, see *“Using Automatic Network Scan” on page 4-56.*)
5. Select or clear the **Audible Alarm** check box.
Turning on this feature causes the PC to “beep” whenever an alarm condition is detected.
6. When an alarm sounds during an Automatic Network Scan, click **Reset** to turn off the alarm and reset it so that it will sound when another problem is detected.

Managing Configuration Files

A complete network structure—including all networks, nodes, LIMs, subaggregates, and channels displayed in the OCM-1000 window—is called a network configuration. A network configuration is stored in a configuration file. The default configuration file name is **config.ocm**.

The OCM-1000 software automatically opens the default configuration file when you start and log into the OCM-1000 software. Once you are logged in, you can:


- Modify the current configuration (e.g., add or modify networks, LIMs, subaggregates, etc.) and save changes to the default configuration file.
- Create and save a new configuration

- Open another configuration file you have previously created and saved.

Saving Configuration Changes

After creating or modifying a network, you can use the **Save** or **Save As** command on the **File** menu to save your work in a configuration file.

To save a new network configuration:

1. On the **File** menu, click **Save** or **Save As** (or press **CTRL+S** or **ALT+F, A**), or click the **Save** button  on the toolbar.

The **Save As** dialog box opens.

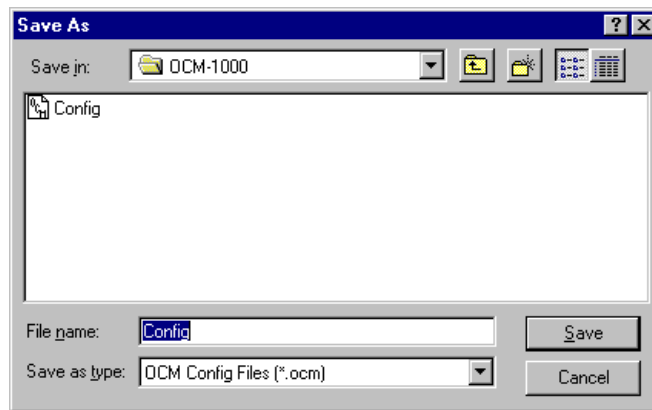


Figure 3-8 Save As Dialog Box

The default OCM program directory (OCM 1000) is selected in the **Save in** box. The default file name, “config.ocm,” is selected in the **File name** box. The default file type, “OCM Config Files (*.ocm),” is selected in the **Save as type** box.

2. If you wish to save the configuration file in another location, navigate to a different folder in the **Save in** box.
3. If you wish to save the file under a different name, type the new name in the **File name** box, keeping the .ocm extension.
4. Click **Save** (or press **ENTER**) to save the configuration and close the **Save As** dialog box.

To save changes to the current configuration file (displayed in the title bar of the OCM-1000 window):

1. On the **File** menu, click **Save** (or press **CTRL+S**), or click the **Save** button  on the toolbar.

The configuration file is immediately updated without further notification or confirmation.


To save the current configuration in a different file:

1. On the **File** menu, click **Save As** (or press **ALT+F, A**) to open the **Save As** dialog box (refer to [Figure 3-8](#)).
2. If you wish to save the configuration file in another location, navigate to a different folder in the **Save in** box.

3. If you wish to save the file under a different name, type the new name in the **File name** box, keeping the .ocm extension.
4. Click **Save** (or press **ENTER**) to save the configuration and close the **Save As** dialog box.

Creating a New Configuration

To create a new network configuration:

1. On the **File** menu, point to **New**, then click **Configuration File** (or press **CTRL+N** or **ALT+F, N, F**), or click the **New Configuration** button  on the toolbar.

If the current configuration has no unsaved changes, the OCM-1000 software clears the currently loaded configuration and displays a blank OCM-1000 window. If the current configuration has unsaved changes, perform step 2.

2. If the current configuration has unsaved changes, a dialog box appears asking whether you wish to save your changes. Do one of the following:
 - Click **Yes** (or press **Y**) to save your changes.
 - Click **No** (or press **N**) to lose your changes.
 - Click **Cancel** to cancel the operation and return to the current configuration.

Opening a Configuration File

To open an existing configuration file:

1. On the **File** menu, click **Open** (or press **CTRL+O** or **ALT+F, O**), or click the **Open** button  on the toolbar.

The **Open** dialog box appears.

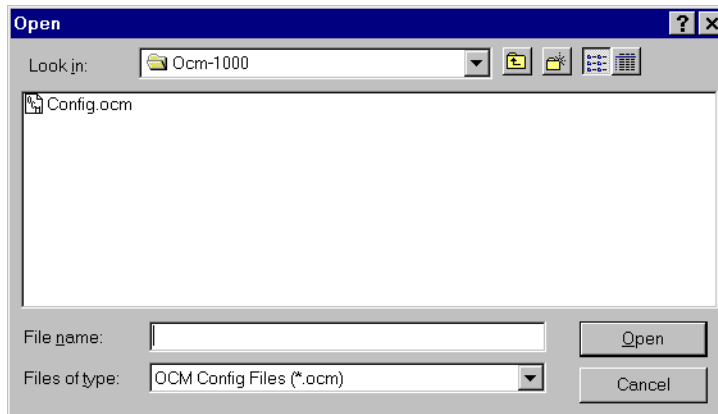


Figure 3-9 Open Dialog Box

The default OCM program directory is selected in the **Look in** box. The default file name, “config.ocm,” is selected in the **File name** box. The default file type, “OCM Config Files (*.ocm),” is selected in the **Files of type** box.

2. If you wish to look in another location, navigate to a different folder in the **Look in** box until the desired configuration file appears in the box below.
3. Click the configuration file to select it and display its name in the **File Name** box.

4. Click **Open** (or press **ENTER**).

If the current configuration has no unsaved changes, the OCM-1000 software clears the currently loaded configuration and displays the selected configuration in the OCM-1000 window. If the current configuration has unsaved changes, perform step 5.

5. If the current configuration has unsaved changes, a dialog box appears asking whether you wish to save your changes. Do one of the following:
 - Click **Yes** (or press **Y**) to save your changes.
 - Click **No** (or press **N**) to lose your changes.
 - Click **Cancel** to cancel the operation and return to the current configuration.

Summary

This chapter described how to start and quit OCM-1000 software, use the OCM-1000 window, and perform setup and administrative tasks.

What's Next?

The next chapter describes how to use the OCM-1000 software to configure and maintain networks.

Chapter 4: Performing Network Operations

Scope

This chapter includes procedures and information you need to perform network operations, using OCM-1000 software. Network operations include all routine tasks you perform to configure networks, perform periodic network scans, and download current network configuration data and software to local and remote OCMs.

Specifically, this chapter covers the following topics:

Configuring a Network: Overview	4-2
Creating, Modifying, and Deleting Networks	4-4
Creating, Modifying, and Deleting Nodes.....	4-6
Creating, Modifying, and Deleting LIMs	4-8
Creating, Modifying, and Deleting Subaggregates.....	4-19
Creating, Modifying, and Deleting Channels	4-27
Maintaining Networks	4-54

Configuring a Network: Overview

Configuring a network consists of creating a network object in the OCM-1000 window and, in turn, configuring components at each level in the network hierarchy. To perform these tasks, you will use the OCM-1000 software to create, modify, and delete the following objects:

- Networks
- Nodes
- LIMs
- Subaggregates
- Channels

Table 4-1 summarizes the procedures for using the OCM-1000 software to configure a new network. Where appropriate, the second column identifies OCM-1000 objects you select, while the next three columns identify the menus and commands or keyboard shortcuts you can use to initiate or perform the action. The last column tells you where to look for detailed information about a particular procedure. You may also refer to *Table 3-1 on page 3-3* for additional information about OCM-1000 symbols and objects.

Once your network configurations are defined, you can scan your networks as well as download current configuration data and software to local and remote OCMs (for more information, see *“Maintaining Networks” on page 4-54*).

Table 4-1 Network Configuration Overview

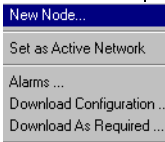
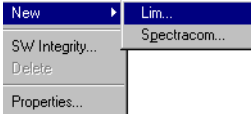
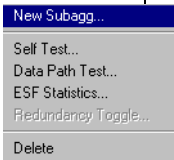

To Do/Perform	Select	Use Either			See
Procedure/Actions	Object	File Menu/ Command	Pop-up Menu	Keyb'd Shortcut	For More Information
1. Create Network(s). Use File menu or keyboard shortcut to create new network and local node objects in OCM-1000 window. Specify node type and CCM redundancy for local node. You can create up to 31 networks in a single configuration.	[None]	File New Network	[None]	CTRL+W	<i>“Creating a Network” on page 4-4</i>
2. Create Remote Node(s). Select network object, then use File menu, object’s pop-up menu, or keyboard shortcut to create new remote node object in OCM-1000 window. Specify node type and CCM redundancy. You can create up to 2 remote nodes per network.	Network	File New Node		CTRL+E	<i>“Creating a Remote Node” on page 4-6</i>
3. Create LIM(s). Select node, then use File menu, object’s pop-up menu, or keyboard shortcut to create new LIM in OCM-1000 window. You can create up to 2 non-diverse (single or redundant) LIMs per node or one diverse LIM per node.	Node	File New LIM		CTRL+L	<i>“Creating a Single or Redundant LIM” on page 4-9</i>
4. Create Subaggregate(s). Select LIM, then use File menu, object’s pop-up menu, or keyboard shortcut to create new subaggregate object in OCM-1000 window. You can create one or two subaggregates on a network, depending on factors such as: subaggregate type (OCM or Network), LIM type (T1/E1, V.xx, Subrate), and LIM version (Standard or Network).	LIM	File New Subagg		CTRL+B	<i>“Creating a Subaggregate” on page 4-21</i>

Table 4-1 Network Configuration Overview (Continued)

To Do/Perform	Select	Use Either			See
Procedure/Actions	Object	File Menu/ Command	Pop-up Menu	Keyb'd Shortcut	For More Information
<p>5. Create Channel(s). Select subaggregate, then use File menu, object's pop-up menu, or keyboard shortcut to create new channel object in OCM-1000 window. The number of channels you can create depends on the subaggregate's available bandwidth and the number of empty/available slots in the node.</p>	Subag- gregate	File New Channel		CTRL+C	"Creating a Channel" on page 4-28

Configuring Slots

The node type you select for your local and remote nodes initially determines the number of available slots you can configure. CCMs (Common Control Modules) reside in slot 1 of the OCM Enclosure or Shelf. You can make the CCMs on a node redundant or non-redundant. If a CCM is redundant, any configured equipment in slot 2 must be deleted to make room for the second CCM. If a CCM is non-redundant, slot 2 is available for other equipment.

You can configure the remaining slots with LIM (up to two slots per node), Spectracomm, and other equipment cards. LIM cards can be single, redundant, or diverse. Redundant and diverse LIM cards occupy both available LIM slots. LIMs can be further configured with subaggregates and channel cards. (Slots occupied by CCMs cannot be further configured.) Slot configuration factors are summarized in [Table 4-2](#).

Table 4-2 Slot Configuration Factors

This node/card type...	has the following number of slots available
8-slot shelf	7
10-slot enclosure	9
16-slot shelf	15
16-slot shelf with an expansion shelf	31
LIM (diverse or redundant)	2 (Two adjacent slots are automatically allocated.)
Dual Data or DPV/VTP Channel Card	1 (You select each half of the card by a and b entries for the slot.) If the channel card data rate is greater than 38,400, the card is not considered to be a dual data card and has only one set of entries. For VTP cards, you can select four ports: a, b, c, d)

Note *CELP, ADPCM, or VLBRV Voice Channel Modules are not considered to be dual cards regardless of data rate.*

Available and Remaining Bandwidth

Available bandwidth refers to the total bandwidth that is supported on a given subaggregate. When the LIM is a V.xx or Subrate type, this total is determined by the user-selected rate. When the LIM is a T1 or E1 type, this total is determined by the Frame Rate of the DS0 (i.e. 56k or 64K) times the Number of DS0s in the subaggregate (i.e. Nx56k or Nx64k).

For T1 LIMs, if AMI B7 is selected, then the Available Bandwidth = Nx56K, where N is the number of DS0s selected for the subaggregate. For T1 LIMs, if B8ZS is selected, then Available Bandwidth = Nx64K, where N is the number of DS0s selected.

In general, the term Remaining Bandwidth refers to the difference between the Available Bandwidth on a configured subaggregate and the amount that is currently consumed by channels configured over that subaggregate.

Creating, Modifying, and Deleting Networks

This section tells you how to create, modify, and delete network objects in the OCM-1000 software.

Creating a Network

You can create and manage up to 31 networks in a configuration. When you create a network, the OCM-1000 software selects a default network name and number as well as a default type and CCM redundancy setting for the local node.

To create a new network and local node:

1. On the **File** menu, point to **New**, then click **Network**. (or press **CTRL+W**.)

The **New Network** dialog box appears.

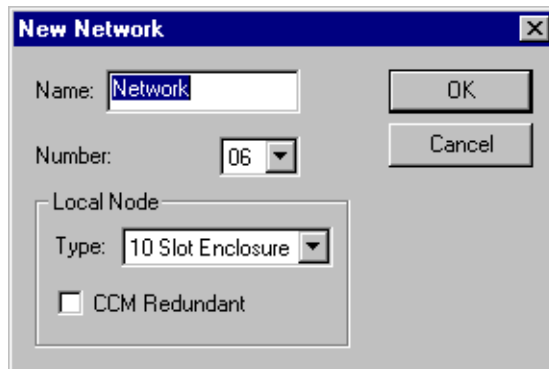


Figure 4-1 New Network Dialog Box

The default name **Network** is selected in the **Name** box. The next available network number appears in the **Number** box. Default values for the local node are also selected: **10 Slot Enclosure**, appears in the **Type** box while the **CCM Redundant** check box is clear.

2. If you accept the system defaults, skip to step 3. Otherwise, modify the defaults as follows:
 - a. In the **Name** box, type a name for the new network (up to 32 alphanumeric characters).
 - b. Click the **Number** arrow and select any available network number (up to 31) from

- the list. (Network number is also referred to as network ID.)
- c. Click the **Type** arrow and select a local node type from the list. Available types are:
 - 8 Slot Shelf
 - 10 Slot Enclosure
 - 16 Slot Shelf
 - 32 Slot Shelf
 - d. Click the **CCM Redundant** check box to select it. (click it again to clear it).

If you select this option, slot 2 on the local node will not be available for other cards.
3. When you have completed all entries, click **OK** (or press **ENTER**) to save your settings, close the **New Network** dialog box, and return to the OCM-1000 window. The new network object (containing a local node and one or two CCMs) appears in the OCM-1000 window.

Note When creating a new network or physically changing the network number of an existing node, you should strap the CCM at the remote node as a *MASTER* (SI-8 up) and set to OCM Address 1 (SI-1 up). After the *INIT LED* for the CCM extinguishes, wait one minute and then restrap the CCM as a *REMOTE* (SI-8 down). This erases the unwanted configuration in the remote CCM and returns the remote node to the basic communication mode.

Modifying Network Properties

Once you have created a network object, you can modify its name. You cannot modify its number or ID. To modify the local node type or CCM redundancy setting, see [“Modifying Node Properties” on page 4-7](#).

To modify a network’s name:

1. In the left pane of the OCM-1000 window, right-click the network you wish to modify.
2. On the pop-up menu, click **Properties** to open the **Network Properties** dialog box.

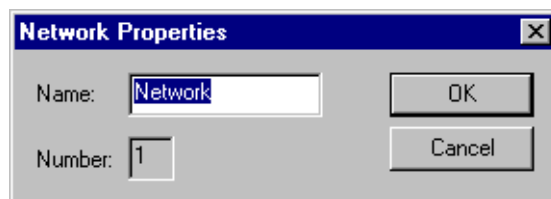


Figure 4-2 Network Properties Dialog Box

- The current network name is already selected. The network number appears in a gray, view-only box, which cannot be edited.
3. In the **Name** box, type the new name (up to 32 alphanumeric characters).
 4. Click **OK** (or press **ENTER**) to save your changes, close the **Network Properties** dialog box, and return to the OCM-1000 window.

Deleting a Network

To delete an existing network:

1. In the left pane of the OCM-1000 window, right-click the network you wish to delete.
2. On the pop-up menu, click **Delete**.
3. In the **Confirm Network Delete** dialog box, click **OK** to confirm the deletion (or click **Cancel** to return to the OCM-1000 window without deleting the network).

Creating, Modifying, and Deleting Nodes

In addition to a local node, you can configure up to two remote nodes on a network. This section tells you how to use the OCM-1000 software to create, modify, and delete nodes.

Creating a Remote Node

You can create up to two remote nodes on each network.

To create a remote node on a network:

1. In the left pane of the OCM-1000 window, right-click the network to which you wish to add the new node.
2. On the pop-up menu, click **New Node** to open the **New Remote Node** dialog box.

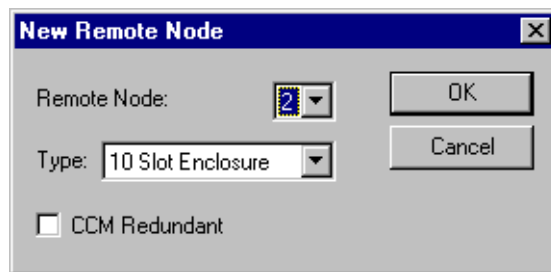


Figure 4-3 New Remote Node Dialog Box

The next available node number (1 or 2) is selected in the **Remote Node** box. The default node type, 10 Slot Enclosure, appears in the **Type** box while the **CCM Redundant** check box is clear.

3. If you accept the system defaults, skip to step 4. Otherwise, modify the defaults as follows:
 - a. Click the **Remote Node** arrow and select any available node number (1 or 2) from the list.
 - b. Click the **Type** arrow and select a node type from the list. Available types are:
 - 8 Slot Shelf
 - 10 Slot Enclosure
 - 16 Slot Shelf
 - 32 Slot Shelf
 - c. Click the **CCM Redundant** check box to select it. (click it again to clear it.)

If you select this option, slot 2 on this node will not be available for other cards.

4. When you have completed all entries, click **OK** (or press **ENTER**) to save your settings, close the **New Remote Node** dialog box, and return to the OCM-1000 window. The new remote node (containing one or two CCMs) appears in the OCM-1000 window.

Modifying Node Properties

You can modify the type and CCM redundancy setting of any local or remote node in a network. You cannot, however, modify a node's network assignment or node name/number.

To modify a node's properties:

1. In the left pane of the OCM-1000 window, right-click the node you wish to modify, then click **Properties** on the pop-up menu. (Alternatively, select the network containing the node you wish to modify, then double-click the node in the right pane of the OCM-1000 window.)

The **Node Properties** dialog box appears.

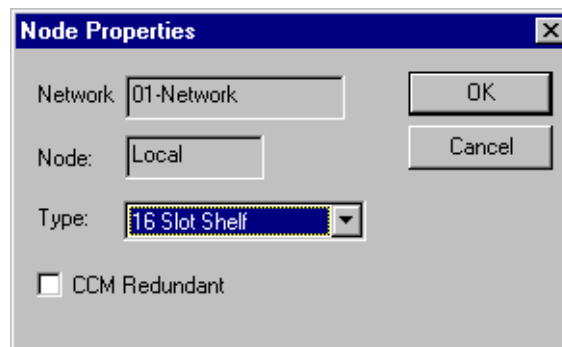


Figure 4-4 Node Properties Dialog Box

The current node type is already selected. The network assignment and node name/number appear in gray, view-only boxes, which cannot be edited.

2. If necessary, click the **Type** arrow and select a different node type from the list.

If existing cards on the node use more slots than the selected node type supports, you will receive a **Configuration Warning** message when you try to save the change (step 4), telling you that the change will cause one or more cards to be deleted.

3. Click the **CCM Redundant** check box to select it. (Click it again to clear it.)

If the redundant slot (slot 2) is already occupied by another card, you will receive a **Configuration Error** message when you attempt to select the **CCM Redundant** check box. Click **OK** to close the message box and return to the **Node Properties** dialog box. If you still wish to have CCM redundancy on this node, you must first move or remove the card currently in slot 2.

4. Click **OK** (or press **ENTER**) to save your changes, close the **Node Properties** dialog box, and return to the OCM-1000 window.

If you receive the **Configuration Warning** message described in step 2, do either of the following:

- Click **Yes** (or press **Y**) to confirm the change in node type and delete one or more cards from this and, possibly, other network nodes.

- Click **No** (or press **N**) to return to the **Node Properties** dialog box, where you can select another node type.

Deleting a Node

You can delete any remote node on a network. You cannot delete a local node unless you delete the network itself.

To delete an existing remote node:

1. In the left pane of the OCM-1000 window, right-click the node you wish to delete.
2. On the pop-up menu, click **Delete**.
3. In the **Confirm Remote Node Delete** dialog box, click **OK** to confirm the deletion (or click **Cancel** to return to the OCM-1000 window without deleting the node).

Creating, Modifying, and Deleting LIMs

You can configure up to two single or redundant LIMs or one diverse LIM on any local or remote node in a network. This section tells you how to use the OCM-1000 software to configure, create, modify, and delete LIMs (Line Interface Modules).

Configuring Single, Redundant, or Diverse LIMs

LIMs can be configured as single, redundant, or diverse. A single LIM occupies one slot. A redundant or diverse LIM occupies two adjoining slots and shares the same set of parameters. A diverse LIM counts as two LIMs.

The following rules apply when you configure redundant or diverse LIMs:

- A LIM configured for redundancy or diversity occupies two slots, where the primary LIM occupies an even-numbered slot greater than 2 and the secondary LIM occupies the preceding odd-numbered slot.
- If you select an odd-numbered slot (e.g., 5), the next slot (e.g., 6) must be available; if you select an even-numbered slot (e.g., 4), the preceding slot (e.g., 3) must be available.
- If one of the redundant slots is occupied by another LIM or CCM, you cannot set redundancy.
- If one of the redundant slots is occupied by a channel card, you will be given the option to delete the card and select redundancy or retain the card and select the single setting or another slot.
- Diverse LIMs are allowed only in point-to-point configurations consisting of one LIM pair linking the local node to one remote node.
- Before configuring a LIM pair as diverse, you must first define single LIMs on each node, then define an OCM subaggregate on one of the LIMs.

With diverse LIMs, OCMs are ready to pass data within ten seconds after diversity switching occurs. The time required by external equipment to pass data is variable. To avoid excessive toggling between primary and secondary LIMs, you may configure switching filters. The primary failure filter has a range of 10 to 120 seconds (in one-second increments), while the primary recovery filter has a range of 10 seconds to 20 minutes (in ten-second increments). These filters

are reset when a change in the condition of the primary link occurs. See [Chapter 1](#) for more information about diversity.

Note *If the primary LIM fails during the night when less important data is being transferred, you may be charged needlessly for switching to a secondary link. To avoid this, you can select a range of hours (in one-hour increments) during which diversity switching is disabled (for details, see [Figure 4-10 on page 4-13](#) and [Table 4-6 on page 4-16](#)).*

Configuring Dual, Non-Redundant LIMs

In dual-LIM, non-redundant configurations, T1 and E1 LIMs support a mechanism for fast switching the node clocking source. This mechanism is automatically enabled if two of the same LIM types are configured for non-redundant operation (i.e., two CSU, DSX1, or E1 LIMs)

V.xx and Subrate type LIMs do not support this mechanism. If a configuration mixes LIM types or uses V.xx LIMs, the configuration may have data disruption on one LIM (from carrier loss or configuration changes to the other LIM).

Creating a Single or Redundant LIM

When configuring a new LIM, you use a wizard consisting of two or three pages. Settings on the first (**New LIM**) page of the wizard are common to all LIM types. Settings on subsequent pages vary according to the type of LIM being configured: T1, E1, or V.xx. If the LIM configuration is diverse, four additional parameters appear. Detailed configuration information for each LIM type is provided in the following tables:

- T1: [Table 4-3 on page 4-14](#).
- E1: [Table 4-4 on page 4-15](#)
- V.xx and Subrate: [Table 4-5 on page 4-16](#)

Information in each table is presented according to the **New LIM** wizard page or **LIM Properties** tab (see [“Modifying LIM Properties” on page 4-17](#)) where the settings appear.

To create a LIM on a node:

1. In the left pane of the OCM-1000 window, right-click the node on which you wish to add the LIM.

2. On the pop-up menu, point to **New**, then click **LIM** to open the **New LIM** page.

Figure 4-5 New LIM Page

The default LIM type, T1, appears in the **Type** box. The next available slot number appears in the **Slot** box. Other default values on this page are:

Configuration: Single
Clocking: Facility, **Priority** = High
Error Threshold: clear (off)

The network and node name/number appear in the gray, view-only boxes near the top. This information cannot be edited.

3. If you accept the system defaults, skip to step 4. Otherwise, modify the defaults as follows:
 - a. Click the **Type** arrow and select one of the following LIM types from the list: **T1**, **E1**, or **VXX** (includes Subrate LIMs).
 - b. Click the **Slot** arrow and select any available slot number from the list.

Note You cannot physically install a T1DSX1, CSU/T1 or E1 LIM in slot 2 of a 10-slot enclosure if that slot does not have an RJ-45 jack. If this is the case, you must change the LIM location to a different slot.

- c. Under **Configuration**, click **Single** or **Redundant**.

Note If you wish this LIM to be Diverse, create it as a single LIM and see detailed instructions under [“Creating a Diverse LIM” on page 4-12](#).

If you attempt to configure a redundant LIM in slot 2, you will receive a **Configuration Error** message telling you that the redundant slot is already occupied. Click **OK** to close the message box and return to the **New LIM** wizard. Then select a higher numbered slot.

If you attempt to configure a redundant LIM in a slot whose redundant slot is occupied by a channel card, you will receive a **Configuration Warning** message when you try to advance to the next page (step 4), telling you that the channel card and all associated channels will be deleted.

- d. Under **Clocking**, click **Internal** or **Facility**. Then click the **Priority** arrow and select

either **High** or **Low** from the list.

4. When you have completed all entries on this page, click **Next** to advance to the next page of the **New LIM** wizard.

If you receive the **Configuration Warning** message described in step 2, do either of the following:

- Click **Yes** (or press **Y**) to confirm redundancy and delete the channel card from the redundant slot.
- Click **No** (or press **N**) to return to the page, where you can select **Single** or select another slot for the redundant LIM.

Depending on which LIM type you selected in step 3, one of the following pages appears:

- If you selected **T1**, the **T1 LIM Settings** page appears:

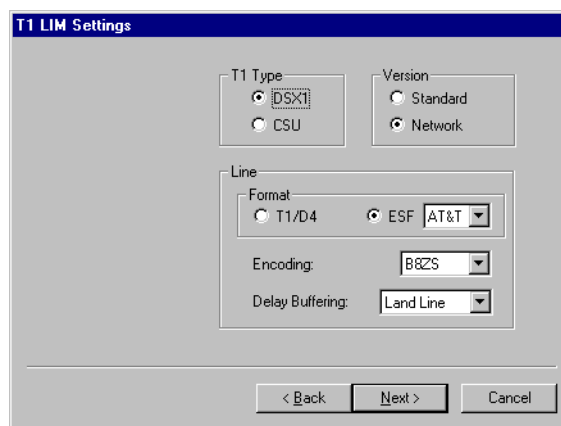


Figure 4-6 T1 LIM Settings Page

- If you selected **E1**, the **E1 LIM Settings** page appears:

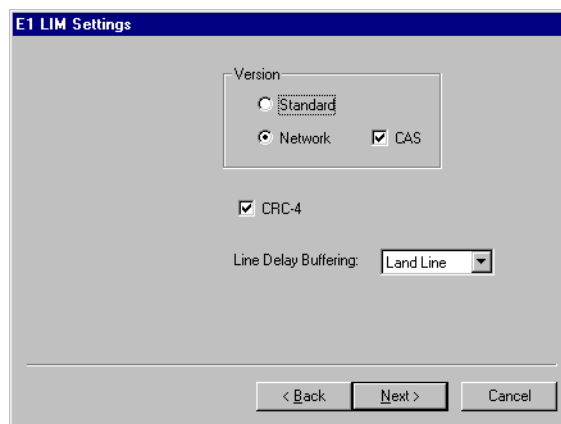


Figure 4-7 E1 LIM Settings Page

- If you selected **VXX**, the **V.xx LIM Settings** page appears:

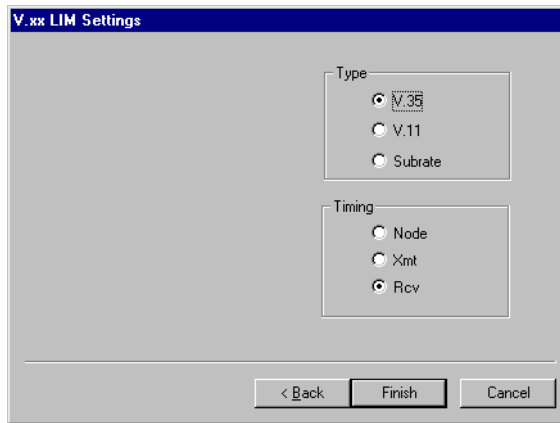


Figure 4-8 V.xx (and Subrate) LIM Settings Page

5. On the wizard page opened in the previous step, specify settings by selecting the appropriate option button, check box, or list item. For more detail about each setting, see one of the following tables:
 - T1 LIM Settings page: [Table 4-3 on page 4-14](#).
 - E1 LIM Settings page: [Table 4-4 on page 4-15](#)
 - V.xx LIM Settings page (and Subrate settings): [Table 4-5 on page 4-16](#)
6. If, in step 3, you selected a V.xx type LIM or the Standard version of either a T1 or E1 LIM, skip to step 7. If you selected the Network version of either a T1 or E1 LIM, click **Next** to advance to the next page of the **New LIM** wizard and select the Network (port and bus) settings from the drop-down lists (see [Table 4-3](#) or [Table 4-4](#) for descriptions).

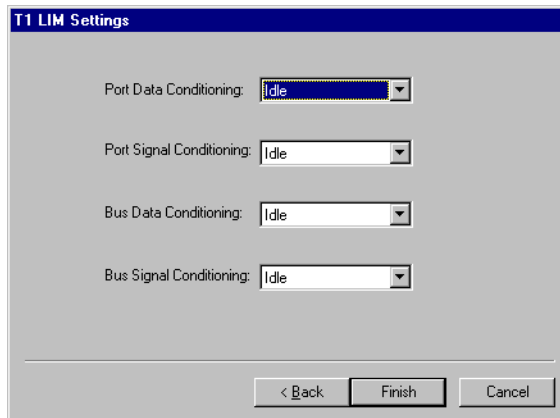


Figure 4-9 T1 LIM Settings (Network) Page

7. Click **Finish** to save your settings, calculate remaining bandwidth, close the **New LIM** wizard, and return to the OCM-1000 window.

Creating a Diverse LIM

1. Create a single LIM on the Local node and Remote node, as described above under [“Creating a Single or Redundant LIM” on page 4-9](#).

2. Create an OCM subaggregate (see *“Creating a Subaggregate”* on page 4-21 for details) on either LIM.
3. In the left pane of the OCM-1000 window, right-click either LIM to open its pop-up menu.
4. On the pop-up menu, click **Properties** to open the **LIM Properties** dialog box. (For detailed information, see *“Modifying LIM Properties”* on page 4-17.)
5. On the **Config** tab, under **Configuration**, click the **Diverse** option button to make available the **Diverse** command button.
6. Click the **Diverse** command button to open the **Diverse LIM Settings** dialog box.

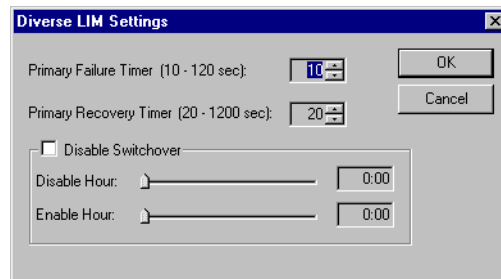


Figure 4-10 Diverse LIM Settings Dialog Box

7. Specify settings by selecting the appropriate values, using the spin box, check box, or slider controls provided. For detailed information about diverse LIM settings, see *Table 4-6* on page 4-16.
8. Click **OK** (or press **ENTER**) to save your settings, close the **Diverse LIM Settings** dialog box, and return to the **Config** tab in the **LIM Properties** dialog box.
9. Click **OK** (or press **ENTER**) to save all LIM settings, calculate remaining bandwidth, close the **LIM Properties** dialog box, and return to the OCM-1000 window.

Table 4-3 Settings for T1D1SX1 and CSU/T1 LIM Types

For this setting	this selection...	does/indicates the following:
New LIM page in wizard or Config tab in LIM Properties		
Type	T1*	Generic T1 LIM type
Slot†	2–32	Slot which contains the non-diverse LIM.
	3/4–31/32	Slots which contain the diverse or redundant LIMs.
Configuration	Single*	Specifies normal operation; only one slot is used.
	Diverse	Fixes the slot next to the primary LIM slot as the secondary LIM. Results in prompt to delete any existing channel in the secondary slot
	Redundant	
Clocking‡	Internal	Sets the local OCM to use an internal clock.
	Facility*	Sets the local OCM to derive clocking from the line.
Error Threshold	Off*	Disables the error threshold check.
	10^{-3} , 10^{-4} , 10^{-5} , 10^{-6}	Lets an error every 10^{-n} bits generate an alarm.
Priority	High*	High priority LIM is clock source as long as it is in sync
	Low	Low priority LIM acts as backup clock source
T1 LIM Settings page in wizard or T1 tab in LIM Properties		
T1 Type	T1DSX1*	Fractional T1 LIM type.
	CSU/T1	Fractional T1 LIM type with CSU/T1.
Version	Standard	Specifies Standard version LIM
	Network*	Specifies Network version LIM
Line Format	T1/D4	T1/D4 format.
	ESF*	Extended Super Frame format.
ESF Mode	AT&T*	Assigns ESF state in this format.
	ANSI	Reports ESF state in this format.
Line Encoding	B8ZS	Bit 8 Zero Suppression Encoding.
	AMI B7	Alternate Mark Inversion Encoding -T1 with Bit 7 Zero Suppression Encoding.
Line Delay Buffering	Land Line*	OCM optimizes delay for land lines.
	Satellite	OCM optimizes delay for satellite links.
T1 LIM Settings page (continued)** in wizard or Network tab in LIM Properties		
Port Data Condit'ing	DACS Trouble	Sets unused DS0s to E4h
	G.732	Sets unused DS0s to FFh
	Idle	Sets unused DS0s to FEh
	None	No change
	Out-of-Service	Sets unused DS0s to 36h
	Out-of-Sync	Sets unused DS0s to 1Ah
	U-Law-Quiet	Sets unused DS0s to 7Fh
Port Signal Condit'ing	Idle	Forces unused DS0 signaling bits to OFh
Bus Data Condit'ing	(see " Port Data Condit'ing ")	(see " Port Data Condit'ing ")
Bus Signal Condit'ing	Idle	
Diverse T1 LIM Settings*** (see Table 4-6 on page 4-16)		
† This selection is not directly modifiable		
‡ See Figure 4-11 on page 4-17 for schematic of timing and clocking selections		
* Default		
** These settings are only available when the Network version is selected.		
*** These settings are only available when diversity is selected.		

Table 4-4 Settings for E1 LIM Types

For this setting...	this selection...	does/indicates the following:
New LIM page in wizard or Config tab in LIM Properties		
Type	E1	Fractional CEPT (E1) LIM type.
Slot†	2–32	Slot which contains the non-diverse LIM.
	3/4–31/32	Slots which contain the diverse or redundant LIMs.
Configuration	Single*	Specifies normal operation; only one slot is used.
	Diverse	Fixes the slot next to the primary LIM slot as the secondary LIM. Results in prompt to delete any existing channel in the secondary slot
	Redundant	
Clocking‡	Internal	Sets the local OCM to use an internal clock.
	Facility*	Sets the local OCM to derive clocking from the line.
Error Threshold	Off*	Disables the error threshold check.
	10^{-3} , 10^{-4} , 10^{-5} , 10^{-6}	Lets an error every 10^{-n} bits generate an alarm.
Priority	High*	High priority LIM is clock source as long as it is in sync
	Low	Low priority LIM acts as backup clock source
E1 LIM Settings page in wizard or E1 tab in LIM Properties		
Version	Standard	Specifies Standard version LIM
	Network*	Specifies Network version LIM
CAS (Channel Associated Signaling)	On*	Enables CAS function (only if Network version selected)
	Off	Disables CAS function (only if Network version selected)
CRC-4	On*	Enables the “Cyclic Redundancy Check” function.
	Off	Disables the “Cyclic Redundancy Check” function.
Line Delay Buffering	Land Line*	OCM optimizes delay for land lines.
	Satellite	OCM optimizes delay for satellite links.
Network LIM Settings** page in wizard or Network tab in LIM Properties		
Port Data Condit'ing	A-Law-Quiet	Forces unused DS0 data to DSh
	DACS Trouble	Forces unused DS0 data to E4h
	G.732	Forces unused DS0 data to FFh
	Idle	Forces unused DS0 data to FEh
	None	No change
	Out-of-Service	Forces unused DS0 data to 36h
	Out-of-Sync	Forces unused DS0 data to 1Ah
Port Signal Condit'ing	Disconnect/Busy	Forces unused DS0 signaling to Dh
Bus Data Condit'ing	(see “Port Data Condit'ing”)	(see “Port Data Condit'ing”)
Bus Signal Condit'ing	Disconnect/Busy	
Diverse E1 LIM Settings*** (see Table 4-6 on page 4-16)		
† This setting is not directly modifiable. ‡ See Figure 4-11 on page 4-17 for schematic of timing and clocking selections * Default ** These settings are only available when the Network version is selected. *** These settings are only available when diversity is selected.		

Table 4-5 Settings for V.11, V.35, and Subrate LIMs

For this setting...	this selection...	does/indicates the following:
New LIM page in wizard or Config tab in LIM Properties		
Type	VXX	Generic V.xx or Subrate LIM type
Slot†	2–32	Slot which contains the non-diverse LIM.
	3/4–31/32	Slots which contain the diverse or redundant LIMs.
Configuration	Single*	Specifies normal operation; only one slot is used.
	Diverse	Fixes the slot next to the primary LIM slot as the secondary LIM. Results in prompt to delete any existing channel in the secondary slot
	Redundant	
Clocking‡	Internal	Sets the local OCM to use an internal clock.
	Facility*	Sets the local OCM to derive clocking from the line.
Error Threshold	Off*	Disables the error threshold check.
	10^{-3} , 10^{-4} , 10^{-5} , 10^{-6}	Lets an error every 10^{-n} bits generate an alarm.
Priority	High*	High priority LIM is clock source as long as it is in sync
	Low	Low priority LIM acts as backup clock source
V.xx LIM Settings page in wizard or V.xx tab in LIM Properties		
Type	V.35*	V.35 LIM interface.
	V.11	V.11 LIM interface.
	Subrate	Subrate LIM interface.
Timing	Node	The link transmit timing to come from the node.
	Xmt	The link transmit timing to come from the transmit clock.
	Rcv*	The link transmit timing to come from the receive clock (loop timing). See Figure 4-11 on page 4-17 .
Diverse V.xx and Subrate LIM Settings** (see Table 4-6 on page 4-16)		
† This selection is not directly modifiable.		
‡ See Figure 4-11 on page 4-17 for schematic of timing and clocking selections		
* Default		
** These settings are only available when diversity is selected.		

Table 4-6 Diverse LIM Settings (All Types)

For this setting	this selection...	does/indicates the following:
Primary Fail Timer**	10*–120 sec (in one-second increments)	Specifies how long after a primary LIM/link failure the system waits before switching to the secondary LIM.
Primary Restore Timer**	20*–1200 sec (in ten-second increments)	Specifies how long the primary LIM/link must be clear before the system returns to the primary LIM.
Disable Switchover	Select or Clear	Select check box to disable switchover at all times. Clear this check box to enable/disable switchover, as specified in Disable Hours and Enable Hours settings (see below).
Disable Hour**	12 midnight*–11 PM	Select 1 of 24 hours (no minutes).
	No Disabling	If the 'disable hour' and 'enable hour' differ, then the time entered in this field is used to prevent any switches to the secondary link until the 'enable hour' is reached.
Enable Hour**	12 midnight*–11 PM No Disabling*	Select 1 of 24 hours (no minutes). See Disable Hour above.

Table 4-6 Diverse LIM Settings (All Types)

* Default
** This parameter is applicable when diversity is selected.

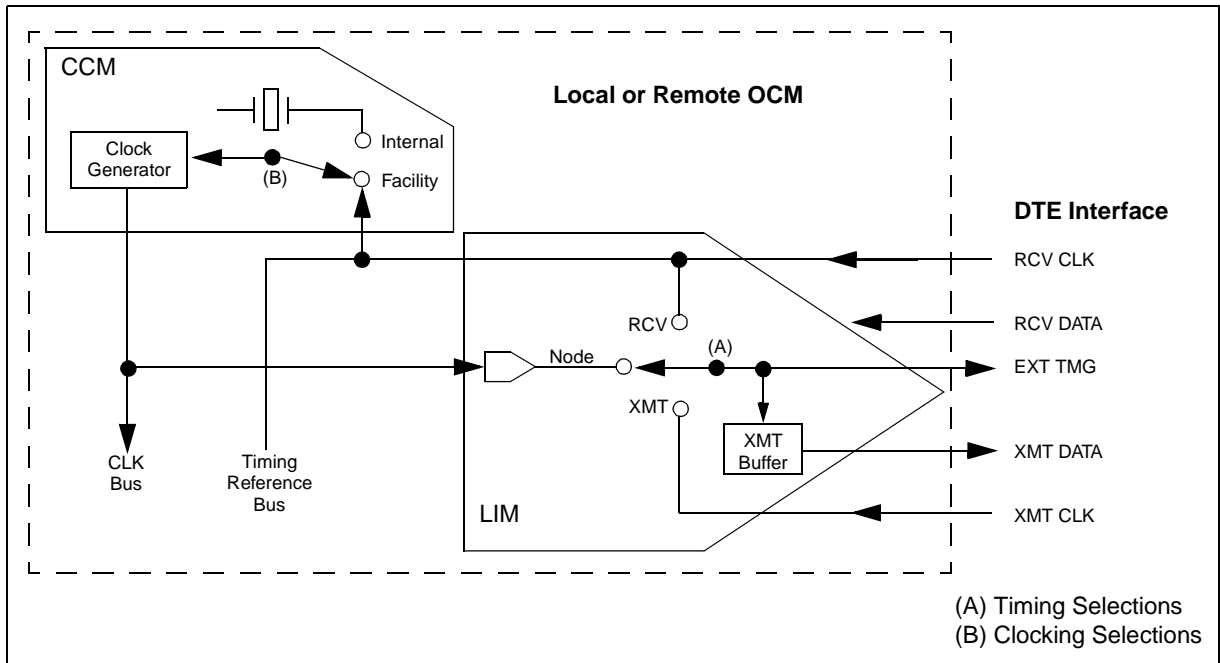


Figure 4-11 LIM Type V.11, V.35, and Subrate Timing and Clocking Selections

Modifying LIM Properties

Once you have created a LIM, you can modify most of its properties, using the **LIM Properties** dialog box.

The exact appearance of the **LIM Properties** dialog box depends on the type and version of LIM selected. For Standard version T1/E1 LIMs and for all V.xx LIMs, the **LIM Properties** dialog box consists of four tabs: **Config**, **T1/E1/V.xx**, **HW Settings**, and **Diagnostics**. Network version T1/E1 LIMs have a fifth tab: **Network**.

The **HW Settings** tab is used to display actual hardware switch settings and their status with respect to the stored configurations. The **Diagnostics** tab is used to access LIM diagnostic status detail. For more information about these functions, see [Chapter 5](#).

You cannot modify a LIM's network assignment, node name/number, type (T1/E1/V.xx), or version (Standard/Network). To modify these properties, you must delete the current LIM and create a new one.

Note ***Changing LIM Location.** When you move LIMs in an operational system, change the configuration first, download the information next, power down all nodes, and move the physical equipment (LIMs, cables, etc.). Power up the nodes last. Moving the equipment first may cause the remote node to become isolated from the local node. If the disable button is pressed on a non-redundant LIM, the LIM goes into stand-by mode. To enable the non-redundant LIM back in-service, reinsert the card in the shelf slot. If the LIM is redundant, operation switches to the secondary card.*

To modify a LIM's properties:

1. In the left pane of the OCM-1000 window, right-click the LIM you wish to modify.
2. On the pop-up menu, click **Properties** to open the **LIM Properties** dialog box.

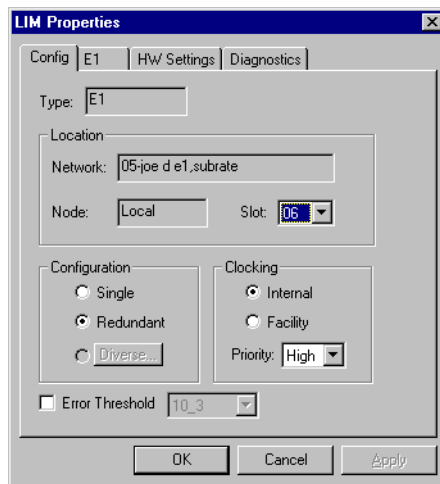


Figure 4-12 LIM Properties Dialog Box (E1 LIM)

The **LIM Properties** dialog box displays the current settings for the selected LIM on the **Config** tab. The current slot number is already selected. The type, network assignment and node name/number appear in gray, view-only boxes, which cannot be edited.

3. If necessary, click the **Config** tab. This tab corresponds to the first page of the **New LIM** wizard. Use this tab to verify or modify generic LIM configuration settings, including:
 - Type (view only)
 - Network and Node (view only)
 - Slot (view and modify)
 - Configuration (view or modify: Single/Redundant/Diverse)
 - Clocking (view or modify: Internal/Facility)
 - Error Threshold (view or modify).

For detailed information on these settings, refer to step 1 through step 3 under *“Creating a Single or Redundant LIM” on page 4-9* and to the corresponding table for the LIM type you are viewing or modifying (see step 4 below for table references). For additional

information on settings for diverse LIMs, see step 5 through step 8 under “*Creating a Diverse LIM*” on page 4-12 and refer to *Table 4-6 on page 4-16*. For general information on configuring redundant or diverse LIMs, refer to “*Configuring Single, Redundant, or Diverse LIMs*” on page 4-8.

4. If necessary, click the **T1/E1/V.xx** tab. This tab corresponds to the second page of the **New LIM** wizard. Use this tab to verify or modify type-specific (T1, E1, or V.xx) LIM settings according to the type of LIM selected. All settings on this tab can be modified except the version (Network/Standard) in T1/E1 LIMs. For screen illustrations and detailed information on these settings, refer to:
 - T1 tab: *Figure 4-6 on page 4-11* and *Table 4-3 on page 4-14*.
 - E1 tab: *Figure 4-7 on page 4-11* and *Table 4-4 on page 4-15*
 - V.xx tab: *Figure 4-8 on page 4-12* and *Table 4-5 on page 4-16*
5. If necessary (and available), click the **Network** tab. Available for Network version T1/E1 LIMs only, this tab corresponds to the third page of the **New LIM** wizard. Use this tab to verify or modify the port and bus data/signal conditioning settings. For detailed information on these settings, refer to:
 - T1 LIMs: *Table 4-3 on page 4-14*.
 - E1 LIMs: *Table 4-4 on page 4-15*
6. When you have entered all of your changes, click **OK** (or press **ENTER**) to save your work, calculate remaining bandwidth, close the **LIM Properties** dialog box, and return to the OCM-1000 window.

If your settings result in a negative remaining bandwidth, you will not be allowed to exit the **LIM Properties** dialog box. When this occurs, click **Cancel** to close the **LIM Properties** dialog box and look for ways to reduce the bandwidth used by the subaggregates and channels on this LIM.

Note *If you have not modified any LIM properties, you should click **Cancel** to close the **LIM Properties** dialog box, and return to the OCM-1000 window. You should also click **Cancel** after viewing the **HW Settings** or **Diagnostics** tab.*

Deleting a LIM

To delete an existing LIM:

1. In the left pane of the OCM-1000 window, right-click the LIM you wish to delete.
2. On the pop-up menu, click **Delete**.
3. In the **Confirm Lim Delete** dialog box, click **OK** to confirm the deletion (or click **Cancel** to return to the OCM-1000 window without deleting the LIM).

Creating, Modifying, and Deleting Subaggregates

If you want point-to-multipoint communications in a network, you must configure subaggregates. This section tells you how to use the OCM-1000 software to create, modify, and delete subaggregates.

Configuring Subaggregates for Point-to-Multipoint Communications

A subaggregate specifies the bandwidth available to transport voice and data traffic. Ability to configure subaggregates for point-to-multipoint communications depends on a number of interacting factors, including: subaggregate type (OCM, Network, or Bypass), LIM type (T1/E1, V.xx, Subrate), and LIM version (Standard or Network).

The following rules and conditions apply when you configure subaggregates:

- **No DSO Conflict.** No two subaggregates can be assigned the same DS0 on the same LIM (for T1/E1). If you attempt to configure a DS0 that is assigned to another subaggregate, an error message results.
- **OCM Subaggregates.** OCM subaggregates can be defined between any combination of source/destination LIM types on the different nodes (e.g. T1-T1, T1-E1, T1-V.xx, T1-Subrate, E1-E1, E1-V.xx, E1-Subrate, V.xx-V.xx, V.xx-Subrate, Subrate-Subrate).

In addition, the following limitations apply to OCM subaggregates:

- No more than two OCM subaggregates can be configured for a network.
- No more than two OCM subaggregates can be configured under the individual T1 and E1 LIMs.
- No more than one OCM subaggregate can be configured under individual V.xx and Subrate LIMs.
- No more than one OCM subaggregate can be configured under any LIM set configured for diversity (i.e. two T1s, E1s, V.11s, V35s, or Subrates). In such diversity configurations, the associated OCM subaggregate is the only subaggregate allowed for the network.
- For an OCM subaggregate defined between LIMs on different nodes, the contiguous bandwidths allocated from each LIM are equal.
- For any OCM subaggregate having at least one T1 LIM type (with AMI B7 Line Encoding), the system treats the DS0 framing rate as being Nx56. For any OCM subaggregate having any combination of T1 LIM type (with B8ZS Line Encoding) and E1 LIM type, the system treats the DS0 framing rate as being Nx64.
- **Network Subaggregates.** Network subaggregates are only configured under a source LIM (i.e. they do not directly connect to a destination LIM). Multiple Network subaggregates can be configured under T1 or E1 LIMs (limited only by the available DS0s on the individual LIM). In addition:
 - When you modify a Network subaggregate that already has a VTP channel assigned, the Network subaggregate retains the following characteristics: the Framing Rate must be Nx64, only one DS0 can be assigned, and subaggregate signaling must be enabled.
 - Only one channel can be assigned to a given Network subaggregate, and that channel consumes the entire bandwidth of the Network subaggregate.
- **Bypass Subaggregates.** Bypass subaggregates can be defined between any Network version T1 and E1 LIM combination on the same node. Multiple Bypass subaggregates can be configured under T1 or E1 LIMs on the same node (limited only by the available DS0s on the individual LIMs). For a Bypass subaggregate defined between the LIMs on the same node, the contiguous bandwidths allocated from each LIM are equal.

Creating a Subaggregate

When configuring a new subaggregate, you use a wizard consisting of two pages. Settings on the first (**New SubAgg**) page of the wizard are common to all subaggregate types. Settings on the second page vary according to the type of subaggregate being configured. Detailed configuration information for subaggregates is provided in [Table 4-7 on page 4-24](#). Information in the table is presented according to the **New SubAgg** wizard page or **SubAgg Properties** tab (see [“Modifying Subaggregate Properties” on page 4-26](#)) where the settings appear.

To create a subaggregate on a LIM:

1. In the left pane of the OCM-1000 window, right-click the LIM on which you wish to add the subaggregate.
2. On the pop-up menu, click **New Subagg** to open the **New SubAgg** page.



Figure 4-13 New SubAgg Page

If available (see [Table 4-7 on page 4-24](#)), the default SubAgg type, OCM, is selected. The cursor is positioned in the **SubAgg Name** box. The network, node name/number, LIM type, and slot of the selected LIM appear in the gray, view-only boxes near the top. This information cannot be edited.

3. In the **SubAgg Name** box, type a name for the new subaggregate (up to 32 alphanumeric characters). An entry is required in this field.
4. Under **Type**, select one (and only one) of the following options:
 - OCM
 - Network
 - Bypass

For detailed information on availability and implementation rules for these options, see [Table 4-7 on page 4-24](#) and [“Configuring Subaggregates for Point-to-Multipoint Communications” on page 4-20](#).

5. When you have completed all entries on this page, click **Next** to advance to the next page of the **New SubAgg** wizard.

Depending on which SubAgg type you selected in step 4, one of the following pages appears:

- If you selected **OCM**, the **OCM SubAgg Setup** page appears:

OCM SubAgg Setup

Node: Local	Node: Remote 1
LIM Type: T1 DSX1	LIM Type: T1 DSX1
Slot: 5	Slot: 05
DSO Start: 06	DSO Start: 06

Rates

DSO Count: 1	Available Bandwidth: 64000
Link Rate:	Remaining Bandwidth: 54200
Sync Rate: 200	
Overhead Rate: 9600	

< Back Finish Cancel

Figure 4-14 OCM SubAgg Setup Page

- If you selected **Network**, the **Network SubAgg Setup** page appears:

Network SubAgg Setup

LIM Settings

Node: Local	Slot: 5
LIM Type: T1 DSX1	
DSO Start: 06	
DSO Count: 1	

Port Settings

DSO Bandwidth: Nx64
<input type="checkbox"/> Signaling
Data Conditioning: None
Signal Conditioning: None

Available Bandwidth: 64000
Remaining Bandwidth: 64000

< Back Finish Cancel

Figure 4-15 Network SubAgg Setup Page

- If you selected **Bypass**, the **Bypass SubAgg Setup** page appears:

Figure 4-16 Bypass SubAgg Setup Page

6. On the wizard page opened in the previous step, specify settings by selecting the appropriate option button, check box, or list item. For detailed information about each setting, see [Table 4-7 on page 4-24](#) and refer to [“Configuring Subaggregates for Point-to-Multipoint Communications” on page 4-20](#).

Note **Configuring DS0 Start and DS0 Count.** The DS0 Start field is available only if the selected LIM type is E1 or T1. If the selected LIM is a Network E1 type with CAS enabled, then DS0 16 is not available. If you modify the DS0 Start field, the DS0 Count field must be adjusted accordingly, i.e. the DS0 Start/Count fields must represent available DS0s. (For more information on modifying the DS0 Count fields, see step 3 under [“Modifying Subaggregate Properties” on page 4-26](#).)

7. Click **Finish** to save your settings, calculate remaining bandwidth, close the **New SubAgg** wizard, and return to the OCM-1000 window.

Table 4-7 Settings for Subaggregates

For this parameter...	this selection...	does/indicates the following:
New SubAgg Page in wizard		
Name	User defined	Defines the name of the subagg.
Type	OCM*	Defines an OCM subagg. Only available if at least one available LIM on another node.
	Network	Defines a Network subagg. Only available on T1/E1 LIM type (Standard or Network).
	Bypass	Defines a Bypass subagg. Only available on Network version T1/E1 LIM type with another Network T1/E1 LIM on the same node having at least one available DSO.
OCM/Network/Bypass SubAgg Setup Page in wizard or SubAgg Properties		
LIM Settings		
Source DS0 Start (on T1 or E1 LIMs only)	1*-24 (for T1/T1CSU)	Local starting DS0 for LIM subaggregate. Default is first available DS0 for E1/T1 LIMs.
	1-31 (for E1)	
Destination Node (OCM SubAgg only)	Local	Selects the other end of the subagg being configured.
	Remote 1	
	Remote 2	
Destination Slot (OCM SubAgg only)	2-32	Selects the destination LIM's node slot.
Destination DS0 Start (OCM SubAgg only)	1*-24 (for T1/T1CSU)	Remote starting DS0 for LIM subaggregate. Default is first available DS0 for E1/T1 LIMs.
	1-31 (for E1)	
DS0 Count (on T1 or E1 LIMs only)	1*-24 (for T1/T1CSU)	No. of available DS0s in source and destination LIM (source only for Network subaggregate)
	1-31 (for E1)	
Rate Settings (OCM SubAggs only)		
Link Rate (on V.11, V.35, subrate LIMs only)	(see Table 4-8 and Table 4-9)	Selects communications link data rate. Available options depend on source/destination LIM types.
Sync Rate	200* 400 800 1600	Bandwidth amount (in bps) for synchronizing the communications link.
Overhead Rate	400 1200 4800 9600* 19200	Bandwidth amount (in bps) for overhead communications.
Port Settings (Network and Bypass SubAggs only)		
DSO Bandwidth	N x 56	Available bandwidth for AMI B7
	N x 64	Available bandwidth for B8ZS
Signaling (on Network T1 or E1/CAS-enabled LIMs only)	On* or off	Note: signaling must be enabled for VTP channel.
Data Conditioning (on Network T1 or E1 LIMs only)	See Table 4-10 .	
Signal Conditioning (on Network T1 or E1 LIMs only)	See Table 4-11 .	
Bandwidth Status (All SubAggs)		
Available Bandwidth†	(N x 64 K)	Available bandwidth for B8ZS, N = # of DS0s.
	(N x 56 K)	Available bandwidth for AMI B7, N = # of DS0s.
Remaining Bandwidth†	(Numeric)	Remaining bandwidth based on LIM and channel settings; calculated upon entry into this dialog box or when LIM settings are changed.
* Default		
† This selection is not directly modifiable.		

Table 4-8 Subaggregate Link Rates for V.11 and V.35 LIMs

Nx	Link Rates					
56 K	56 K,	112 K,	168 K,	224 K,	280K,	336 K,
	392 K,	448 K,	504 K,	560 K,	616 K,	672 K,
	728 K,	784 K,	840 K,	896 K,	952 K,	1.008 M,
	1.064 M,	1.120 M,	1.176 M,	1.232 M,	1.288 M,	1.344 M
64 K	64 K,	128 K,	192 K,	256 K,	320 K,	384 K,
	448 K,	512 K,	576 K,	640 K,	704 K,	768 K,
	832 K,	896 K,	960 K,	1.024 M,	1.088 M,	1.152 M,
	1.216 M,	1.280 M,	1.344 M,	1.408 M,	1.472 M,	1.536 M,
	1.600 M,	1.664 M,	1.728 M,	1.792 M,	1.856 M,	1.920 M,
	1.984 M					

Table 4-9 Subaggregate Link Rates for Subrate LIMs

Nx	Link Rates					
2400	9.6 K,	12 K,	14.4 K,	16.8 K,	19.2 K,	21.6 K,
	24 K,	26.4 K,	28.8 K,	31.2 K,	33.6 K,	36 K,
	38.4 K,	40.8 K,	43.2 K	45.6 K		
8000	16 K,	24 K,	32 K,	40 K,	48 K,	56 K,
	64 K					

Table 4-10 Data Conditioning Settings for Network or Bypass Subaggregate

For this LIM type	this setting	does/indicates the following
T1 (Signaling enabled)	DACS Trouble	Forces configured DS0 signaling to E4h
	Quiet*	Forces configured DS0 signaling to 7Fh
T1 (Signaling disabled)	None*	No change to signaling
	Idle	Forces configured DS0 signaling to FEh
	Out-of-Service	Forces configured DS0 signaling to 36h
	Out-of-Sync	Forces configured DS0 signaling to 1Ah
E1 (Signaling enabled)	Quiet	Forces configured DS0 signaling to D5h
E1 (Signaling disabled)	AIS Fail	Forces configured DS0 signaling to FFh
* Default		

Table 4-11 Signal Conditioning Settings for Network or Bypass Subaggregate

For this LIM type	this setting	does/indicates the following
T1 (Signaling enabled)	None	No conditioning
	Freeze	Freeze at present settings
	A0+B0*	Force A+B bits to 0
	A0+B1	Force A to 0 and B to 1
	A0/1+B0/1	Force A+B to 0, then to 1
	A1/0+B1	Force A to 1, B to 1, then A to 0
	A1+B1	Force A+B bits to 1
T1 (Signaling disabled)	None*	No change
E1 (Signaling enabled)	A1+B1+C1+D1	Force A+B+C+D bits to 1
E1 (Signaling disabled)	None	No change
* Default		

Modifying Subaggregate Properties

Once you have created a subaggregate, you can modify most of its properties, using the **SubAgg Properties** dialog box.

The **Subagg Properties** dialog box consists of two tabs: a **Config** tab and a **Diagnostics** tab. The exact appearance of the **Config** tab depends on the type (OCM, Network, or Bypass) of subaggregate selected and closely resembles the **SubAgg Setup** page in the **New SubAgg** wizard for that type (refer to [Figure 4-14](#) through [Figure 4-16](#)). The **Diagnostics** tab is used to access subaggregate diagnostic status detail. For more information about this function, see [Chapter 5](#).

To modify a subaggregate's properties:

1. In the left pane of the OCM-1000 window, right-click the subaggregate you wish to modify, then click **Properties** on the pop-up menu. (Alternatively, select the LIM containing the subaggregate you wish to modify, then double-click the subaggregate in the right pane of the OCM-1000 window.)
2. The **Subagg Properties** dialog box appears.

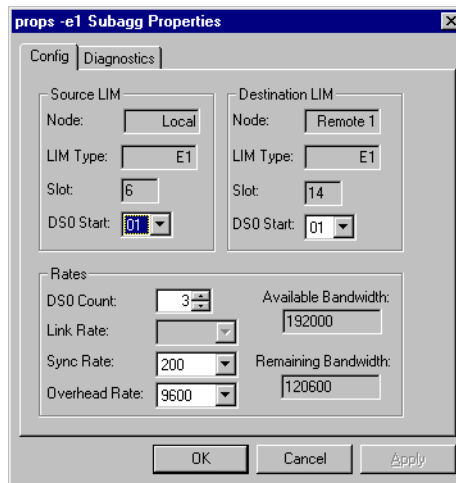


Figure 4-17 Subagg Properties Dialog Box

The **Subagg Properties** dialog box displays the current settings for the selected subaggregate on the **Config** tab. The source LIM DSO start setting is already selected. The source and destination (for OCM and Bypass subaggregate types) node name/number, LIM type, and slot number appear in gray, view-only boxes, which cannot be edited.

3. If necessary, click the **Config** tab. Use this tab to verify or modify configuration settings appropriate to the type of subaggregate selected. For detailed information on these settings, refer to step 6 under [“Creating a Subaggregate” on page 4-21](#) and [Table 4-7 on page 4-24](#). For additional information on configuring subaggregates, refer to [“Configuring Subaggregates for Point-to-Multipoint Communications” on page 4-20](#).

If you modify the **DS0 Start** field, you must adjust the **DS0 Count** field accordingly, i.e. the DS0 Start/Count fields must represent available DS0s. When you modify the **DS0 Count** field, keep in mind the following:

- **All Subaggregates.** If your **DS0 Count** setting results in a negative remaining bandwidth, you will not be allowed to exit the **SubAgg Properties** dialog box.
- **Network Subaggregates.** If a VTP channel is configured on a Network subaggregate, you cannot modify the **DS0 Count** (it can only have a value of 1).

4. When you have entered all of your changes, click **OK** (or press **ENTER**) to save your work, calculate remaining bandwidth, close the **SubAgg Properties** dialog box, and return to the OCM-1000 window.

If your settings result in a negative remaining bandwidth, you will not be allowed to exit the **SubAgg Properties** dialog box. You can either increase the **DS0 Count** (on T1 or E1 LIMs) or increase the **Link Rate** (on V.xx or Subrate LIMs), or you can click **Cancel** to close the dialog box without saving your changes.

***Note** If you have not modified any subaggregate properties, you should click **Cancel** to close the **Subagg Properties** dialog box, and return to the OCM-1000 window. You should also click **Cancel** after viewing the **Diagnostics** tab.*

Deleting a Subaggregate

To delete an existing subaggregate:

1. In the left pane of the OCM-1000 window, right-click the subaggregate you wish to delete.
2. On the pop-up menu, click **Delete**.
3. In the **Confirm Subagg Delete** dialog box, click **OK** to confirm the deletion (or click **Cancel** to return to the OCM-1000 window without deleting the subaggregate.)

Creating, Modifying, and Deleting Channels

The OCM-1000 software allows you to configure a variety of channel cards. This section tells you how to use the OCM-1000 software to create, modify, and delete channels.

Configuring Data and Voice Channels

On any node, you can configure the following types of channel cards:

- **Data Channel Cards.** Synchronous (Sync) Data, Asynchronous (Async) Data, Isochronous (Isoc) Data, Transition Encoded (T-Encode) Data
- **Voice Channel Modules (VCMs).** Adaptive Differential Pulse Code Modulation (ADPCM), Very Low Bit Rate Voice (VLBRV), Codebook Excited Linear Predictive (CELP), Pulse Code Modulation (PCM)
- Dual Private Voice (DPV)
- Voice Transcoder Platform (VTP)

The following rules or conditions apply when you configure channel cards:

- **Subaggregates.** All channel cards, other than SpectraCom, must be configured on a selected subaggregate.
- **Ports.** No port can be configured more than once.
- **Channel Crossovers.** Channel slots within a specific subaggregate do not have to be adjacent. However, multiple channels configured on the same subaggregate cannot cross (e.g., slots 2, 3, and 4 on one node cannot connect to 2, 4, and 3 on the other node). Channels are allowed to cross if they go over different subaggregates.
- **Dual Data Channel (DDC) Cards.** For cards having dual data channel capability, you can configure any mixture of the Sync, Async, Isoc, and T-Encode types on the “a” and “b”

sides. For a Synchronous data channel, rates greater than 38.4k are not available for the “b” side.

- **Voice Channel Modules.** When you configure Voice Channel Modules, generally source (Channel Card 1) and destination (Channel Card 2) types must match (e.g., ADPCM-ADPCM, VLBRV-VLBRV, CELP-CELP, and PCM-PCM). VLBRV-Sync and CELP-Sync combinations are also permitted for Voice-Sync daisy chain configurations with the Sync card configured on the destination slot. This lets a VCM be chained through several networks without the degradation. If you select Sync, you must use a High Speed Data Channel.
- **Voice Channel Slot Restrictions.** You cannot use a voice channel card in slot 2 of a 10-slot enclosure if that slot has no RJ-45 jack. If slot 2 has no RJ-45 jack, move the card to a different slot. If there is only one RJ-45 connector for a slot configured for a DPV, only the “a” side of the card is usable.
- **DPV and VTP Channel Cards.** You can configure source and destination DPV and VTP channels as matched or combined pairs (DPV-DPV, VTP-VTP, DPV-VTP, or VTP-DPV). DPV-Sync and VTP-Sync combinations are also permitted for Voice-Sync daisy chain configurations, provided the Sync card has Dual Data capability and is configured on the destination slot. This lets a DPV be chained through several networks without degradation. If you select Sync, you must use a dual data card.
- **VTP Channel Cards.** To configure a VTP card, a Network Subagg that meets the following criteria must be available on each node:
 - Configured on the same node as the VTP card
 - Has available bandwidth (is not used by any channels)
 - Has Nx64k DS0 Bandwidth
 - Has only 1 DSO
 - Signaling is enabled
- **Multi-Port Communications Channel Cards.** For channel cards that support multi-port communications (i.e., DDC, DPV, and VTP), all ports from the same card must be routed over the same OCM subaggregate. Ports from the same VTP card can be connected to network subaggregates from different LIMs.
- **Power Supply Limitations.** When you configure channels, be aware of power supply limitations. For information about power supply limitations, see the *Office Communications Manager Installation and Operation Manual*, GDC 036R340-000. For SpectraComm card power supply limitations, see the appropriate SpectraComm card hardware manual.

Creating a Channel

When configuring a new channel, you use a wizard consisting of two or three pages. Settings on the first (**New Channel**) page of the wizard are common to all channel types. Settings on subsequent pages vary according to the type of channel being configured. Detailed configuration information for new channels is provided in [Table 4-13 on page 4-31](#).

To create a channel on a subaggregate:

1. In the left pane of the OCM-1000 window, right-click the subaggregate on which you wish to add the channel.

2. On the pop-up menu, click **New Channel** to open the **New Channel** page.

The screenshot shows a 'New Channel' dialog box with the following fields and values:

- Subaggregate Name: props -e1
- Remaining Bandwidth: 111000
- Source Node: Local
- Source Type: Sync
- Source Slot: 02
- Source Port: a
- Destination Node: Remote 1
- Destination Type: Sync
- Destination Slot: 03
- Destination Port: b
- Channel Rate: 9.600K

Buttons at the bottom: < Back, Next >, Cancel

Figure 4-18 New Channel Page

This dialog box consists of four field groups:

- **Subaggregate.** The **Subaggregate** group, near the top, displays the name of the selected subaggregate and remaining bandwidth in the gray, view-only boxes. This information cannot be edited.
- **Source Channel Card.** Immediately below the Subaggregate group, to the left, source channel card fields identify the node, slot, and type of card to be configured on the selected node/subaggregate. The node name appears in a gray, view-only box and cannot be edited.
- **Destination Channel Card.** If you selected an OCM subaggregate, destination channel card fields identify the node, slot, and type of card to be configured on the destination node/subaggregate.
- **Channel Rate.** Near the bottom, Channel Rate identifies the selected data transfer rate for the channel.

Initially, the lowest available slot (having a compatible available port) is selected as the default for the source and destination sides of the channel.

3. On the **New Channel** page, specify settings for **Slot**, **Type**, and **Channel Rate** by selecting the appropriate list items for source channel card and (if OCM subaggregate) destination channel card. For more detail about each setting, see [Table 4-13 on page 4-31](#) and refer to [“Configuring Data and Voice Channels” on page 4-27](#).
4. When you have completed all entries on this page, click **Next** to advance to the next page of the **New Channel** wizard.

If your settings result in a negative remaining bandwidth, you will not be allowed to exit the **New Channel** page. You can either decrease the channel rate or click **Cancel** to close

the dialog box without creating the channel. If your settings cross channels within the selected subaggregate (OCM only), you will receive an error message and be returned to the **New Channel** page.

Depending on which channel type(s) you selected in step 3, one of the following channel setup pages appears ([Table 4-12](#)):

Table 4-12 New Channel Wizard Setup Pages

Channel Type(s)	Channel Setup Page(s)	More Information
Data Channel Cards		
Sync – Sync	Sync Channel Setup	page 4-33 and ff.
Sync – (Network SubAgg)	Network Sync Channel Setup	
Async – Async	Async Channel Setup	
Async – (Network SubAgg)	Network Async Channel Setup	
Isoc – Isoc	Isoc Channel Setup	
Isoc – (Network SubAgg)	Network Isoc Channel Setup	
T-Encode – T-Encode	T-Encode Channel Setup	
T-Encode – (Network SubAgg)	Network T-Encode Channel Setup	
Voice Channel Modules (VCMs)		
ADPCM – ADPCM	ADPCM Channel Setup	page 4-37 and ff.
PCM – PCM	PCM Channel Setup	
CELP – CELP	CELP Channel Setup	
VLBRV – VLBRV	VLBRV Channel Setup	
Dual Private Voice (DPV)		
DPV – DPV	DPV Channel Setup (2 pages)	page 4-40 and ff.
Voice Transcoder Platform (VTP)		
VTP – VTP	VTP Channel Setup (2 pages)	page 4-46 and ff.
Voice Channel Combinations		
DPV – VTP VTP – DPV	DPV – VTP Channel Setup (2 pages) VTP – DPV Channel Setup (2 pages)	page 4-40 and ff. page 4-46 and ff. page 4-48 and ff.
DPV – Sync (Daisy Chain) Sync – DPV (Daisy Chain)	DPV – Sync Setup Sync – DPV Setup	page 4-40 and ff. page 4-33 and ff.
VTP – Sync (Daisy Chain) Sync – VTP (Daisy Chain)	VTP – Sync Setup Sync – VTP Setup	page 4-46 and ff. page 4-33 and ff.
CELP – Sync (Daisy Chain) Sync – CELP (Daisy Chain)	CELP – Sync Setup Sync – CELP Setup	page 4-37 and ff. page 4-33 and ff.
VLBRV – Sync (Daisy Chain) Sync – VLBRV (Daisy Chain)	VLBRV – Sync Setup Sync – CELP Setup	page 4-37 and ff. page 4-33 and ff.
Other Cards		
SpectraComm	SpectraComm Setup	page 4-51

- On the channel setup page opened in the previous step, specify settings by selecting the appropriate option button, check box, or list item. For detailed setup information, see the pages specified in [Table 4-12](#) under “More Information.”
- Click **Finish** to save your settings, calculate remaining bandwidth, close the **New Channel** wizard, and return to the OCM-1000 window.

If your settings result in a negative remaining bandwidth, you will not be allowed to exit the **New Channel** wizard. You can either decrease the channel rate or click **Cancel** to close the dialog box without creating the channel.

Table 4-13 Settings for New Channels (All Types)

For this parameter...	this selection...	does/indicates the following:
Subaggregate		
Name	(Read-only)	Displays selected subaggregate
Remaining Bandwidth†	(Read-only)	Displays remaining bandwidth based on LIM and channel settings (including new channel).
Channel Card(s)		
Node	(Read only)	Displays names of the node(s) where the channel resides.
Type	The selection in source channel card Type field alters the available choices in the destination channel card Type field.	
	Sync*	Defines the channel as a synchronous data channel.
	Async	Defines the channel as an asynchronous data channel.
	Isoc	Defines the channel as an isochronous data channel.
	T-Encoded	Defines the channel as a transition-encoded data channel.
	ADPCM	Defines the channel as an Adaptive Differential Pulse Code Modulation voice compression channel.
	PCM	Defines the channel as a Pulse Code Modulation channel.
	VLBRV	Defines the channel as a Very Low Bit Rate Voice compression channel.
	CELP	Defines the channel as a Codebook Excited Linear Predictive voice compression channel.
	DPV	Defines the channel as a Dual Private Voice Module channel.
	VTP	Defines the channel as a Voice Transcoder Platform channel.
SpectraComm	Defines the channel as a SpectraComm (FastRoute, V.F. 28.8 and 500A DSU) channel.	
Slot	2–32	Defines slot(s) occupied by card(s).
Port	a, b, c, d	Field initially displays first available port. You can select from list of available (undefined) ports within the selected node. Modifying source channel card slot changes destination channel card slot to display the same slot number (default slot numbers match), if possible. In addition: <ul style="list-style-type: none"> • For low-speed, dual data cards (Sync, Async, Isoc, or T-Encode; channel rate less than or equal to 38.4 K), an “a” or “b” follows slot number and this field allows access to either channel. For example if the channel rate is 9.600k, a Sync channel is selected, and slots 9, 10, and 11 are currently undefined this field would contain 9a, 9b, 10a, 10b, 11a, and 11b as available options. • If the Type field is set to DPV, then all available slots (including DPVs with unused ports) allow the selection of an “a” or “b” port (maximum rate for DPV is 9.600k). • If the type field is set to VTP, then each available slot (including existing VTPs with available ports) will contain ports “a, b, c, and d” for selection.
Channel Rate	For data channels, see Table 4-14 . For voice channels, see Table 4-15 .	Selects the channel data rate. Available rates depend on the card types selected. If a “b” channel is selected then the allowed rates cannot exceed 38.4k. When this field is modified, the Remaining Bandwidth field is updated to account for the rate modification.
* Default		
† This selection is not directly modifiable.		

Table 4-14 Selectable Data Rates for Data Channels

Channel Type	Data Rates†					
Synchronous	300, 2.4 K, 7.2 K, 16.0 K, 36.0 K, 72.0 K, 144.0 K, 288.0 K, 576.0 K, 960.0 K, 1.344 M, 1.728 M,	600, 3.2 K, 8.0 K, 19.2 K, 38.40 K, 76.8 K, 153.6 K, 320.0 K, 640.0 K, 1.024 M, 1.408 M, 1.792 M,	1.2 K, 3.6 K, 9.6 K*, 24.0 K, 48.0 K, 96.0 K, 192.0 K, 384.0 K, 704.0 K, 1.088 M, 1.472 M, 1.856 M,	1.6 K, 4.0 K, 12.0 K, 28.0 K, 56.0 K, 112.0 K, 224.0 K, 448.0 K, 768.0 K, 1.152 M, 1.536 M, 1.920 M	1.8 K, 4.8 K, 14.0 K, 28.8 K, 57.6 K, 115.2 K, 230.4 K, 460.8 K, 832.0 K, 1.216 M, 1.600 M,	2.0 K, 6.4 K, 14.4 K, 32.0 K, 64.0 K, 128.0 K, 256.0 K, 512.0 K, 896.0 K, 1.280 M, 1.664 M, 1.984 M
Asynchronous	300, 2.4 K, 7.2 K, 16.0 K,	600, 3.2 K, 8.0 K, 19.2 K	1.2 K, 3.6 K, 9.6 K*,	1.6 K, 4.0 K, 12.0 K,	1.8 K, 4.8 K, 14.0 K,	2.0 K, 6.4 K, 14.4 K,
	(24 K, 28 K, 28.8 K, 32 K, 36 K, 38.4 K available only on High Speed Data Channel)					
Isochronous	300, 2.4 K, 7.2 K, 16.0 K, 36.0 K,	600, 3.2 K, 8.0 K, 19.2 K, 38.4 K,	1.200 K, 3.6 K, 9.6 K*, 24.0 K, 48.0 K,	1.6 K, 4.0 K, 12.0 K, 28.0 K, 56.0 K,	1.8 K, 4.8 K, 14.0 K, 28.8 K, 57.6 K,	2.0 K, 6.4 K, 14.4 K, 32.0 K, 64.0 K
Transition-Encoded ‡	300, 1.2 K, 4.0 K, 14.0 K,	400, 1.6 K, 4.8 K, 14.4 K,	600, 1.8 K, 7.2 K, 16.0 K	800, 2.0 K, 8.0 K,	900, 2.4 K*, 9.6 K,	1.0 K, 3.6 K, 12.0 K,
* Default						
† Dual data channel cards have a maximum data rate of 38.4 Kbps per channel.						
‡ Use 4 x rate for bandwidth.						

Table 4-15 Selectable Data Rates for Voice Channels

Channel Type	Data Rates		
VCM Channels			
ADPCM	16 K,	24K,	CC32 K* [For voice applications (CCITT 32 Kbps).] NA32 K [For CCITT V.29 FAX modem applications (North American ANSI 32 Kbps).]
VLBRV	2.4 K	4.8 K	9.6 K*†
CELP	4.8 K	6.4 K*†	9.6 K†
PCM	64 Kbps		
DPV/VTR Channels			
DPV	8.0 K	9.6 K†	
DPV with CELP or "not selected"	8.0 K	9.6 K†	
VTP	8.0K	9.6K†	
* Default			
† Required for Fax			

Configuring Data Channel Cards: Sync, Async, Isoc, T-Encode

When you select one of the data channel card types (Sync, Async, Isoc, T-Encode) on the **New Channel** page ([Figure 4-18](#)), a channel setup page appears similar to the **Sync Channel Setup** page shown in [Figure 4-19](#).

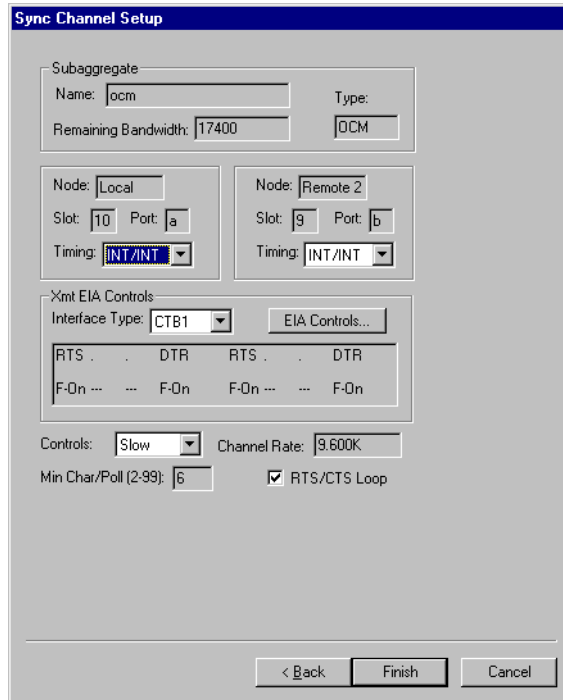


Figure 4-19 Sync Channel Setup Page

Sync, Async, Isoc, T-Encode channels all use a setup page resembling this one to specify settings. When you create a Sync channel on a network subaggregate (Sync is the only data channel allowed on a network subaggregate), the destination (Channel 2) card fields are disabled. See [Table 4-16](#) and [Table 4-17](#) for detailed information about settings for all Data Channel cards.

Table 4-16 Settings for Data Channels

For this parameter...	this selection...	does/indicates the following:
Subaggregate		
Name	(Read-only)	Displays selected subaggregate
Type	(Read-only)	Displays selected subaggregate type (OCM, Network)
Remaining Bandwidth†	(Read-only)	Displays remaining bandwidth (includes the new channel and all other channels configured on this subagg). Value is affected by the Channel Rate and Min Char/Poll field settings.
Channel Card(s)		
Node	(Read only)	Names of the nodes where the channel resides.
Slot	(Read only)	Slot(s) and port(s) occupied by channel card(s).
Timing (Sync only)	Xmt/Rcv	Selects timing for local and remote ends of a synchronous channel.
	Int/Int*	
	Ext/Int	
	Ext/Ext	
Xmt EIA Controls		
Interface Type	See Table 4-17 on page 4-35 .	Defines EIA control signal interface type.
Xmt EIA Controls	See Table 4-17 on page 4-35 .	When you select an EIA control signal interface type, the local and remote EIA control signals change state. Click button to open EIA Controls dialog box and select individual EIA control signals. Available settings are: F-On (forced on), F-Off (forced off), or --- (pass through).
Other Settings		
Controls	Slow*	Enables slow controls; no bandwidth penalty.
	None	Sets all controls forced on; no bandwidth penalty.
	Priority	Enables priority controls.
Priority Controls Min. Char/Poll	2-99 (6*)	If Priority Controls are selected, this field displays the minimum number of characters you expect each polling packet to contain. This selection is multiplied by 8 because 8 bits is the most common character length (for synchronous channels). Asynchronous channels may have 6 data bits and 1 stop bit. In this case, reduce the Min Char/Poll selection by approximately 20%.
Channel Rate	(Read only)	Displays selected channel data rate
RTS/CTS Loop	Enable*	Enables "Request To Send/Clear To Send" loop.
	Disable	Disables "Request To Send/Clear To Send" loop.
Data/Stop Bits (Async only)	8/1*, 8/2, 9/1, 6/1, 6/2, 7/1, and 7/2	Specifies data/stop bits for source and destination cards.
* Default		

Table 4-17 XMT EIA Controls Selections

Selection	Interface Type	Local				Remote			
		RTS	.	.	DTR	RTS	.	.	DTR
CTA1	CPU to Terminal	---	---	---	---	---	---	---	---
CTB1*	CPU to Terminal - RTS/DTR Forced On	RTS F-On	.	.	DTR F-On	RTS F-On	.	.	DTR F-On
CTC1	CPU to Terminal - DTR Forced On	RTS	.	.	DTR F-On	RTS	.	.	DTR F-On
CPL1†	CPU to Private Line Modem	RTS	.	.	DTR	DCD	.	.	DSR
CPL1-R†	CPU to Private Line Modem	DCD	.	.	DSR	RTS	.	.	DTR
CPM2†	CPU to Modem - Polling	RTS	CTS	.	DTR	DCD	CTS	.	DSR
CPM2-R†	CPU to Modem - Polling	DCD	CTS	.	DSR	RTS	CTS	.	DTR
CPT2†	CPU to Terminal - Polling	RTS	CTS	.	DTR	RTS	CTS	.	DTR
CDM3	CPU to Dial-Up Modem	RTS	OOS	.	DTR	DCD	CTS	RI	DSR
DMC3	Dial-Up Modem to CPU	DCD	CTS	RI	DSR	RTS	OOS	.	DTR

* Default
 † You can select these interface types in one of two ways (for local and remote) .

Configuring G.703 Data Channels

The G.703 Data Channel card provides a single G.703 co-directional channel interface operating at 64 Kbps and supports one serial synchronous interface at 64 Kbps with timing from the customer (i.e. external). Also, the G.703 has a selectable octet alarm disable feature which inhibits bipolar violation insertion in the receive data path during loss of transmit signal.

Transmit timing input to the G.703 Data Channel card is extracted and used to clock data into a transmit buffer. Receive timing from the OCM aggregate is used to clock data from the receive buffer to the customer interface, or the 64 KHz transmit timing from the customer interface may be used.

Note The G.703 Dual Channel module may occupy any available slot of an OCM Shelf, Enclosure, or Expansion Shelf.

Configure the G.703 Data Channel card as a regular synchronous channel with the parameters listed below (see [Table 4-18](#)).

Table 4-18 G.703 Data Channel Technical Characteristics

For this item...	G.703 has the following characteristics:
Data Rate	64 Kbps
Interface	ITU-T G.703 co-directional
Interface Type	DB-25 female, DCE
Controls	V.24/TIA-232E

Note For the G.703 Data Channel card, the hardware supports 64 K, 128 K, 192 K, and 256 K rates only.

Configuring Turbo Data Channels

The Turbo Data Channel (TDC) card is an advanced data compression card which provides a typical data compression ratio of 4:1 for most types of data. It is fully end-to-end compatible with the TMS-3000 Turbo Data Channel card, standalone Turbo Data Unit, and GDC's DataComm 500/DCC DSU with integral data compression.

The following two versions of the TDC are available (see [Table 4-19](#)):

- TDC-256 K (operates at terminal rates up to 256 Kbps)
- TDC-512 K (operates at terminal rates up to 512 Kbps)

The TDC accepts uncompressed serial data via the OCM's DB-25 connector. Data compression occurs using a Genetic Compression Algorithm which is linked to a demographic model of the traffic. A compression ratio of 4:1 is typical for SDLC, IPX, and IP traffic while ratios exceeding 20:1 are achieved with asynchronous terminal traffic. Terminal equipment flow control is provided via clock speed manipulation, inband flow control procedures, or control leads.

You manage the TDC with a standard ASCII terminal connected to the front panel. Management is end-to-end and provides configuration, control statistics, and usage reports.

Configure the Turbo Data Channel cards as regular synchronous channels with the parameters listed below (see [Table 4-19](#)):

Table 4-19 Turbo Data Channel Technical Characteristics

For this item...	Turbo Data Channel has the following characteristics:
Interface Type	V.11/RS-422
	V.24-TIA-232EV
Interface Connector	DB-25 female
	ISO2593 via adapter
Line Rate - 256 K unit (compressed)	600, 1200, 1600, 1800, 2000, 2400, 3200, 3600, 4000, 4800, 6400, 7200, 8000, 9600, 12000, 14400, 16000, 19200, 24000, 28800, 32000, 36000, 38400, 48000, 57600, 64000
Line Rate - 512 K unit (compressed)	All the rates above plus the following: 72000, 76800, 96000, 115200, 128000

Note For the Turbo Data Channel card, the hardware supports the above rates only. Note that the TDC-256 K rate range goes up to 64 K and the TDC-512 K rate range goes up to 128 K.

The Turbo Data Channel card has a maintenance port (on the front of the card) and some parameters must be configured with a Maintenance Console connected to the maintenance port. For information about how to connect the Maintenance Console and configure these parameters, see the *Turbo Data Channel Card Installation and Operation Manual*, GDC 036R349-000.

Configuring Voice Channel Modules (VCMs): ADPCM, PCM, CELP, VLBRV

When you select one of the Voice Channel Module (VCM) types (ADPCM, PCM, CELP, VLBRV) on the **New Channel** page ([Figure 4-18](#)), a channel setup page appears similar to the **CELP Channel Setup** page shown in [Figure 4-20](#).

The screenshot shows the 'CELP Channel Setup' dialog box. It is divided into several sections. At the top, under 'Subaggregate', there is a 'Name' field containing 'locm props' and a 'Type' dropdown set to 'OCM'. Below this is a 'Remaining Bandwidth' field showing '172600'. The main area is split into two columns for 'Local' and 'Remote 1' nodes. Each column has a 'Node' dropdown, 'Slot' and 'Port' fields (both set to '3' and 'a' respectively), a 'Sig Type' dropdown set to 'FXS', a 'Sig Conditioning' dropdown set to 'Not Ring', a 'Rcv VF Delta dB' dropdown set to '+0.0', and a 'Rcv Sig' dropdown set to 'Passthru'. At the bottom of the dialog, there are three buttons: '< Back', 'Finish', and 'Cancel'. The 'Channel Rate' is set to '6.400K' and 'Signalling States' is set to '4'.

Figure 4-20 CELP (VCM) Channel Setup Page

ADPCM, PCM, CELP, and VLBRV channels all use a setup page resembling this one to specify settings. When you create any of these channels on a network subaggregate, the destination (Channel 2) card fields are disabled. Selections in some fields on this page affect other fields. In general, when you select source channel card field values, the corresponding destination channel card fields will only display the valid selections available for creating the channel. Selecting or modifying destination channel card fields, however, does not affect source channel card fields in any way.

See [Table 4-20](#) through [Table 4-24](#) for detailed information about settings for all VCM cards.

Table 4-20 Settings for Voice Channel Modules

For this parameter...	this selection...	does/denotes the following:
Subaggregate		
Name	(Read-only)	Displays selected subaggregate
Type	(Read-only)	Displays selected subaggregate type (OCM, Network)
Remaining Bandwidth†	(Read-only)	Displays remaining bandwidth (includes the new channel and all other channels configured on this subagg).
Channel Cards		
Node	(Read-only)	Names of the nodes where the channel resides.
Slot/Port	2–32 (Read-only)	Slots occupied by cards.
Signaling Type (local)	FXS*	Selects the type of local signaling.
	FXO	
	E&M	
Signaling Type (remote)	See Table 4-21 .	Selects the type of remote signaling.
Signal Conditioning	See Table 4-22 .	Selects the type of signal conditioning. (Local and remote conditioning are selected independently.)
Rcv VF Delta dB	See Table 4-23 .	Designates the receive voice frequency (VF) delta in dBs.
Rcv Signaling	See Table 4-24 .	Selects the type of receive signaling.
Other Settings		
Channel Rate	(Read-only)	Displays selected channel data rate.
Signaling States	2 or 4 (Read-only)	Displays the result of the local and remote signaling type selections. Settings are: 2 if Sig Type = E&M for local, remote, or both cards. 4 if you select any other signaling type configuration.
* Default		

Table 4-21 Remote Signaling Type Settings for Voice Channel Modules

Local Signaling Type	Remote Signaling Types
FXS	FXS*
	FXO
	E&M
FXO	FXS*
E&M 2-wire E&M 4-wire	FXS*
	E&M
* Default	

Table 4-22 Signal Conditioning Settings for Voice Channel Modules

Signaling Type	Signal Conditioning Setting	Description
FXS-FXS	Both Nodes	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Not Ring*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
FXS - E&M	FXS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Not Ring*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
	E&M Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the E lead to hold the call until synchronization is restored.
	Steady Idle	Upon loss of end-to-end synchronization, the state of the E lead becomes idle to terminate call.
	Idle then Busy*	Upon loss of end-to-end synchronization, the software clamps the state of the E lead for 2.5 seconds while synchronization is attempted, then the E lead becomes idle for 0.5 seconds to terminate the call. Finally, the E lead becomes busy for 3.0 seconds to busy-out the line.
FXS - FXO	FXS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Not Ring*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
	Release/Not Ring	Upon loss of end-to-end synchronization, the state of the line becomes idle to terminate the call, then the state of the line becomes busy to busy-out the line until synchronization is restored.
	FXO Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Steady On Hook	Upon loss of end-to-end synchronization, the state of the line becomes idle to terminate the call until synchronization is restored.
On Hook then Off Hook*	Upon loss of end-to-end synchronization, the software clamps the state of the line while synchronization is attempted, then the line becomes idle to terminate the call. Finally, the line becomes busy to busy-out the line until synchronization is restored.	
E&M - E&M	Both Nodes	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the E lead to hold the call until synchronization is restored.
	Steady Idle	Upon loss of end-to-end synchronization, the state of the E lead becomes idle to terminate the call until synchronization is restored.
	Idle then Busy*	Upon loss of end-to-end synchronization, the software clamps the state of the E lead while synchronization is attempted, then the E lead becomes idle to terminate the call. Finally, the E lead becomes busy to busy-out the line until synchronization is restored.
* Default		

Table 4-23 Receive VF Delta dB Settings for Voice Channel Modules

Signaling Type	Receive VF Delta dB Settings
FXS FXO	-6.0 through 0* dB in 0.5 increments
E&M (4-wire)	-6.0 through 1.5 dB (0 dB*) in 0.5 increments
* Default	

Table 4-24 Receive Signaling Settings for Voice Channel

Signaling Type	Receive Signaling Settings
FXS	Pass Through
	Ring
	Not Ring*
FXO	Pass Through
	Off Hook
	On Hook*
E&M	Pass Through
	Busy
	Idle*
* Default	

Configuring DPV Channels

When you select matching Dual Private Voice channel types (DPV-DPV) on the **New Channel** page (Figure 4-18), the first **DPV-DPV Channel Setup** page appears, as shown in Figure 4-21.

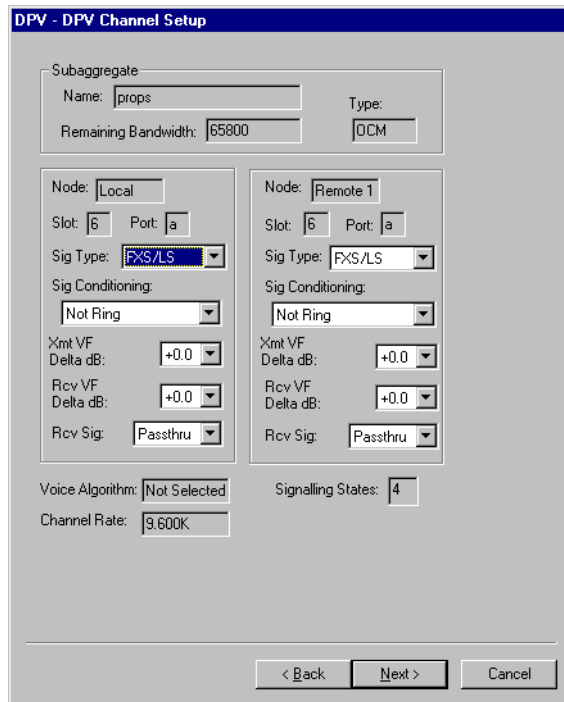


Figure 4-21 DPV-DPV Channel Setup Page

Selections in some fields on this page affect other fields. In general, when you select source channel card field values, the corresponding destination channel card fields will only display the valid selections available for creating the channel. Selecting or modifying destination channel card fields, however, does not affect source channel card fields in any way.

Note *The first time the DPV with CELP (voice algorithm) is used after downloading code to the card, you will hear an echo for a few seconds, as the echo canceller converges from an extreme starting condition. After this initial convergence, the echo canceller freezes when it goes off-hook and converges more quickly on subsequent calls.*

See [Table 4-25](#) through [Table 4-30](#) for detailed information about settings on this page.

When you have completed all entries on the first page, click **Next** to advance to the **DPV-DPV Channel Setup (Continued)** page, as shown in [Figure 4-22](#).

Figure 4-22 DPV-DPV Channel Setup (Continued) Page

See [Table 4-25](#) through [Table 4-30](#) for detailed information about settings on this page.

Table 4-25 Settings for DPV Channels

For this parameter...	this selection...	does/indicates the following:
DPV-DPV Channel Setup Page		
Subaggregate		
Name	(Read-only)	Displays selected subaggregate
Type	(Read-only)	Displays selected subaggregate type (OCM only)
Remaining Bandwidth†	(Read-only)	Displays remaining bandwidth (includes the new channel and all other channels configured on this subagg).
Channel Cards		
Node	(Read only)	Names of the nodes where the channel resides.
Slot/Port	(Read only)	Slots and ports occupied by cards.
Signaling Type (local)	FXS/LS*	Selects the type of local signaling
	FXO/LS	
	FXS/GS**	
	FXO/GS**‡	
	E&M/2W	
	E&M/4W	
Signaling Type (remote)	See Table 4-26	Selects the type of remote signaling
Signal Cond.	See Table 4-27	Selects the type of signal conditioning. (Local and remote conditioning are selected independently.)
Xmt VF Delta dB	See Table 4-28	Designates the transmit voice frequency in dBs
Rcv VF Delta dB		Designates the receive voice frequency in dBs
Recv Signaling	See Table 4-29	Selects the type of receive signaling
Other Settings		
Voice Algorithm	CELP*	Specifies CELP voice algorithm.
Channel Rate	(Read only)	Displays selected channel data rate.
Signaling States	2 or 4	Displays the result of the local and remote signaling type selections (you cannot edit this field). Settings are: 2 if Sig Type = E&M/2W or E&M/4W for any card. 4 if you select any other signaling type configuration.
DPV-DPV Channel Setup (Continued) Page		
Subaggregate		
Name	(Read-only)	Displays selected subaggregate
Type	(Read-only)	Displays selected subaggregate type (OCM, Network)
Remaining Bandwidth	(Read-only)	Displays remaining bandwidth (includes the new channel and all other channels configured on this subagg).
Channel Cards		
Node	(Read only)	Names of the nodes where the channel resides.
Slot	(Read only)	Slots and ports occupied by cards.
Echo Suppression	Enable*	Enables the Echo Suppression function.
	Disable	Disables the Echo Suppression function.
Echo Canceller	Enable*	Enables the Echo Canceller function.
	Disable	Disables the Echo Canceller function.
* Default	** Requires DPV Software Revision 220C or later. ‡ Requires DPV FXO card part # 036P463-001.	

Table 4-25 Settings for DPV Channels (Continued)

For this parameter...	this selection...	does/indicates the following:
A-Bit Invert (E&M only)	Normal* (clear)	Passes A-bit signaling normally (only option if Signaling Type is not E&M).
	Invert (selected)	Inverts A signaling bit (only available if Signaling Type = E&M)
Country Code	See Table 4-30	
Trunk Condition (FXS only)	Reorder*	Gives a busy signal with the DPV is out-of-sync.
	Quiet	Mutes VF during DPV out-of-sync.
Base Rx dB Level	0.0 dB	For FXS/LS, FXO/LS, FXS/GS, FXO/GS, and E&M/2W.
	0.0 dB* or 7.0 dB	For E&M/4W.
Base Tx dB Level	0.0 dB	For FXS/LS, FXO/LS, FXS/GS, FXO/GS, and E&M/2W.
	0.0 dB* or -16 dB	For E&M/4W.
Other Settings		
Fax Algorithm	Fax	Enables the Fax Algorithm code.
	No Fax*	Disables the Fax Algorithm code.
DTMF/MF Bypass	Enable*	DTMF tones bypass the Voice Algorithm.
	Disable	DTMF tones are processed through the Voice Algorithm
Channel Rate	(Read-only)	Displays selected channel data rate.
Signaling States	2 or 4 (read-only)	Displays the result of the local and remote signaling type selections. Settings are: 2 if Sig Type = E&M/2W or E&M/4W for either or both cards. 4 if you select any other signaling type configuration.
* Default ** Requires DPV Software Revision 220C or later. ‡ Requires DPV FXO card part # 036P463-001.		

Table 4-26 Remote Signaling Type Settings for DPV Channels

Local Signaling Type	Remote Signaling Types
FXS/LS*	FXS/LS*
	FXO/LS
	E&M/2W
	E&M/4W
FXO/LS	FXS/LS*
FXS/GS	FXO/GS*
FXO/GS	FXS/GS*
E&M 2-wire	FXS/LS*
	E&M/2W
	E&M/4W
E&M 4-wire	FXS/LS*
	E&M/2W
	E&M/4W
* Default	

Table 4-27 Signal Conditioning Settings for DPV Channels

Signaling Type	Signaling Condition	Location/Description
FXS/LS - FXS/LS	Both Nodes	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Not Ring*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
FXS/LS - E&M	FXS/LS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Not Ring*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
	E&M Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the E lead to hold the call until synchronization is restored.
	Steady Idle	Upon loss of end-to-end synchronization, the state of the E lead becomes idle to terminate call.
Idle then Busy*	Upon loss of end-to-end synchronization, the software clamps the state of the E lead for 2.5 seconds while synchronization is attempted, then the E lead becomes idle for 0.5 seconds to terminate the call. Finally, the E lead becomes busy for 3.0 seconds to busy-out the line.	
FXS/LS - FXO/LS	FXS/LS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Not Ring*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
	FXO/LS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Steady On Hook	Upon loss of end-to-end synchronization, the state of the line becomes idle to terminate the call until synchronization is restored.
On Hook then Off Hook*	Upon loss of end-to-end synchronization, the software clamps the state of the line while synchronization is attempted, then the line becomes idle to terminate the call. Finally, the line becomes busy to busy-out the line until synchronization is restored.	
E&M - E&M	Both Nodes	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the E lead to hold the call until synchronization is restored.
	Steady Idle	Upon loss of end-to-end synchronization, the state of the E lead becomes idle to terminate the call until synchronization is restored.
Idle then Busy*	Upon loss of end-to-end synchronization, the software clamps the state of the E lead while synchronization is attempted, then the E lead becomes idle to terminate the call. Finally, the E lead becomes busy to busy-out the line until synchronization is restored.	
* Default		

Table 4-27 Signal Conditioning Settings for DPV Channels (Continued)

Signaling Type	Signaling Condition	Location/Description	
FXS/GS Node			
FXS/GS - FXO/GS	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.	
	No Tgnd, No Rgnd*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.	
	No Tgnd/Tgnd, Not Ring	Upon loss of end-to-end synchronization, the software clamps the state of the line while synchronization is attempted, then the line becomes idle to terminate the call. Finally, the line becomes busy to busy-out the line until synchronization is restored.	
	FXO/GS Node		
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.	
	On Hook, No Rgnd*	Upon loss of end-to-end synchronization, the state of the line becomes idle to terminate call.	
* Default			

Table 4-28 XMT and Receive VF Delta dB Settings for DPV Channels

Signaling Type	Receive VF Delta dB Settings
FXS/LS or GS	-6.0 through 0* dB in 0.5 dB increments
FXO/LS or GS	
ERICSON	
E&M (2-wire)	
E&M (4-wire)	-6.0 through 1.5 dB (0 dB*) in 0.5 dB increments
* Default	

Table 4-29 Receive Signaling Settings for DPV Channel

Signaling Type	Receive Signaling Settings
FXS/LS or GS, ERICSON	Pass Through*
	Ring
	Not Ring
FXO/LS or GS	Pass Through*
	Off Hook
	On Hook
E&M/2W or 4W	Pass Through*
	Busy
	Idle
* Default	

Table 4-30 Country Codes for DPV Channels

Country Code	Description
USA-600	USA Ring Impedance 600 Ω*
USA-900	USA Ring Impedance 900 Ω
UK	UK Ring Impedance
Germany	Germany Ring Impedance
Special 1-4	(Future Update)
* Default	

Configuring VTP Channels

When you select matching Voice Transcoder Platform channel types (VTP-VTP) on the **New Channel** page ([Figure 4-18](#)), the first **VTP-VTP Channel Setup** page appears, as shown in [Figure 4-23](#).

Figure 4-23 VTP-VTP Channel Setup Page

Note This channel type is only available if a Network LIM and properly configured Network subaggregates are available.

Selections in some fields on this page affect other fields. In general, when you select source channel card field values, the corresponding destination channel card fields will only display the valid selections available for creating the channel. Selecting or modifying destination channel card fields, however, does not affect source channel card fields in any way.

See [Table 4-31](#) and [Table 4-32](#) for detailed information about settings on this page.

Table 4-31 Settings for VTP Channels

For this parameter...	this selection...	does/indicates the following:
VTP-VTP Channel Setup Page		
Subaggregate		
Name	(Read-only)	Displays selected subaggregate
Type	(Read-only)	Displays selected subaggregate type (OCM only)
Remaining Bandwidth†	(Read-only)	Displays remaining bandwidth (includes the new channel and all other channels configured on this subagg).
Channel Cards		
Node	(Read only)	Names of the nodes where the channel resides.
Slot/Port	(Read only)	Slots and ports occupied by cards.
Network Subagg	Any network subaggregate meeting criteria defined on page 4-28 .	
Signal Cond.	See Table 4-32	Signal Conditioning. Available values depend on LIM type.
Echo Canceller	Enable*	Enables the Echo Canceller function.
	Disable	Disables the Echo Canceller function.
Echo Suppression	Enable*	Enables the Echo Suppression function.
	Disable	Disables the Echo Suppression function.
PCM Data Conversion	Mu-Law	Mu-Law data format
	A-Law	A-Law data format
Data Conditioning	Mu-Law Quiet	VTP transmits a 07Fh
	A-Law Quiet	VTP transmits a 0D5h
	DACS Trouble Code	VTP transmits a 0E4h
Other Settings		
Fax Algorithm	Fax	Enables the Fax Algorithm code.
	No Fax*	Disables the Fax Algorithm code.
Signaling States	4 or 16 (read-only)	4 for T1 LIMs using T1/D4 line format 16 for all other configurations.
DTMF/MF Bypass	Enable*	Enables DTMF/MF Bypass function
	Disable	Disables DTMF/MF Bypass function
Channel Rate	(Read only)	Displays selected channel data rate (8.0K or 9.6K).
Voice Algorithm	CELP*	Specifies CELP voice algorithm (only option).
* Default ** Requires DPV Software Revision 220C or later. ‡ Requires DPV FXO card part # 036P463-001.		

Table 4-32 Signal Conditioning Settings for VTP Channels

For this LIM type	this setting	does/indicates the following
T1	A0+B0	Force A+B bits to 0
	A0+B1	Force A to 0 and B to 1
	A0/1+B0/1	Force A+B to 0, then to 1
	A1/0+B1	Force A to 1, B to 1, then A to 0
	A1+B1*	Force A+B bits to 1
E1	A1+B1*	Force A+B bits to 1
* Default		

Configuring Voice Channel Combinations: VLBR, CELP, DPV, VTP, with Sync

As previously noted, you can set up Voice-Sync daisy chain configurations in the following combinations: VLBRV-Sync, CELP-Sync, DPV-Sync, and VTP-Sync. In these combinations, the Sync card is configured on the destination slot. You can also combine source and destination DPV and VTP channels as DPV-VTP or VTP-DPV, where either card can be on the source or destination slot.

In general, you can configure dual-channel combinations by referring to the procedures and settings described above for each card. When you combine DPV and VTP channel cards, however, dependencies and interactions involving the Signaling Type and Signal Conditioning fields become quite complex. The following tables provide additional information about available settings for these card combinations.

- **Signaling Type.** For DPV-VTP channels, where VTP is connected to a network subaggregate configured over either a T1 or E1 LIM, valid DPV source and VTP destination selections are shown in [Table 4-33](#).

Table 4-33 Signaling Type Settings for DPV-VTP Channels

DPV Source Signaling Types	VTP Destination Signaling Types
VTP Connected to Network Subaggregate Over T1 LIM	
FXS/LS*	FXS/LS*
	FXO/LS
FXO/LS	FXS/LS*
FXS/GS	FXO/GS*
FXO/GS	FXS/GS*
E&M 2-wire	E&M/2W*
	E&M/4W
E&M 4-wire	E&M/2W*
	E&M/4W
VTP Connected to Network Subaggregate Over E1 LIM	
E&M 2-wire*	E&M/2W*
	E&M/4W
E&M 4-wire	E&M/2W*
	E&M/4W
ERICSON	ERICSON*
* Default	

- **Signal Conditioning.** For DPV-VTP channels, where VTP is connected to a network subaggregate configured over either a T1 or E1 LIM, available selections depend on the Signaling Type defined for each channel end. Valid DPV source and VTP destination selections are shown in [Table 4-34](#) (for E1 LIMs) and [Table 4-35](#) (for T1 LIMs).

Table 4-34 Signal Conditioning for DPV-VTP Channels on E1 LIMs

Signaling Type	Signaling Condition	Location/Description
E&M - E&M	DPV Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the E lead to hold the call until synchronization is restored.
	Steady Idle	Upon loss of end-to-end synchronization, the state of the E lead becomes idle to terminate the call until synchronization is restored.
	Idle then Busy*	Upon loss of end-to-end synchronization, the software clamps the state of the E lead while synchronization is attempted, then the E lead becomes idle to terminate the call. Finally, the E lead becomes busy to busy-out the line until synchronization is restored.
	VTP Node	
	A1 + B1*	
ERICSON-ERICSON	DPV ERICSON Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Not Ring*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
	VTP ERICSON Node	
		A1 +B1*
* Default		

Table 4-35 Signal Conditioning for DPV-VTP Channels on T1 LIMs

Signaling Type	Signaling Condition	Location/Description
FXS/LS -FXS/LS	DPV FXS/LS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Not Ring*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
	VTP FXS/LS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	On Hook*	Upon loss of end-to-end synchronization, the state of the line becomes idle to terminate the call until synchronization is restored.
FXS/LS - FXO/LS	DPV FXS/LS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Not Ring*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
	VTP FXO/LS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	On Hook*	Upon loss of end-to-end synchronization, the state of the line becomes idle to terminate the call until synchronization is restored.
* Default		

Table 4-35 Signal Conditioning for DPV-VTP Channels on T1 LIMs (Continued)

Signaling Type	Signaling Condition	Location/Description
FXO/LS - FXS/LS	DPV FXO/LS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Steady On Hook	Upon loss of end-to-end synchronization, the state of the line becomes idle to terminate the call until synchronization is restored.
	On Hook then Off Hook*	Upon loss of end-to-end synchronization, the software clamps the state of the line while synchronization is attempted, then the line becomes idle to terminate the call. Finally, the line becomes busy to busy-out the line until synchronization is restored.
	VTP FXS/LS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Not Ring*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
Both Nodes		
E&M - E&M	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the E lead to hold the call until synchronization is restored.
	Steady Idle	Upon loss of end-to-end synchronization, the state of the E lead becomes idle to terminate the call until synchronization is restored.
	Idle then Busy*	Upon loss of end-to-end synchronization, the software clamps the state of the E lead while synchronization is attempted, then the E lead becomes idle to terminate the call. Finally, the E lead becomes busy to busy-out the line until synchronization is restored.
DPV FXS/GS Node		
FXS/GS - FXO/GS	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	No Tgnd, No Rgnd*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
	No Tgnd/Tgnd, Not Ring	Upon loss of end-to-end synchronization, the software clamps the state of the line while synchronization is attempted, then the line becomes idle to terminate the call. Finally, the line becomes busy to busy-out the line until synchronization is restored.
	FXO/GS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	On Hook, No Rgnd*	Upon loss of end-to-end synchronization, the state of the line becomes idle to terminate call.
DPV FXO/GS Node		
FXO/GS - FXS/GS	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	On Hook, No Rgnd*	Upon loss of end-to-end synchronization, the state of the line becomes idle to terminate call.
	VTP FXS/GS Node	
	Freeze	Upon loss of end-to-end synchronization, the software clamps the state of the line to hold the call until synchronization is restored.
	Not Ring*	Upon loss of end-to-end synchronization, the state of the line becomes busy to busy-out the line until synchronization is restored.
* Default		

Configuring SpectraComm Cards

You configure SpectraComm cards directly on a node, not on a subaggregate.

To create a SpectraComm card on a node:

1. In the left pane of the OCM-1000 window, right-click the node on which you wish to add the SpectraComm card.
2. On the pop-up menu, point to **New**, then click **SpectraComm** to open the **New SpectraComm Card** dialog box, as shown in *Figure 4-20*.

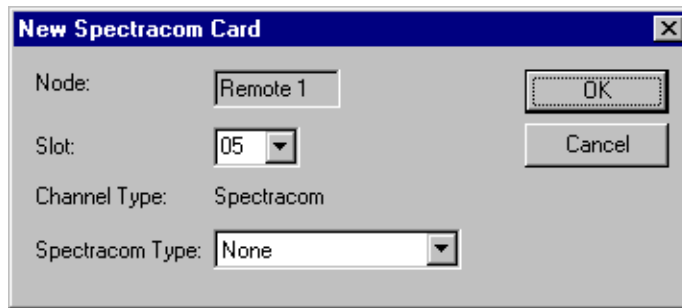


Figure 4-24 New SpectraComm Card Dialog Box

Although there are no user settings or bandwidth penalties for SpectraComm cards, the wizard lets you specify that a SpectraComm card is physically occupying a particular slot. The node does not know of these cards and cannot communicate with them. Thus, you configure the card by switches located on the card, by switches found on the front panel, or by a Maintenance Console via the front panel jack. No diagnostics routines are available for the card; but card status (its slot assignment) is displayed in the OCM-1000 window.

Table 4-36 lists the SpectraComm parameters that appear in the **New SpectraComm Card** dialog box.

Table 4-36 SpectraComm Card Channel Settings

For this parameter...	this selection...	does/denotes the following:
Slot	2-32	Identifies circuits.
Channel Type	SpectraComm*	Defines the channel as a SpectraComm channel.
	Other	Opens the other channel screen.
SpectraComm Type	None*	There is no SpectraComm Card in the slot.
	500A DSU	SpectraComm DSU.
	Alarm Card	SpectraComm Alarm card
	FastRoute	SpectraComm FastRoute Bridge Card.
	V.F. 28.8	SpectraComm V.F. 28.8 Modem.
* Default		

Modifying Channel Properties

Once you have created a channel, you can modify most of its properties by opening its **Channel Properties** dialog box.

The **Channel Properties** dialog box displays the current settings for the selected channel. The exact appearance of the **Channel Properties** dialog box depends on the selected channel type.

For most channel types, the **Channel Properties** dialog box consists of three tabs: **Config**, **HW Settings**, and **Diagnostics**. DPV-DPV and DPV-VTP channels have a fourth tab: **Advanced**.

Table 4-37 lists each channel type, its associated Channel Properties dialog box and tabs, and where to find more information about property settings for that channel.

Table 4-37 Channel Property Pages

Channel Type(s)	Channel Properties Dialog Box: Tabs	More Information
Data Channel Cards		
Sync – Sync	Sync Channel Properties: Config, HW Settings, Diagnostics	page 4-33 and ff.
Sync – (Network SubAgg)	Network Sync Channel Properties: Config, HW Settings, Diagnostics	
Async – Async	Async Channel Properties: Config, HW Settings, Diagnostics	
Async – (Network SubAgg)	Network Async Channel Properties: Config, HW Settings, Diagnostics	
Isoc – Isoc	Isoc Channel Properties: Config, HW Settings, Diagnostics	
Isoc – (Network SubAgg)	Network Isoc Channel Properties: Config, HW Settings, Diagnostics	
T-Encode – T-Encode	T-Encode Channel Properties: Config, HW Settings, Diagnostics	
T-Encode – (Network SubAgg)	Network T-Encode Channel Properties: Config, HW Settings, Diagnostics	
Voice Channel Modules (VCMs)		
ADPCM – ADPCM	ADPCM Channel Properties: Config, HW Settings, Diagnostics	page 4-37 and ff.
PCM – PCM	PCM Channel Properties: Config, HW Settings, Diagnostics	
CELP – CELP	CELP Channel Properties: Config, HW Settings, Diagnostics	
VLBRV – VLBRV	VLBRV Channel Properties: Config, HW Settings, Diagnostics	
Dual Private Voice (DPV)		
DPV – DPV	DPV Channel Properties: Config, Advanced, HW Settings, Diagnostics	page 4-40 and ff.
Voice Transcoder Platform (VTP)		
VTP – VTP	VTP Channel Properties: Config, HW Settings, Diagnostics	page 4-46 and ff.

Table 4-37 Channel Property Pages (Continued)

Channel Type(s)	Channel Properties Dialog Box: Tabs	More Information
Voice Channel Combinations		
DPV – VTP	DPV – VTP Channel Properties: Config, Advanced, HW Settings, Diagnostics	page 4-40 and ff. page 4-46 and ff. page 4-48 and ff.
VTP – DPV	VTP – DPV Channel Properties: Config, Advanced, HW Settings, Diagnostics	page 4-40 and ff. page 4-46 and ff. page 4-48 and ff.
DPV – Sync or Sync – DPV (Daisy Chain)	DPV – Sync or Sync – DPV Properties: Config, HW Settings, Diagnostics	page 4-40 and ff. page 4-33 and ff.
VTP – Sync or Sync – VTP (Daisy Chain)	VTP – Sync or Sync – VTP Properties: Config, HW Settings, Diagnostics	page 4-46 and ff. page 4-33 and ff.
CELP – Sync or Sync – CELP (Daisy Chain)	CELP – Sync or Sync – CELP Properties: Config, HW Settings, Diagnostics	page 4-37 and ff. page 4-33 and ff.
VLBRV – Sync or Sync – VLBRV (Daisy Chain)	VLBRV – Sync or Sync – VLBRV Properties: Config, HW Settings, Diagnostics	page 4-37 and ff. page 4-33 and ff.
Other Cards		
SpectraComm	SpectraComm Properties: Config, HW Settings, Diagnostics	page 4-51 and ff.

In each **Channel Properties** dialog box, the **Config** tab closely resembles the **Channel Setup** page in the **New Channel** wizard for that channel type. The **Advanced** tab (for DPV channels) resembles that channel’s second setup page in the **New Channel** wizard. For detailed information about settings in any **Channel Properties** dialog box, refer to the appropriate channel type’s setup procedure and tables in the section, “*Creating a Channel*”.

The **HW Settings** tab is used to display actual hardware switch settings and their status with respect to the stored configurations. The **Diagnostics** tab is used to access channel diagnostic status detail. For more information about these functions, see [Chapter 5](#).

To modify a channel’s properties:

1. In the left pane of the OCM-1000 window, right-click the channel you wish to modify, then click **Properties** on the pop-up menu. (Alternatively, select the subaggregate containing the channel you wish to modify, then double-click the channel in the right pane of the OCM-1000 window.)

The **Channel Properties** dialog box for the selected channel appears (refer to [Table 4-37](#)).

Note *You can only access a channel card’s properties via the LIM and subaggregate the channel is attached to. You cannot access a card’s properties directly from its slot on the node.*

2. If necessary, click the **Config** tab. Use this tab to verify or modify configuration settings for the selected channel. For detailed information on these settings, refer to the appropriate channel setup procedures and tables under “*Creating a Channel*”. For additional information on configuring channels, refer to “*Configuring Data and Voice Channels*” on [page 4-27](#).
3. If necessary (and available, i.e., on a DPV channel), click the **Advanced** tab and verify or modify additional configuration settings. For detailed information on these settings, refer to the appropriate channel setup procedures, figures and tables under “*Configuring DPV Channels*” on [page 4-40](#) and following.

4. When you have entered all of your changes, click **OK** (or press **ENTER**) to save your work, calculate remaining bandwidth, close the **Channel Properties** dialog box, and return to the OCM-1000 window.

If your settings result in a negative remaining bandwidth, you will not be allowed to exit the **Channel Properties** dialog box. You can either decrease the channel rate or click **Cancel** to close the dialog box without saving your changes.

***Note** If you have not modified any channel properties, you should click **Cancel** to close the **Subagg Properties** dialog box, and return to the OCM-1000 window. You should also click **Cancel** after viewing the **HW Settings** or **Diagnostics** tab.*

Deleting a Channel

To delete an existing channel:

1. In the left pane of the OCM-1000 window, right-click the channel you wish to delete.

***Note** You can only access a channel card's pop-up menu functions via the LIM and subaggregate the channel is attached to. You cannot access a card's properties directly from its slot on the node.*

2. On the pop-up menu, click **Delete**.
3. In the **Confirm Channel Delete** dialog box, click **OK** to confirm the deletion (or click **Cancel** to return to the OCM-1000 window without deleting the channel.)

Maintaining Networks

In addition to defining your network configurations, you use the OCM-1000 software to maintain network integrity by performing the following activities:

- Setting the active network
- Scanning networks
- Downloading software and configurations

Setting the Active Network

For most network diagnostic and maintenance operations, you need to specify or set a network as the “active network.” Only the active network can be updated with new configuration settings or software, queried for hardware status or diagnostic detail, or subjected to diagnostics tests. Only one network can be active at a time.

You can set the active network using either:

- The network object's pop-up menu—more convenient when the network object is visible in the left pane of the OCM-1000 window
- The OCM-1000 window's **File** menu—more convenient when the network object is not visible in the OCM-1000 window

To set the active network using the network object's pop-up menu:

1. In the left pane of the OCM-1000 window, right-click the network you wish to set as active.

2. On the pop-up menu, click **Set as Active Network**.

To set the active network using the OCM-1000 window's **File** menu:

1. On the **File** menu, click **Set Active Network** to open the **Set Active Network** dialog box.
2. In the **Networks** list box, click the network you wish to set as active.
3. Click **OK** to confirm your selection, close the **Set Active Network** dialog box, and return to the OCM-1000 window.

Once you complete the procedure, using either method, the mouse pointer may turn into an hour glass while the system implements the function. Once a network is active, you may see network objects change color from blue to green, yellow, or red, as the system checks the status of the network.

Scanning Networks

Scanning lets you check the condition of the networks controlled by OCM-1000 software and download, as required, software and configuration data. OCM-1000 software has two scanning functions:

- Scan Networks—enabled from the OCM-1000 window's **File** menu.
- Automatic Scan—enabled from the OCM-1000 window's **Admin** menu, with user-selected settings from the **System Parameters** dialog box.

Using Scan Networks

The **Scan Networks** function lets you check networks controlled by OCM-1000 software and download software and configuration data to local and remote OCMs. If you enable **Download As Required**, the system scans local and remote OCMs, downloads software to OCMs that are initializing or have an incorrect software version, and downloads configuration data to OCMs that have incorrect or invalid configurations.

To scan all networks:

1. On the **File** menu, click **Scan Networks**.
2. The **Scanning all Networks** dialog box appears and network scanning begins.

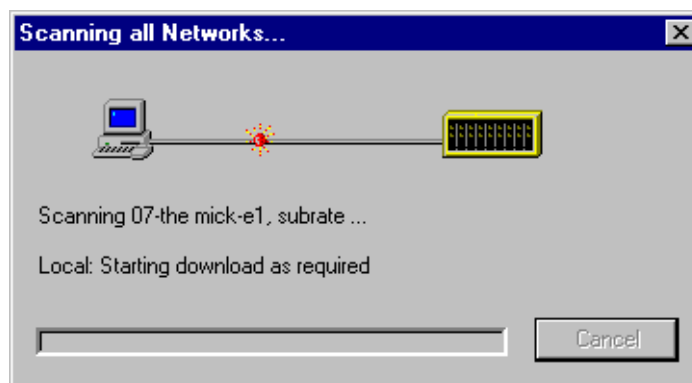


Figure 4-25 Scanning All Networks Dialog Box

The software scans the networks continuously and updates the **Scanning all Networks** dialog box whenever a condition changes. The dialog box shows the number and name of the

network currently being scanned, identifies any download activity that is initiated, and shows the progress of that activity.

3. To stop scanning and close the **Scanning all Networks** dialog box, click **Cancel**.

Using Automatic Network Scan

If enabled, and depending on the user selected system parameters, the Automatic Network Scan function can:

- detect network faults with or without an audible alarm
- detect network faults with or without the Download as Required feature

An automatic Network Scan will activate whenever the pre-defined interval of time has elapsed where there has been no activity (i.e., no input with the keyboard or mouse). When a fault is After starting the software, if there is no activity for ten minutes, an automatic Download As Required scan occurs. Once activity starts, an automatic Download As Required occurs after 30 minutes of inactivity. During an automatic Download As Required scan, the fault detection audible alarm is enabled.

To enable or disable the Automatic Network Scan and Download As Required features, see [“Setting System Parameters” on page 3-11](#).

Downloading Software and Configurations

When you download software and configurations, be sure there is a channel card in the OCM. The OCM requires at least one channel card (inserted in both nodes and configured to each OCM subagg) to communicate with the other OCM on the network. If you remove the last channel card on the local node, replace it before attempting to communicate with the remote OCM. A power cycle may be required on the remote node to regain communications.

Note *Download time depends on the COM port baud rate. For example:*

- *At 19.2 K, software download takes approximately 5 minutes per node.*
 - *At 9600, software download takes approximately 10 minutes per node*
 - *At 2400, software download takes approximately 40 minutes per node.*
-

To download software and configurations, you access the OCM-1000 window's **Download** menu. This menu provides the following download options:

- Configuration Data
- CCM Software
- As Required
- Software Integrity
- SW Revision List

The first three download functions are also available as options on certain pop-up menus.

Using Download As Required

Download As Required is a combined scan and download function that is more efficient than Configuration Download and Software Download. During a Download As Required scan, the system checks for specific situations (see [Table 4-38](#)).

Table 4-38 Download As Required Tasks

If a local or remote OCM...	then Download As Required does the following task:
is initializing	software download
has the wrong software version	
has an incorrect/invalid configuration	configuration download and activation
has invalid or no DPV/VTP code	DPV/VTP software download

You can also implement Download As Required by using Scan Networks and Automatic Scan functions (refer to *“Scanning Networks”* on page 4-55).

Note Download As Required must be performed after a Software Download to a node. This is the only way to download the version lists used for the Software Integrity function and channel card software (e.g. DPV).

To initiate Download As Required:

1. Select and set active the network you wish to download to.
2. On the **Download** menu, click **As Required**.

The **Downloading** dialog box appears and downloading begins. When downloading is complete, click **Close** to close the **Downloading** dialog box.

Using Configuration Download

When you create or modify a configuration using OCM-1000 software, you can download the current configuration data to both the local and remote OCMs.

To download configuration data:

1. Select and set active the network you wish to download to.
2. Right-click the network you wish to download to, then click **Download Configuration** on the pop-up menu. (Alternatively, select the network and click **Configuration Data**—or press **CTRL+D**—on the **Download** menu.)

If you need to save the current configuration, you will be prompted to do so before the download can proceed.

Once the download is started, a **Downloading** dialog box appears indicating download progress and status (see *Table 4-39* for a list of possible status messages). While this window is displayed, you are unable to access OCM-1000 software. If the download fails, a message appears in the **Downloading** window indicating the reason for the failure (see *Table 4-40*).

Note Even if the download and activation of a configuration fails at a remote OCM, the download and activation of the configuration continue at the local OCM.

3. When the configuration download operation is completed, click **Close** to exit the **Download** function and return to the OCM-1000 window. (If redundant CCMs are available, the new configuration is automatically loaded from the in-service CCM to the out-of-service CCM.)

Table 4-39 Configuration Downloading Progression Messages

This message...	indicates the following:
Downloading configuration to OCM...	The configuration is being downloaded to the OCM.
Sending activate to OCM	The configuration activation message is being sent to the OCM and that the CFG Update Time has been reset.
Configuration download complete	Download is completed successfully.
Download/Activate OK	Full download and activation is completed successfully.

Table 4-40 Configuration Download Failure Messages

This message...	indicates the following:
File open error	The configuration data, which normally exists in a certain file, is corrupted, moved, renamed, or deleted.
OCM comm failure	Download is unable to proceed because communications to the OCM are not functioning (communications are down, busy, or the OCM is initializing).
Activate response bad	The OCM responded negatively to the activate command.
No resp from activate	The OCM did not respond within time-out period.

Using Software Download

When you update the OCM-1000 software, you can download the new version to the CCM card on any local or remote node.

To download the current OCM-1000 software:

1. Select and set active the network containing the CCM card you wish to download to.
2. Right-click the CCM card you wish to download to, then click **Download SW** on the pop-up menu. (Alternatively, select the CCM card and click **CCM Software** on the **Download** menu.)

An **OCM-1000** message box appears:

```
Downloading to Local/Remote X Node will disrupt the OCM.
Continue with download?.
```

3. Do either of the following:
 - Click **Yes** (or press **Y**) to confirm and start the CCM software download.
 - Click **No** (or press **N**) to cancel the download and return to the OCM-1000 window.

Once the download is started, a **Downloading** window appears indicating download progress and status (see [Table 4-41](#) for a list of possible status messages). While this window is displayed, you are unable to access OCM-1000 software. If the download fails, a message appears in the window indicating the reason for the failure (see [Table 4-42](#)).

4. When the CCM software download operation is completed, click **Close** to exit the download function and return to the OCM-1000 window.

Table 4-41 Software Download Progression Messages

This message...	indicates the following:
Reinitializing OCM	If not already initializing, OCM has been told to initialize (to accept the new full feature download).
Downloading software version <i>n</i> to OCM	OCM-1000 software is being downloaded to the OCM (<i>n</i> is the version of the software).
Software file header OK for version: <i>n</i>	The header section of the multiplexer software file is OK (<i>n</i> is the name of the software release).
Download complete	The software transfer is finished.
Waiting for OCM to run full feature...	The OCM has been told to verify its new software and execute it if it is OK.
Software download successful	Download is completed successfully.

Table 4-42 Software Download Failure Messages

This message...	indicates the following:
File open error	The software, which normally exists in a certain directory, has been corrupted, moved, renamed, deleted, or is formatted incorrectly.
File header error	
File length error	
File close error	
Download fail: comm failure	The software download sequence failed because of a failure in the communications system.
Download fail: OCM did not reinitialize	After being instructed to exit full feature (to accept new software), the OCM remained in full feature.
Download fail: OCM not running full feature	After completion of the software download, OCM did not begin running full feature.

Verifying Software Integrity

Use the Software Integrity feature to compare available software revisions for CCM, DPV, and VTP cards with software versions currently active on those cards.

To verify software integrity:

1. Select and set active the network containing the node whose integrity you wish to verify.
2. Right-click the node you wish to verify, then click **SW Integrity** on the pop-up menu to open the **Software Integrity Status** dialog box (Alternatively, select the node and click **Software Integrity** on the **Download** menu.)

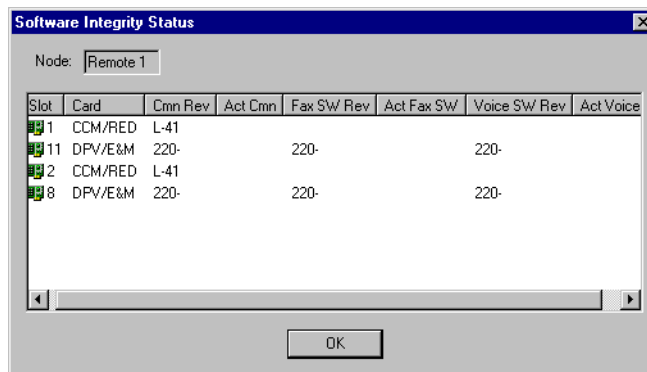


Figure 4-26 Software Integrity Status Dialog Box

For the selected node—identified in the gray, view-only box near the top—this dialog box displays information about available and active software associated with CCM, CPV, or VTP channel card. Cards with software discrepancies are highlighted in red. For additional detail about information displayed in this dialog box, see [Table 4-43](#).

Note *Software revisions displayed on your system may differ from those in illustration. If the node is configured for an expansion shelf, you may have to use the vertical scroll bar on the right to view the higher-numbered slots. If information doesn't fit in some columns, you can resize the column width by dragging its right border. If some columns appear to be out of view, you can use the horizontal scroll bar along the bottom to scroll right or left.*

3. When you have finished viewing the information displayed, click **OK** to close the dialog box and return to the OCM-1000 window.
4. If software discrepancies are reported, use the Software Revision List feature (see below) and the Software Download feature to verify, select, and download the correct software versions.

Table 4-43 Software Integrity Status Information

This column...	contains the following information
Slot*	Slot number on node
Card	Type of channel card (CCM or DPV/VTP) occupying slot
Cmn Rev	Revision number of available CCM software or DPV/VTP common software on system
Act Cmn†	Revision number of active CCM software or DPV/VTP common software on card
Fax SW Rev	Revision number of available fax software on system (references DPV/VTP only)
Act Fax Sw†	Revision number of active fax software on card (references DPV/VTP only)
Voice SW Rev	Revision number of available voice software on system (references DPV/VTP only)
Act Voice SW†	Revision number of active voice software on card (references DPV/VTP only)
<p>* If a slot has the wrong card type or has no card installed, that slot displays the message, <i>Invalid Card Type</i> or <i>Not in Slot!</i></p> <p>† If you see <i>n/a</i> displayed in red, the software revision is unavailable from the node and you should perform a <i>Download As Required</i> (see "Using Download As Required" on page 4-56).</p>	

Using the Software Revision List

Use the Software Revision List feature to view available software revisions for CCM, DPV, and VTP cards, and, if necessary select current revisions for download.

To use the **Software Revision List** feature:

1. Select the network whose software revisions you wish to verify or set.
2. On the **Download** menu, click **SW Revision List** to open the **Software Revision List** dialog box.

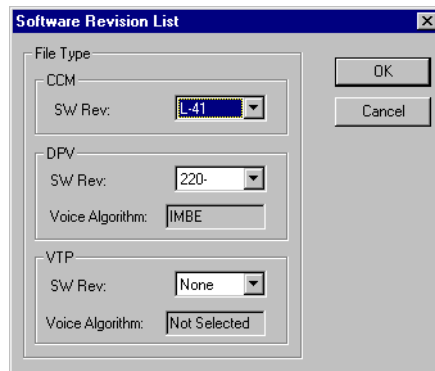


Figure 4-27 Software Revision List Dialog Box

From this dialog box, you can view and select the software revisions available to operate the CCM, DPV, and VTP channels in the system.

***Note** Software revisions displayed on your system may differ from those in illustration.*

3. To select a different revision for any channel type, click the **SW Rev** arrow and select the desired revision from the drop-down list.
4. Click **OK** to save any changes, close the dialog box and return to the OCM-1000 window. (Click **Cancel** to close the dialog box without saving any changes.)
5. If you changed any software revision settings, perform a Download As Required (see *“Using Download As Required” on page 4-56*) to the active network.

Summary

This chapter described how to operate OCM-1000 software in order to configure, and maintain networks.

What's Next?

The next chapter describes how to monitor equipment, perform diagnostic tests, and handle alarms.

Chapter 5: Status/Diagnostics and Alarms

Scope

This chapter describes how to monitor equipment, perform diagnostic tests, and handle alarms. Specifically, this chapter covers the following topics:

Overview	5-2
Network, Node, CCM Status and Diagnostics	5-5
LIM Status and Diagnostics.....	5-13
Subaggregate Status and Diagnostics	5-22
Data Channel Status and Diagnostics	5-26
Voice Channel Status and Diagnostics	5-35
Losing Power to an OCM During a Diagnostic Test.....	5-56

Overview

You can access status/diagnostic information and run diagnostic tests at all levels of the network hierarchy. This overview covers:

- Available status/diagnostic information and functions
- Diagnostic tests you can run on each network component
- A generic procedure for using the OCM-1000 software to diagnose network problems

Status/Diagnostic Information and Functions

The OCM-1000 software provides access to status/diagnostic information in several ways:

- **OCM-1000 Window.** The OCM-1000 window (refer to *Figure 3-2 on page 3-3*) displays network-wide status and diagnostic information follows:
 - **Colors.** Icon colors (green, yellow, red, and blue) denote the fault status of active network components as follows.
 - Green = OK
 - Red = Problem or fault
 - Yellow = (depends on context)
 - Blue = Status cannot be determined.

Fault status colors appear on objects in both the left and right panes of the OCM-1000 window. A fault in any network object generates a red fault status at the top of the network tree. For example, a channel card fault will cause the node and network icons to be red as well as the program icon in the OCM-1000 window's title bar and in the Windows taskbar.
- **Right-Pane/List View.** When you select a network object in the left pane (tree view) of the OCM-1000 window, the right pane displays the object's contents along with selected properties and status information about each item.
- **Status Bar.** The status bar along the bottom of the OCM-1000 window displays general system status information as well as the local communications status for the active network.

Note The OCM-1000 window displays some properties and status information when you select a network object. To view all available properties and status information, you must set as active the network which contains the object.

- **Object Pop-up Menus.** Object pop-up menus provide direct access to object properties and to all diagnostic tests that can be run on that object
- **Object Properties.** When you open a selected object's **Properties** dialog box, you can view all of the object's settings on the **Config** tab and (for DPV channel cards) **Advanced** tab. Two additional tabs provide access to hardware status and diagnostic status detail information as follows:
 - **HW Settings.** For LIM and voice channel cards, clicking this tab displays current hardware switch settings and status. Status is denoted by color as follows:
 - Green = Settings match the stored configuration

Red = Settings do not match the stored configuration.

Blue = Status cannot be determined.

- **Diagnostics.** Clicking this tab displays current diagnostic status detail information and fault status. Fault status is denoted by color as follows:

Green = OK

Red = Problem or fault.

Blue = Status cannot be determined.

The Diagnostics tab also allows you to initiate available diagnostic tests for the selected network object (see [Table 5-1](#)).

Note The **HW Settings** tab and **Diagnostics** tab are static displays and do not self refresh. To update the information displayed on either of these tabs, you must first leave it, then view it again. A convenient way to do this is to click the **Config** tab, then reclick either the **HW Settings** tab or **Diagnostics** tab.

- **Diagnostics Menu.** You can use the **Diagnostics** menu, on the OCM-1000 window's menu bar, to initiate any diagnostic test that is available for a selected object.
- **Audible Alarm.** You can enable an audible alarm to sound every 5 seconds whenever a network fault is detected. If the audible alarm is enabled and sounds, you can silence the alarm and reset it to sound when the next fault is detected. (For detailed information, see "[Setting System Parameters](#)" on page 3-11.)
- **Network Alarms.** You can use the **View** menu, on the OCM-1000 window's menu bar, or an active network's pop-up menu to display recent network alarms and their status.

Diagnostic Tests

Diagnostic tests can help you pinpoint network problems or equipment faults. As noted above, you can run available diagnostic tests for selected network objects in any of the following ways:

- From the **Diagnostics** menu on the OCM-1000 window's menu bar
- From the selected object's pop-up menu
- From the selected object's **Properties** dialog box on the **Diagnostic** tab

[Table 5-1](#) identifies available diagnostic tests, summarizes the purpose of each test, and indicates where to find more information about running a test.

Table 5-1 OCM-1000 Diagnostic Tests

Network Object	Available Tests	Purpose of Test	More Information
CCM	Self Test	Determine operational status of local and remote CCMs as well as in-service and out-of-service redundant CCMs	page 5-12
LIM	Self Test	Determine operational status of LIM	page 5-18
	Data Path Test	Determine status of data path for local and remote LIMs and for in-service and out-of-service redundant or diverse LIMs	page 5-18
	ESF Statistics	Display Extended Superframe (ESF) error counts for in-service T1DSX1 or CSU/T1 LIMs	page 5-20
Subaggregate	Data Path Test	Determine status of data path for sub-aggregates configured on T1 and E1 LIM cards	page 5-24
Data Channel or card	Self Test	Determine operational status of data card	page 5-30
	Data Path Test	Determine status of data path for any data channel	page 5-30
	Control State Test	Determine status of titles and state of Xmt EIA Controls for any data channel configured on an OCM or Bypass sub-aggregate	page 5-33
Voice Channels (including DPV/ VTP) or card	Self Test	Operational status of voice card	page 5-43
	Data Path Test	Determine status of data path for any voice channel	page 5-44
	Signaling Test	Change and monitor signalling states for any voice channel	page 5-46
	dB Test	Change and monitor transmit and receive dB levels for any voice channel	page 5-49
	Echo Celler Test (except CELP)	Change echo canceller parameters without affecting the configuration	page 5-52

Diagnosing Network Problems

When the OCM-1000 software signifies a network fault, by displaying a red icon and (optionally) sounding an audible alarm, you may use the following procedure to isolate the problem and determine its nature:

1. **Display Network Alarms.** In the OCM-1000 window, select the network icon at fault and open the Network Alarms dialog box to view the most recent active alarms and their location (for more detail, see *“Displaying Network Alarm History” on page 5-8*).
2. **Identify Component(s).** Starting at the top of the network hierarchy, e.g., a red OCM-1000 program icon or network icon, follow the red trail down into the network by opening successive branches until you find the lowest-level component at fault.
3. **View Status and Properties.** In tree view (left pane), select the object at fault and view its status and properties, as displayed in list view (right pane). Select the object one level above (e.g., the LIM above a subaggregate) to view additional status and property information.

4. **Open Properties Dialog Box.** To obtain additional information, reselect the lowest-level object and open its **Properties** dialog box.
5. **View Hardware Settings.** If the object is a LIM or voice channel card, you may click the **HW Settings** tab to verify that settings match configuration settings.
6. **View Diagnostics.** Click the **Diagnostics** tab to obtain diagnostic status (color) and information (messages) about the selected object.
7. **Run Diagnostic Test(s).** On the **Diagnostics** tab, initiate a Self Test (for a CCM, LIM, or channel card) followed by any other available diagnostic tests for the object. (You may also run these tests from the object’s pop-up menu or from the **Diagnostics** menu while the object is selected.)
8. **Diagnose Other Branches.** If more than one branch has a fault, repeat step 3 through step 7 for each branch at fault.

Network, Node, CCM Status and Diagnostics

Network, node, and CCM status, diagnostic, and test functions include:

- Assessing network communication status
- Viewing status information in the OCM-1000 window
- Displaying network alarm history
- Placing redundant CCMs in and out of service
- Displaying CCM diagnostic status detail
- Performing a CCM Self Test

***Note** You can perform the above functions only in a network that is active and on a node whose communications are up.*

Assessing Network Communication Status

The ability of the OCM-1000 software to display status and diagnostic information and to run diagnostic tests depends on the active network’s current communication status, as displayed in the OCM-1000 window’s status bar (see *Figure 5-1 on page 5-6*). *Table 5-2* summarizes possible communications status conditions and their implications for the availability of node status display and of network diagnostic functions.

Table 5-2 Network Communication Status and Diagnostics

If Network Communications Status is	Status display available for	Available Diagnostics are
Local node = Up Remote node(s) = Up	Local node Remote node(s)	All diagnostics on all nodes.
Local node = Up Remote Node(s) = Down or Initializing	Local node only	No diagnostics on remote node(s). No LIM and channel loopbacks that would utilize the remote node(s).
Local node = Down or Initializing	No nodes	No diagnostics on any node.
The local node CCM software is incompatible with OCM baseline version.	No nodes	No diagnostics on any node.

Viewing Network Status Information in the OCM-1000 Window

To display high-level network status and diagnostic information in the OCM-1000 window:

1. In the left pane, select and set active (refer to *“Setting the Active Network”* on page 4-54) the network you wish to view.

Fault status indicators along with other properties and status information for each node in the selected network appear in the right pane of the OCM-1000 window (see *Table 5-3 on page 5-6*).

2. In the left pane, select node or CCM objects in the active network to view additional properties and status information (see *Table 5-3 on page 5-6*)

In addition to the fault status and properties displayed in the left and right panes, network communications status information appears on right side of the status bar, along the bottom of the OCM-1000 window. *Figure 5-1* illustrates how this information is displayed. *Table 5-3* describes the status indicators available for each object.

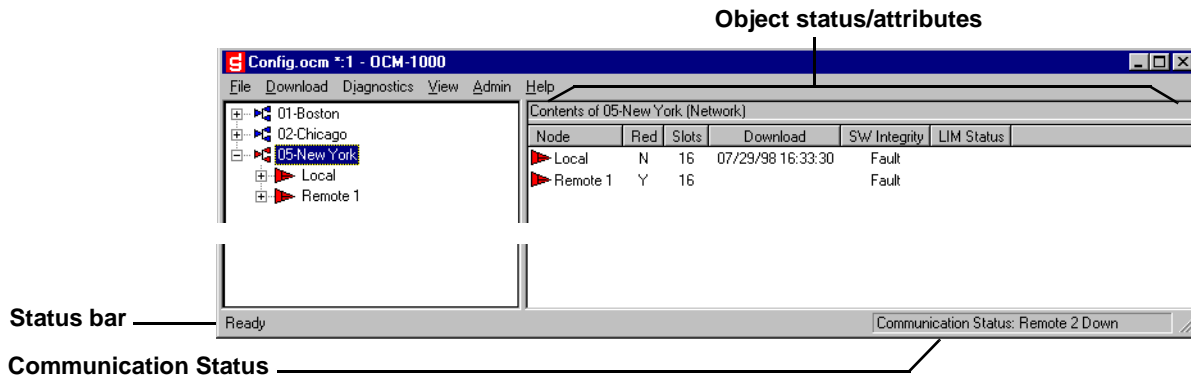


Figure 5-1 Network Status Display

Table 5-3 Active Network Status Indicators

For this parameter...	this indicator...	does/indicates the following:
Selecting any object in active network displays the following status information		
Fault Status†	Green icon*	OK: no faults or problems detected
	Red icon*	Major problem(s) due to one or more of the following: <ul style="list-style-type: none"> • Failure in overhead communications • Discrepancy in software integrity • Network or node has one or more status faults
	Yellow icon*	Minor problem with some component (depends on context, not always available)
	Blue icon	Status cannot be determined
* Network must be active to display. † Displayed for active network whether or not object is selected.		

Table 5-3 Active Network Status Indicators (Continued)

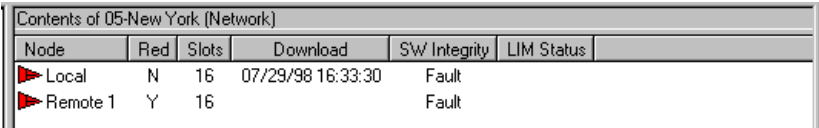
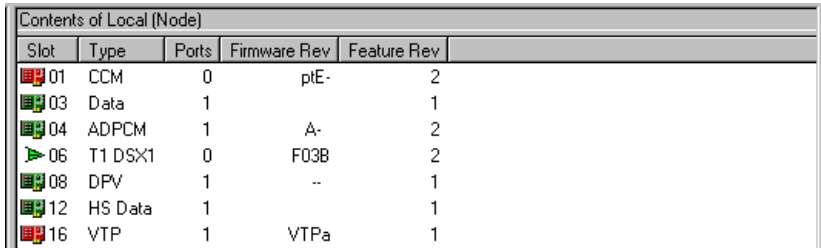
For this parameter...	this indicator...	does/indicates the following:
Local Communication Status	Up	Communications are functioning normally.
	Down	Communications are not functioning normally.
	Init	The OCM software is not ready for communications, i.e., is starting up, performing a Self Test, is incomplete.
	Incompatible	The OCM software version is considered incompatible with controller software.
Selecting the network icon displays the following status information for each node:		
		
Node	Local, Remote 1, Remote 2	Node name.
Red (Redundancy)	Y	Yes: redundant CCMs on node
	N	No: non-redundant CCM on node
Slots	8, 10, 16, 32	Number of slots on node
Download*	(Date/Time)	Date and time of last configuration download.
	Config Not Activated	Configuration not activated due to: invalid or missing data, communications down, software initializing or incompatible.
SW Integrity*	OK (Green)	The node's software integrity (CCM, DPV, VTP) is OK.
	Not OK (Red)	Node does not have all the proper software revisions.
LIM Status*	OK (Green)	LIM(s) (primary and/or secondary) functioning properly.
	Fault (Red)	A fault exists in at least one LIM
Selecting the node icon displays the following status information for each configured slot:		
		
Slot	1-32	Slot occupied by card. Icon color indicates fault status
Type	CCM, Data, HS Data, Spectra-Comm, ADPCM, PCM, VLBRV, CELP, DPV, VTP, T1DSX1, T1CSU, E1, V.xx, Subrate	Type of card or equipment in slot. Note that: <ul style="list-style-type: none"> • Data indicates a Sync, Async, Isoc, or T-Encode card on an OCM channel. • HS Data indicates a Sync card on a Network channel.
Ports	0, 1, 2	Number of ports used by card or equipment.
Firmware Rev*	(Alphanumeric)	Revision level of firmware.
Feature Rev*	(Numeric)	Revision level of hardware features.
* Network must be active to display. † Displayed for active network whether or not object is selected.		

Table 5-3 Active Network Status Indicators (Continued)

For this parameter...	this indicator...	does/indicates the following:
Selecting the CCM icon displays the following status information for the CCM:		
Slot(s)	01 or 01 02	Slot(s) occupied by CCM. Icon color indicates fault status.
Fault status of active/ inactive CCM†	Green*	No faults in paired or non-redundant CCMs.
	Red*	Fault in active (in-service) CCM.
	Yellow*	Fault in inactive (out-of-service) CCM.
	Blue	Fault status cannot be determined
Active*	Pri	The primary CCM is in-service.
	Sec	The secondary CCM is in-service.
	NRed	The non-redundant CCM in slot 1 is in service.
	Red	The redundant CCM in slot 2 is in service.
Firmware Rev*	(Alphanumeric)	Revision level of CCM firmware.
Feature Rev*	(Numeric)	Revision level of CCM hardware features.
* Network must be active to display. † Displayed for active network whether or not object is selected.		

Displaying Network Alarm History

Another way to obtain status information about a network is to view its alarm history.

To examine the reported problems that have occurred in a network:

1. In the left pane of the OCM-1000 window, select and set active (refer to *“Setting the Active Network” on page 4-54*) the network whose alarm history you wish to view.
2. Right-click the network object, then click **Alarms** on the pop-up menu to open the **Network Alarms** dialog box. (Alternatively, select the active network and click **Alarms** on the **View** menu.)

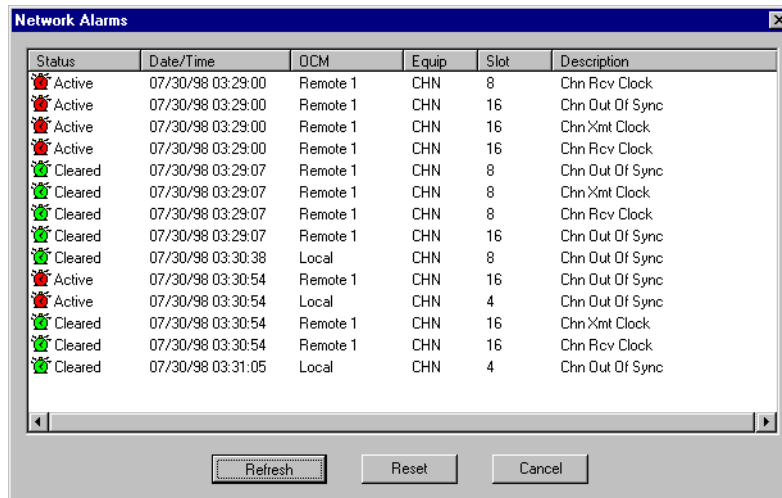


Figure 5-2 Network Alarms Dialog Box

The **Network Alarms** dialog box lists a maximum of 14 alarms. After 14 alarms have occurred, new alarms are added to the top of the list and the oldest alarms are removed from the bottom of the list. This display is continually refreshed or updated.

The **Network Alarms** dialog box displays the following information about each alarm ([Table 5-4](#)):

Table 5-4 Network Alarm History Information

For this column...	this indicator...	does/indicates the following:
Status	(Red icon) Active	Problem that caused the alarm still exists.
	(Green icon) Clear	Problem no longer exists.
Date/Time	mm/dd/yy hh:mm:ss	Date (month, day and year) and time (hour, minute and second) the alarm occurred.
OCM	Local, Remote 1, or Remote 2	Node that generated the alarm.
Equipment	Type of hardware that generated the alarm:	
	CCM	Common Control Module
	CHN	Voice or Data Channel Module
	LIM	Line Interface Module
Slot	1-32	Slot number of equipment that generated the alarm.
Description	Text	Alarm description/message (see Table 5-5 to Table 5-7).

An image of an alarm clock on the **Refresh** button indicates that additional alarms have occurred but are not yet shown in the alarm list.

Note *If an OCM loses and then regains power, all alarms may report with a time-date stamp of mm/dd/yy hh:mm:ss.*

You can manually refresh, reset, or close the display as follows:

- To refresh (update) the alarm list with any new alarms that may have occurred (signified by an alarm clock on the **Refresh** button), click **Refresh**.
- To clear all the alarms in the **Network Alarms** dialog box, click **Reset**.
- To close the **Network Alarms** dialog box, click **Cancel**.

Refer to [Table 5-5](#) through [Table 5-7](#) for detailed alarm descriptions.

Table 5-5 CCM Alarms

This alarm...	indicates the following:
CCM Not In Slot	The CCM is not in its slot or is not making proper contact with the backplane connectors.
CCM Board Failure	A problem exists within a module in a specified slot.
CCM Cnfg Error	The module type configured for the slot does not match the module occupying the slot.
CCM Clk Fail	The clock generator circuits of the specified CCM are not operating properly.
Faulty Power Supply	The power available on the node does not match what it was configured for.
Modem Fail	The link level communications via the modem link have been lost.
Manu Red Switch	The user initiates a redundant swap.
PLL Fail	The node clock cannot lock to the reference clock.
Redund Error	The hardware option and the software configuration differ on the in-service module.
OOS Redund Error	The hardware option and the software configuration differ on the out-of-service module.
OOS SW Error	The hardware option and the software configuration differ on the out-of-service module.
Auto Redund Switch	Generated by the PC initiating a toggle from a configuration change.
Lost Alarms	Alarms have been lost due to an alarm queue being full.

Table 5-6 LIM Alarms

This alarm...	indicates the following:
LIM Not In Slot	The LIM is not in its slot or is not making proper contact with the backplane connectors.
Board Failure	A problem exists within the module in the specified slot.
LIM Cnfg Error	The module type configured for the slot does not match the module occupying the slot.
LIM Failure	A non redundant card or both cards of a redundant pair have requested to be switched out-of-service.
Carrier Loss	A loss of carrier has occurred.
Out Of Net Sync	The D4 frame is out of synchronization.
Out Of Service	One or more DS0s on a subaggregate is out-of-service.
Abnormal Station Code	The remote end has a problem.
LIM Sagg Down	The subaggregate has lost communications or the remote end is initializing.
Sagg Threshold	The subaggregate exceeds the user-specified threshold rate.
Sagg Out Of Sync	A loss of synchronization pattern has occurred over a user-specified period.
LIM Link Down	The specified LIM is not communicating with its remote counterpart.

Table 5-7 OCM Data/Voice Channel Module Alarms

This alarm...	indicates the following:
Chn Not In Slot	The specified module is not in its slot or is not making proper contact with the backplane connectors.
Chn Board Failure	A problem exists within the module in the specified slot.
Chn Cnfg Error	The module type configured for the slot does not match the module occupying the slot.
Card Down	A problem exists with the module in the specified slot.
Chn Rcv Clock	The receive data flow has been disrupted by a timing related failure.

Placing Redundant CCMs in and out of Service

When a CCM is configured for redundant operation, you have the option to switch, or toggle, the in-service and out-of-service CCMs. For example, if the primary CCM is in service, you can use the CCM Redundancy Toggle feature to place the secondary CCM in service. You may wish to do this when the in-service CCM is not operating properly or to perform a Self Test on the inactive CCM.

To toggle the in-service and out-of-service CCMs:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the redundant CCM you wish to toggle.
2. If necessary, expand the network and node branches to display the CCM.
3. Right-click the CCM, then click **Redundancy Toggle** on the pop-up menu.

Displaying CCM Diagnostic Status Detail

For any configured CCM (including redundant paired CCMs), you can display CCM diagnostic status detail: a list of all active faults that currently exist for either the singular CCM or both the primary and secondary CCMs (if paired). (For redundant CCMs, you can use the redundancy toggle feature to place either of the redundant CCMs into active service.)

You can display CCM diagnostic status detail by opening the **CCM Diagnostics** dialog box.

To display CCM diagnostic status detail:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the CCM whose status detail you wish to display.
2. If necessary, expand the network and node branches to display the CCM.
3. Right-click the CCM to open the pop-up menu.

- Click **Status/Diagnostics** to open the **CCM Diagnostics** dialog box (*Figure 5-3*).

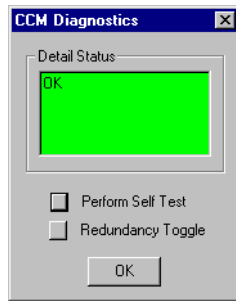


Figure 5-3 CCM Diagnostics Dialog Box

The **Detail Status** box lists any active CCM faults. If CCM faults exist, they are listed on a **red** background. If no CCM faults exist, the message, OK appears on a **green** background. The message **Not Available** on a **blue** background indicates that the fault status could not be determined. If the CCM is redundant, you can click **Redundancy Toggle** to place the alternate CCM into active service. You can also use this tab to perform a Self Test.

Performing a CCM Self Test

Performing a CCM Self Test lets you check the operation of local and remote CCM cards as well as in-service and out-of-service redundant CCMs.

To perform a CCM Self Test:

- In the left pane of the OCM-1000 window, select and set active (refer to *“Setting the Active Network” on page 4-54*) the network containing the CCM(s) you wish to self test.
- If necessary, expand the network and node branches to display the CCM.
- Right-click the CCM, then click **Self Test** on the pop-up menu. (Alternatively, select the CCM and click **Self Test** on the **Diagnostics** menu.)

A dialog box appears informing you that communications to the node may be lost during the test.

- Click **Yes** (or press **Y**) to continue the test. To cancel the test, click **No** (or press **N**).

If the CCM is redundant, a dialog box appears asking you which CCM to test.

- To test the primary (in-service) CCM, click **Yes** (or press **Y**). To test the secondary (out-of-service) CCM, click **No** (or press **N**).

When the test starts, a **Self Test** dialog box appears indicating test status and results (for a list of status messages, see *Table 5-8*).

- When the test is complete, click **OK** to close the **Self Test** dialog box.

Table 5-8 Self Test Status Messages

This status message	Means...
Command/Configuration Mismatch	Wrong card type is in slot.
Preemption Error	LIM is actively involved in network diagnostics.
Card Not in Slot	The target card is not in slot.
Test in Progress	The self test is still in progress.
Pass	The self test passed successfully.
Fail	The self test failed.

LIM Status and Diagnostics

LIM status, diagnostic, and test functions include:

- Viewing status information in the OCM-1000 window
- Placing redundant LIMs in and out of service
- Displaying hardware switch status
- Displaying diagnostic status detail
- Performing a LIM Self Test
- Performing a LIM Data Path Test
- Displaying ESF Statistics

Note You can perform the above functions only for an in-service LIM in a network that is active and on a node whose communications are up.

Viewing LIM Status Information in the OCM-1000 Window

To display high-level LIM status and diagnostic information in the OCM-1000 window:

1. In the left pane, select and set active (refer to *“Setting the Active Network”* on page 4-54) the network whose LIM status you wish to view.
2. If necessary, expand the network and node branches to display the LIM.
3. In the left pane, select the node whose LIM status you wish to view.

Fault status indicators along with other properties and status information for each slot—including slots occupied by LIM cards—appear in right pane of the OCM-1000 window (see *Table 5-9* on page 5-14).

4. In the left pane, select the LIM to view additional properties and status information about configured subaggregates on that LIM (see *Table 5-13* on page 5-23).

Table 5-9 LIM Status and Diagnostics Indicators

For this parameter...	this status...	does/indicates the following:
Selecting the node icon displays the following status information for each configured LIM slot:		
LIM status		
Fault status of active/ inactive LIM†	Green*	No faults in paired or non-redundant/diverse LIMs.
	Red*	Fault in active (in-service) LIM (see “Displaying LIM Diagnostic Status Detail” on page 5-17).
	Yellow*	Fault in inactive (out-of-service) LIM.
	Blue	Fault status cannot be determined
Slot	1-32	Slot(s) occupied by card(s).
Type	T1CSU	A T1CSU LIM is in slot.
	T1DSX1	A T1DSX1 LIM is in slot.
	V11	A V.11 LIM is in slot.
	V35	A V.35 LIM is in slot.
	E1	An E1 LIM is in slot.
	Subrate	A subrate LIM is in slot.
	Other	The equipment in this slot does not match the slot configuration (e.g., a channel card in a slot configured for a LIM).
Ports	0	Ports only apply to channel cards.
Firmware Rev*	(Alphanumeric)	Revision level of firmware (E1/T1/T1CSU only).
Feature Rev*	(Numeric)	Revision level of hardware features.
* Network must be active to display. † Displayed for active network whether or not object is selected. ‡ Only appears when diversity and/or redundancy is enabled.		

Placing Redundant LIMs in and out of Service

When a LIM is configured for redundant operation, you have the option to switch, or toggle, the in-service and out-of-service LIMs. For example, if the primary LIM is in service, you can use the LIM Redundancy Toggle feature to place the secondary LIM in service. You may wish to do this when the in-service LIM is not operating properly or to diagnose/test the alternate LIM.

To toggle the in-service and out-of-service LIMs:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network”](#) on page 4-54) the network containing the redundant LIM you wish to toggle.
2. If necessary, expand the network and node branches to display the LIM.
3. Right-click the LIM, then click **Redundancy Toggle** on the pop-up menu.

Displaying LIM Hardware Switch Status

You can display LIM hardware switch settings and equipment status by opening the **LIM Properties** dialog box and selecting the **HW Settings** tab.

To display LIM hardware switch settings:

1. In the left pane of the OCM-1000 window, select and set active (refer to *“Setting the Active Network” on page 4-54*) the network containing the LIM whose hardware settings you wish to display.
2. If necessary, expand the network and node branches to display the LIM.
3. Right-click the LIM to open the pop-up menu.
4. Click **Properties** to open the **LIM Properties** dialog box.
5. Click the **HW Settings** tab to display it.

Figure 5-4 shows the **HW Settings** tab for a redundant T1 LIM.

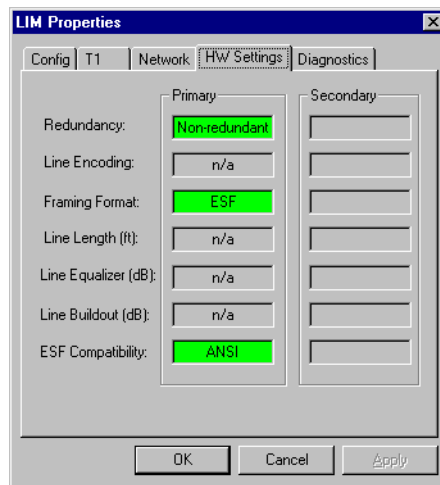


Figure 5-4 LIM HW Settings Tab

The exact information displayed on this tab varies with the type of LIM. *Table 5-10* lists and describes LIM hardware settings for all LIM types.

Table 5-10 LIM Hardware Switch Settings

For this Parameter	in LIM Type	this setting*...	indicates the following:
Redundancy	all	Redundant	Redundant LIM operation.
		Non-Redundant	Non-redundant LIM operation.
Line Encoding	T1DSX1 CSU/T1	B8ZS	Bit 8 zero stuffing (zero suppression) line encoding.
		AMI	Alternate Mark Inversion line encoding (T1) with Bit 7 zero suppression.
Framing Format	T1DSX1 CSU/T1	ESF	T1/Extended Super Frame framing format.
		D4	T1/D4 framing format.
Line Length(Ft)	T1DSX1	000-133 Ft	AT&T compatible line length for equalization.
		133-266 Ft	
		266-399 Ft	
		399-533 Ft	
		533-655 Ft	
Line Equalizer (dB)	CSU/T1	26 dB	26 dB of line equalizer gain.
		36 dB	36 dB of line equalizer gain.
Transmit Line (dB)	CSU/T1	0.0 dB	0.0 dB of transmit line build-out.
		7.5 dB	7.5 dB of transmit line build-out.
		15.0 dB	15.0 dB of transmit line build-out.
		22.5 dB	22.5 dB of transmit line build-out.
ESF Compatibility	T1DSX1 CSU/T1	ANSI	ANSI-compatible statistical reporting format.
		AT&T	AT&T-compatible statistical reporting format.
Timing	V.11 V.35 subrate	NODE	Internal transmit clock to provide LIM timing.
		RCV	DCE-supplied clock to provide LIM timing.
Rate Multiple Nx	V.11 V.35	Nx56	Link data rate that is a multiple of 56 K bits/s.
		Nx64	Link data rate that is a multiple of 64 K bits/s.
	subrate	Special	(Future Update)
		Nx8	Link data rate that is a multiple of 8 K.
		Nx2.4	Link data rate that is a multiple of 2.4 K.
Line Rate	V.11 V.35 subrate	(Numeric)	Link data rate.
CRC4	E1	CRC4	Enables Cyclic Redundancy Check multiframe.
		NO CRC4	Disables Cyclic Redundancy Check multiframe.
CAS	E1	On	30 timeslots are available to carry data.
		Off	31 timeslots are available to carry data.
<p>Green background: the configured software setting matches the hardware switch setting. Red background: the configured software setting does not match the hardware switch setting and will cause a Config Mismatch alarm. Blue background: the hardware switch status cannot be determined.</p>			

Displaying LIM Diagnostic Status Detail

For any configured LIM (including redundant or diverse paired LIMs), you can display LIM diagnostic status detail: a list of all active faults that currently exist for either the singular LIM or both the primary and secondary LIMs (if paired). (For redundant LIMs, you can use the redundancy toggle feature to place either of the redundant LIMs into active service.)

You can display LIM diagnostic status detail by opening the **LIM Properties** dialog box and selecting the **Diagnostics** tab.

To display a LIM's diagnostic status detail:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the LIM whose status detail you wish to display.
2. If necessary, expand the network and node branches to display the LIM.
3. Right-click the LIM to open the pop-up menu.
4. Click **Properties** to open the **LIM Properties** dialog box.
5. Click the **Diagnostics** tab to display it.

Figure 5-5 shows the **Diagnostics** tab for a redundant E1 LIM.

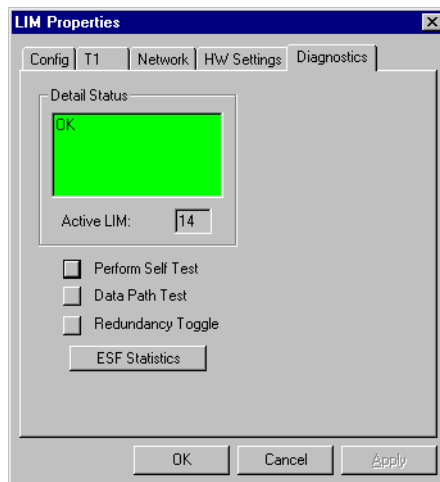


Figure 5-5 LIM Diagnostics Tab

The **Detail Status** box lists any active LIM faults. If LIM faults exist, they are listed on a **red** background. If no LIM faults exist, the message, **OK** appears on a **green** background. The message **Not Available** on a **blue** background indicates that the fault status could not be determined. If the LIM is redundant, you can click **Redundancy Toggle** to place the alternate LIM into active service. You can also use this tab to:

- Initiate a LIM Self Test
- Initiate a LIM Data Path Test
- Display ESF statistics

Performing a LIM Self Test

Performing a LIM Self Test lets you check the operation of local and remote LIM cards as well as in-service and out-of-service redundant LIMs.

Note *Since a LIM Self Test results in a loss of data throughout the system, you are unable to perform a LIM Self Test on a LIM running a network-initiated loopback test.*

To perform a LIM Self Test:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the LIM you wish to self test.
2. If necessary, expand the network and node branches to display the LIM.
3. Right-click the LIM, then click **Self Test** on the pop-up menu. (Alternatively, select the LIM and click **Self Test** on the **Diagnostics** menu. If the **LIM Properties Diagnostics** tab is open, you can click **Self Test** there.)

A dialog box appears informing you that the test will disrupt data.

4. Click **Yes** (or press **Y**) to continue the test. To cancel the test, click **No** (or press **N**).
If the selected LIM is redundant, a dialog box appears asking you which LIM to test.
5. To test the primary (in-service) LIM, click **Yes** (or press **Y**). To test the secondary (out-of-service) LIM, click **No** (or press **N**).

When the test starts, a **Self Test** dialog box appears indicating test status and results (for a list of status messages, refer to [Table 5-8 on page 5-13](#)).

6. When the test is complete, click **OK** to close the **Self Test** dialog box.

Performing a LIM Data Path Test

Performing a LIM Data Path Test lets you check the status of the data path for local and remote LIM cards as well as in-service and out-of-service redundant LIMs.

You can perform a data path test only on an active (in-service) LIM. Therefore, to test the secondary LIM card of a redundant pair, you must first place the secondary LIM into active service by using the redundancy toggle feature. Similarly, to test the secondary LIM card of a diverse set, you must first reconfigure the LIM to be non-diverse.

To perform a LIM Data Path Test:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the LIM you wish to test.
2. If necessary, expand the network and node branches to display the LIM.
3. Right-click the LIM, then click **Data Path Test** on the pop-up menu. (Alternatively, select the LIM and click **Data Path Test** on the **Diagnostics** menu. If the **LIM Properties Diagnostics** tab is open, you can click **Data Path Test** there.)

The **Data Path Test** dialog box appears:

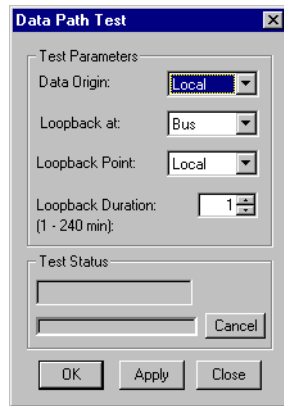


Figure 5-6 LIM Data Path Test Dialog Box

4. Specify settings by selecting the appropriate option button, check box, or list item or by typing data into a text box. For detailed information about each setting, see [Table 5-11](#).
5. When you have entered all settings, do one of the following:

- Click **OK** to start the test and close the **Data Path Test** dialog box.
- Click **Apply** to start the test without closing the **Data Path Test** dialog box.

A dialog box appears informing you that the test will disrupt data and network communications.

6. Click **Yes** (or press **Y**) to continue the test. To cancel the test, click **No** (or press **N**).

If the selected LIM is on a remote node and no alternate data path is available to access the LIM, a dialog box appears warning you that once this test is started it must run to completion (i.e., the **Cancel** button is disabled during the test). (The alternate data path to the LIM is via an OCM subagg from the local node to the remote node's other LIM card, if one exists).

7. Click **Yes** (or press **Y**) to continue the test. To cancel the test, click **No** (or press **N**).

If the selected LIM is redundant, a **Data Path Test** dialog box appears asking you which LIM to test.

8. To test the primary (in-service) LIM, click **Yes** (or press **Y**). To test the secondary (out-of-service) LIM, click **No** (or press **N**).

When the test starts, a progress bar indicates completion status. While the test is running, you may:

- Click **Cancel** to stop the test before the selected loopback duration has expired
- Click **Close** to close the **Data Path Test** dialog box during the test or after completion.

To reopen the **Data Path Test** dialog box while the test is running, reselect the LIM and choose **Data Path Test** again.

Note *During a loopback, the LIM should not generate a subaggregate out-of-synchronization message in the Display Detail LIM Status pop-up screen.*

Table 5-11 LIM Data Path Test Settings

For this parameter	this setting	indicates/does the following
Data Origin	Source Node*, Network	Location where data originates and returns.
Loopback Point	[Source Node]	Name of node where the signal is looped back towards the data origin. Read only
Loopback At	Bus*	Test signal loops back at the bus interface of the loopback point node.
	Line	Test signal loops back at the line interface of the loopback point node.
Loopback Duration	1* - 240	How long the test will run (specify in 1-minute increments).
* Default		

Displaying ESF Statistics

ESF Statistics display information about the extended superframe (ESF) for in-service T1DSX1 or CSU/T1 LIMs. An ESF is a modified D4 framing format that contains twenty-four 193-bit frames (permits greater access to digital network services).

Note *ESF statistics are not displayed for out-of-service LIMs. To obtain ESF statistics for out-of-service LIMs, place the out-of-service LIM in-service.*

To display ESF statistics:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the LIM you wish to look at.
2. If necessary, expand the network and node branches to display the LIM.
3. Select the LIM and click **ESF Statistics** on the **Diagnostics** menu. (If the **LIM Properties Diagnostics** tab is open, you can click **ESF Statistics** there.)

The **ESF Statistics** dialog box appears.

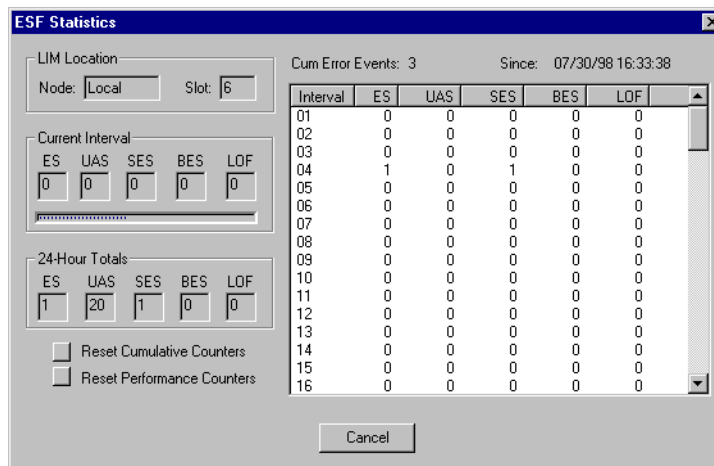


Figure 5-7 ESF Statistics Dialog Box

The **ESF Statistics** dialog box displays ESF statistics accumulated since the LIM was configured or since the accumulated statistics were last reset. [Table 5-12](#) provides detailed information.

4. While viewing ESF statistics you may:
 - Click **Reset Cumulative Counters** to set the Current Interval, 24 Hour Totals, and Cum. Errors Events counters to zero.
 - Click **Reset Performance Counters** to set the 96 15-minute interval counters to zero.
5. When you have finished viewing ESF statistics, click **Cancel** to close the **ESF Statistics** dialog box.

Table 5-12 ESF Statistics

Statistic or Control	Values	Meaning
LIM Location		
Node	Local 1, Remote 1, Remote 2	Node on which selected LIM is located
Slot	0-32	Node slot where LIM is configured
Error Summaries		
Current Interval Errors	0-65535	Cumulative ES, UAS, SES, BES, and LOF errors detected so far in the current 900-second interval.
Progress	Progress bar	Progress into the current 900-second interval.
24-Hour Totals	0-65535	Cumulative ES, UAS, SES, BES, and LOF errors detected during the past 24-hour period.
Error Detail		
Cumulative Error Events	0-65535	Cumulative count of all errors since last time counters were reset.
Since	mm/dd/yy hh:mm:ss	Last time the counters were reset.
Interval	01-96	Particular interval during past 24 hours for which errors are reported (01 is most recent).
24-Hour Interval Detail	0-65535	ES, UAS, SES, BES, and LOF subtotals for the current and 95 previous 900-second intervals since the LIM was configured or counters reset.
Error Categories		
ES	0-65535	Errored Second: A second with one or more ESF error events.
UAS (or FS)	0-65535	Unavailable Seconds: A count of one-second intervals during which service is unavailable. UAS is also referred to as Failed Seconds (FS).
BES	0-65535	Bursty Errored Seconds: A second with more than one but less than 320 CRC6 error events.
SES	0-65535	Severely Errored Seconds: A second with 320 or more CRC6 error events or one or more Out of Frame (OOF) errors.
LOF (Loss of Frame)	0-65535	A count of Loss of Frame events.

Subaggregate Status and Diagnostics

Subaggregate status, diagnostic, and test functions include:

- Viewing status information in the OCM-1000 window
- Displaying subaggregate diagnostic status detail
- Performing a subaggregate Data Path test

Note You can perform the above functions only for subaggregate on an in-service LIM in a network that is active and on a node whose communications are up.

Viewing Subaggregate Status Information in the OCM-1000 Window

To display high-level subaggregate status and diagnostic information in the OCM-1000 window:

1. In the left pane, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network whose subaggregate status you wish to view.
2. If necessary, expand the network, node, and LIM branches to display the subaggregate.
3. Select the LIM whose subaggregate status you wish to view.

Fault status indicators along with other properties and status information for each configured subaggregate on the selected LIM appear in right pane of the OCM-1000 window (see [Table 5-13 on page 5-23](#)).

4. In the left pane, select the subaggregate to view additional properties and status information about configured channels. (For data channels, see [Table 5-15 on page 5-27](#); for voice channels, see [Table 5-19 on page 5-36](#).)

Table 5-13 Subaggregate Status and Diagnostics Indicators

For this parameter...	this status...	does/indicates the following:
Selecting a LIM icon displays the following status information for each configured subaggregate:		
Header		
Subagg status		
Fault Status†	Green*	OK: No faults or problems detected
	Red*	Fault: subaggregate has one or more faults (see “Displaying Subaggregate Diagnostic Status Detail” on page 5-23).
	Blue	Status cannot be determined
Slot (header)	2–32	Slot(s) occupied by card(s).
LIM Type (header)	T1CSU	A T1CSU LIM is in slot.
	T1DSX1	A T1DSX1 LIM is in slot.
	V11	A V.11 LIM is in slot.
	V35	A V.35 LIM is in slot.
	E1	An E1 LIM is in slot.
	Subrate	A subrate LIM is in slot.
Subagg	XXX	Name of the subaggregate (user-defined).
Type	OCM	OCM proprietary subaggregate.
	Network	Network subaggregate.
	Bypass	Bypass subaggregate
Start DS0	1–31	Starting DS0 for the LIM subaggregate.
DS0 Count	1–31	Number of DS0s constituting the subaggregate.
Rate	9.6Kbps–1.984Mbps	Available bandwidth
Diag Test	None	Currently, no diagnostics are running for this subaggregate.
	LLB	The LIM port is in local loopback.
	RLB	The LIM port is in remote loopback.
	Remote	The opposite end is running a loopback.
* Network must be active to display. † Displayed for active network whether or not object is selected. ‡ Only appears when diversity and/or redundancy is enabled.		

Displaying Subaggregate Diagnostic Status Detail

For any configured subaggregate, you can display subaggregate diagnostic status detail: a list of all active faults that currently exist for the subaggregate.

You can display subaggregate diagnostic status detail by opening the **Subaggregate Properties** dialog box and selecting the **Diagnostics** tab.

To display a subaggregate’s diagnostic status detail:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network”](#) on page 4-54) the network containing the subaggregate whose status detail you

wish to display.

2. If necessary, expand the network, node, and LIM branches to display the subaggregate.
3. Right-click the subaggregate to open the pop-up menu.
4. Click **Properties** to open the **Subaggregate Properties** dialog box.
5. Click the **Diagnostics** tab to display it.

Figure 5-8 shows the **Diagnostics** tab for an OCM subaggregate.

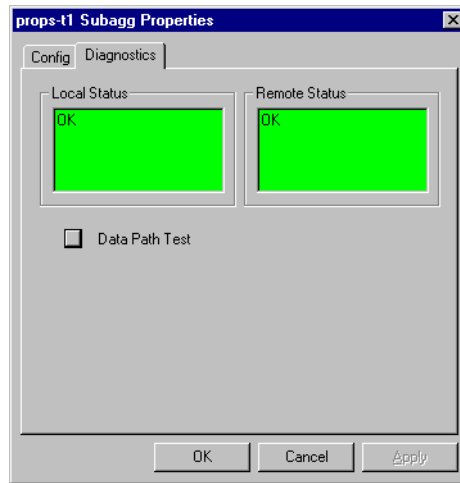


Figure 5-8 Subaggregate Diagnostics Tab

The **Detail Status** box lists any active subaggregate faults. If subaggregate faults exist, they are listed on a **red** background. If no faults exist, the message, OK appears on a **green** background. The message **Not Available** on a **blue** background indicates that the fault status could not be determined. You can also use this tab to initiate a subaggregate Data Path Test.

Performing a Subaggregate Data Path Test

Performing a subaggregate Data Path Test lets you check the status of the data path for subaggregates configured on T1 and E1 LIM cards.

Note *You can perform a data path test for subaggregates on T1 and E1 LIMs only. V.35, V.11, and subrate LIMs do not support the data path test on the subaggregate. Instead, you can perform LIM diagnostics.*

To perform a subaggregate Data Path Test:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the subaggregate you wish to test.
2. If necessary, expand the network, node, and LIM branches to display the subaggregate.
3. Right-click the subaggregate, then click **Data Path Test** on the pop-up menu. (Alternatively, select the subaggregate and click **Data Path Test** on the **Diagnostics** menu. If the **Subaggregate Properties Diagnostics** tab is open, you can click **Data Path Test** there.)

The **Data Path Test** dialog box appears:

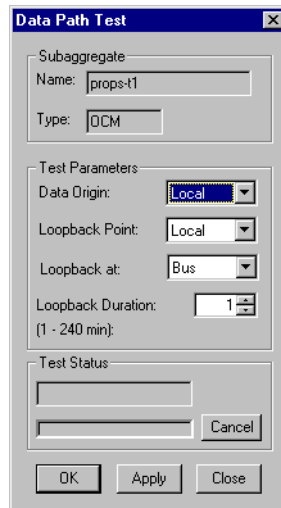


Figure 5-9 Subaggregate Data Path Test Dialog Box

4. Specify settings by selecting the appropriate option button, check box, or list item or by typing data into a text box. For detailed information about each setting, see [Table 5-14](#).
5. When you have entered all settings, do one of the following:
 - Click **OK** to start the test and close the **Data Path Test** dialog box.
 - Click **Apply** to start the test without closing the **Data Path Test** dialog box.

A dialog box appears informing you that the test will disrupt data and network communications.

6. Click **Yes** (or press **Y**) to continue the test. To cancel the test, click **No** (or press **N**).

If the selected subaggregate belongs to a LIM on a remote node and no alternate data path is available to access the LIM, a dialog box appears warning you that once this test is started it must run to completion (i.e., the **Cancel** button is disabled during the test). (The alternate data path to the LIM is via an OCM subagg from the local node to the remote node's other LIM card, if one exists).

7. Click **Yes** (or press **Y**) to continue the test. To cancel the test, click **No** (or press **N**).

When the test starts, a progress bar indicates completion status. While the test is running, you may:

- Click **Cancel** to stop the test before the selected loopback duration has expired
- Click **Close** to close the **Data Path Test** dialog box during the test or after completion.

To reopen the **Data Path Test** dialog box while the test is running, reselect the subaggregate and choose **Data Path Test** again.

Table 5-14 Subaggregate Data Path Test Settings

For this parameter	this setting	indicates/does the following
Subaggregate		
Name	(Read-only)	Name of selected subaggregate
Type	OCM, Network, Bypass (Read-only)	Type of selected subaggregate
Test Parameters		
Data Origin	Local*	The test pattern originates at the local node.
	Remote_1	The test pattern originates at the Remote 1 node.
	Remote_2	The test pattern originates at the Remote 2 node.
	Network†	The test pattern originates at the Network node.
	LIM (1) slot # ‡ LIM (2) slot # ‡	Slot numbers of LIMs in bypass configuration.
Loopback Point	Local*	The test pattern loops back to the local.
	Remote_1	The test pattern loops back to the Remote 1 node.
	Remote_2	The test pattern loops back to the Remote 2 node.
	LIM (1) slot # ‡ LIM (2) slot # ‡	Slot numbers of LIMs in bypass configuration.
Loopback At	Bus*	Test signal loops back at the bus interface of the loopback point node.
	Line	Test signal loops back at the line interface of the loopback point node.
Loopback Duration	1-240 minute(s)	How long the test will run (specify in 1-minute increments).
* Default † Selection available only on Network subaggregate ‡ Selection available only on Bypass subaggregate		

Data Channel Status and Diagnostics

Data channel status, diagnostic, and test functions include:

- Viewing status information in the OCM-1000 window
- Displaying diagnostic status detail
- Performing a Self Test
- Performing a Data Path Test
- Performing a Control State Test

Note You can perform the above functions only for an in-service LIM in a network that is active and on a node whose communications are up.

Viewing Data Channel Status Information in the OCM-1000 Window

To display high-level data channel status and diagnostic information in the OCM-1000 window:

1. In the left pane, select and set active (refer to *“Setting the Active Network”* on page 4-54) the network whose data channel status you wish to view.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the data channel.
3. In the left pane, select the subaggregate whose data channel status you wish to view.

Fault status indicators along with other properties and status information for each configured data channel on the selected subaggregate appear in right pane of the OCM-1000 window (see *Table 5-15*).

4. In the left pane, select the slot containing a data channel card to view additional properties and status information about that card (see *Table 5-15*).

Note Since the OCM-1000 software cannot communicate with SpectraComm cards, no status/diagnostics screens are available for these cards. The slot number and type appear only in the ‘Select’ pop-up screen for informational purposes only.

Table 5-15 Data Channel Status and Diagnostics Indicators

For this parameter...	this status...	does/indicates the following:
Selecting a subaggregate icon displays the following status information for each configured data channel:		
Header		
Node		
Slot		
Port		
Type		
Fault Status†	Green*	OK: No faults or problems detected
	Red*	Fault: channel has one or more faults (see <i>“Displaying Data Channel Diagnostic Status Detail”</i> on page 5-29).
	Blue	Status cannot be determined
Subaggregate (header)	User defined	Name of selected subaggregate
Channel	For each channel, the following source-destination information is displayed:	
Node	L, R1, R2	Source and destination nodes used by channel: L = Local, R1 = Remote 1, R2 = Remote 2
Slot	02–32	Source and destination slots used by card(s).
Port	a, b	Source and destination ports used by channel.
Type	Sync, Async, Isoc, T-Encode, SpectraComm	Type of source and destination channel cards.
	Other	The equipment in this slot does not match the slot configuration (e.g., a LIM or other card is in a slot configured for a data channel).
* Network must be active to display. † Displayed for active network whether or not object is selected. ‡ Only displayed if one of the channel ends is injecting a 511 or 2047 pattern.		

Table 5-15 Data Channel Status and Diagnostics Indicators (Continued)

For this parameter...	this status...	does/indicates the following:
Rate	300 bps–1.920 Mbps	Channel rate. Actual value range depends on channel type (refer to Table 4-14 on page 4-32).
Bandwidth	300 bps–1.920 Mbps	Actual bandwidth used by this channel
Selecting a slot containing a data card displays the following status information for that card:		
Header		
Slot (header)	2-32	Slot(s) used by card(s).
Type (header)	Data, HS Data	Type of channel card in slot. <ul style="list-style-type: none"> • Data indicates a Sync, Async, Isoc, or T-Encode card on an OCM channel. • HS Data indicates a Sync card on a Network channel.
	Other	The equipment in this slot does not match the slot configuration (e.g., a LIM or other card is in a slot configured for a data channel).
Port	a, b	Source port used by channel.
Dest Node	Remote 1, Remote 2	Destination node used by channel card
Dest Slot	2–32	Destination slot used by channel card
Dest Port	a, b	Destination port used by channel card
Dest Card	Data, HS Data, CELP, VLBRV, DPV, VTP	Destination card on channel <ul style="list-style-type: none"> • Data indicates a Sync, Async, Isoc, or T-Encode card on an OCM channel. • HS Data indicates a Sync card on a Network channel.
Rate	300 bps–1.920 Mbps	Channel rate. Actual value range depends on channel type (refer to Table 4-14 on page 4-32).
Bandwidth	300 bps–1.920 Mbps	Actual bandwidth used by this channel
Test*	None	The data channel is not currently being tested.
	Status message of form <Pattern><Type>@<Where>:	
	Pattern = User Data	The test pattern is user supplied data.
	Pattern = 2047†	The 2047 test pattern is generated at the test origin point.
	Pattern = 511*†	The 511 test pattern is generated at the test origin point.
	Type = LLB	Channel card is in local loopback.
	Type =RLB	Channel card is in remote loopback.
	Type = Remote	Opposite end is running a loopback
	Where = Bus	Test signal loops back at the bus interface of the loopback point node.
Where = Line	Test signal loops back at the line interface of the loopback point node.	
* Network must be active to display. † Displayed for active network whether or not object is selected. ‡ Only displayed if one of the channel ends is injecting a 511 or 2047 pattern.		

Table 5-15 Data Channel Status and Diagnostics Indicators (Continued)

For this parameter...	this status...	does/indicates the following:
Error Count*‡	None	No errors have been detected.
	1 - 65,535	Displays the number of errors detected.
	If the Error counter exceeds its maximum value of 65,535, or if the channel detects an "instantaneous overflow," i.e., more than 255 errors in 0.5 seconds, then the errors will continue to accumulate with a greater than sign (>) accompanying the count.	
* Network must be active to display. † Displayed for active network whether or not object is selected. ‡ Only displayed if one of the channel ends is injecting a 511 or 2047 pattern.		

Displaying Data Channel Diagnostic Status Detail

For any configured data channel, you can display data channel diagnostic status detail: a list of all active faults that currently exist for the channel.

You can display data channel diagnostic status detail by opening the **Data Channel Properties** dialog box and selecting the **Diagnostics** tab.

To display a data channel's diagnostic status detail:

1. In the left pane of the OCM-1000 window, select and set active (refer to ["Setting the Active Network" on page 4-54](#)) the network containing the data channel whose status detail you wish to display.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the data channel.
3. Right-click the data channel to open the pop-up menu.
4. Click **Properties** to open the **Channel Properties** dialog box.
5. Click the **Diagnostics** tab to display it.

Figure 5-10 shows the **Diagnostics** tab for a Sync data channel.

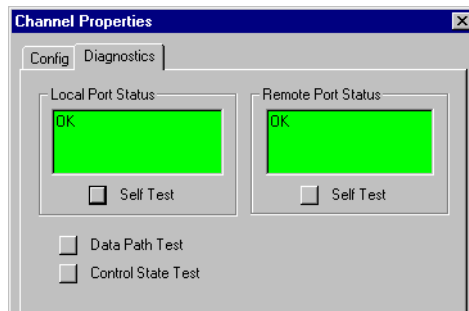


Figure 5-10 Data Channel Diagnostics Tab

The **Local Port Status** and **Remote Port Status** boxes list any active data channel faults on the local and remote ports, respectively. If faults exist, they are listed on a **red** background. If no faults exist, the message, OK appears on a **green** background. The message Not Available on a **blue** background indicates that the fault status could not be determined.

You can also use this tab to:

- Initiate a data channel Self Test on the local and remote ports

- Initiate a Data Path Test
- Initiate a Control State Test

Performing a Data Channel Self Test

Performing a data channel Self Test lets you check the operation of local and remote data channel cards.

Note *Performing a Self Test on a channel card interrupts data and performing a Self Test on a dual data channel card interrupts data on both A and B channels.*

To perform a data channel Self Test:

1. In the left pane of the OCM-1000 window, select and set active (refer to “[Setting the Active Network](#)” on page 4-54) the network containing the data channel you wish to self test.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the data channel and the slot containing the card.
3. Select the LIM slot containing the data card you wish to test, then click **Self Test** on the **Diagnostics** menu. (Alternatively, if the **Channel Properties Diagnostics** tab is open, you can click **Self Test** there for either port.)

A dialog box appears informing you that the test will disrupt data.

4. Click **Yes** (or press **Y**) to continue the test. To cancel the test, click **No** (or press **N**).

When the test starts, a **Self Test** dialog box appears indicating test status and results (for a list of status messages, see [Table 5-8 on page 5-13](#)).

5. When the test is complete, click **OK** to close the **Self Test** dialog box.

Performing a Data Channel Data Path Test

Performing a data channel Data Path Test lets you check the status of the data path for any configured data channel.

For VCM-Sync daisy chain configurations, data path diagnostic capabilities are geared towards Voice side of the channel. In order to fully test all data characteristics of the Sync module, you can temporarily reconfigure the other end of the channel so that both ends are data oriented, and then use the full suite of data channel diagnostics.

To perform a Data Path Test on a data channel:

1. In the left pane of the OCM-1000 window, select and set active (refer to “[Setting the Active Network](#)” on page 4-54) the network containing the data channel you wish to test.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the data channel.
3. Right-click the data channel you wish to test, then click **Data Path Test** on the pop-up menu. (Alternatively, select the data channel and click **Data Path Test** on the **Diagnostics** menu. If the **Channel Properties Diagnostics** tab is open, you can click **Data Path Test** there.)

The **Data Path Test** dialog box appears:

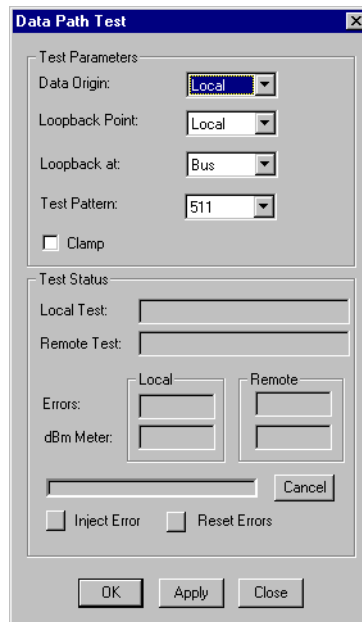


Figure 5-11 Data Channel Data Path Test Dialog Box

4. Specify settings by selecting the appropriate option button, check box, or list item or by typing data into a text box. For detailed information about each setting, see [Table 5-16](#). For additional detail about interactions between different settings, see [Table 5-17](#).
5. When you have entered all settings, do one of the following:
 - Click **OK** to start the test and close the **Data Path Test** dialog box.
 - Click **Apply** to start the test without closing the **Data Path Test** dialog box.

A dialog box appears informing you that the test will disrupt data and network communications.

6. Click **Yes** (or press **Y**) to continue the test. To cancel the test, click **No** (or press **N**).

When the test starts, a progress bar indicates completion status. While the test is running, you may:

- Click **Cancel** to stop the test before completion
- Click **Inject Error** to send an error message to the switch and generate a diagnostic error.
- Click **Reset Errors** to reset accumulated diagnostic errors to zero.
- Click **Close** to close the **Data Path Test** dialog box during the test or after completion.

To reopen the **Data Path Test** dialog box while the test is running, reselect the data channel and choose **Data Path Test** again.

Table 5-16 Data Channel Data Path Test Settings

For this parameter	this setting	indicates/does the following
Data Origin	Local*	The test pattern originates at the local node. Default for OCM subaggregate only.
	Remote_1	The test pattern originates at the Remote 1 node.
	Remote_2	The test pattern originates at the Remote 2 node.
	Network/Node	The test pattern originates at the Network node. This setting only valid for a Network subaggregate; default is node connected to subaggregate.
Loopback Point	Local*	The test pattern loops back to the local node. Default for OCM subaggregate only.
	Remote_1	The test pattern loops back to the Remote 1 node.
	Remote_2	The test pattern loops back to the Remote 2 node.
	None	No loopback.
	Network/Node	The test pattern originates at the Network node. This setting only valid for a Network subaggregate; default is node connected to subaggregate.
Loopback At	Line	The test pattern loops back at the line interface of the loopback point node.
	Line may change automatically depending on the selection of other data path test parameters and is not always a user selection.	
	Bus*	The test pattern loops back at the bus interface of the loopback point node.
	Bus may change automatically depending on the selection of other data path test parameters and is not always a user selection.	
	None	There is no loopback.
Test Pattern	User Data	The test pattern is user supplied data.
	2047†	The 2047 test pattern is generated at the test origin point.
	511*†	The 511 test pattern is generated at the test origin point.
Clamp/Mute	Off*	The test data is not clamped and passes through the line/bus interfaces.
	On	The test data is clamped at both ends of the test.
* Default		
† The 2047 and 511 patterns cause the Errors display to show accumulated bit errors at the test origin point.		

Table 5-17 Interactions for Data Channel Data Path Test Settings

IF			THEN		
Data Origin equals	and Loopback Point equals	and Loopback At equals	Loopback At must be	Test Pattern can be	Clamp/Mute can be
For data channels configured on an OCM or network subaggregate:					
	None		None	511, 2047	Off
Same node		Bus		511, 2047	On, Off.
		Line		User Data*	On, Off
For data channels configured on an OCM subaggregate:					
Different nodes			Line	511, 2047, User Data*	On, Off.
For data channels configured on a Network subaggregate:					
Network	Any node (not None)		Line	511, 2047, User Data*	On, Off.
*If the Test Pattern option is set to User Data, test data is not clamped at the test origin point.					

Performing a Data Channel Control State Test

Performing a data channel Control State Test lets you verify and test the titles and states of the Transmit (Xmt) EIA Controls for any data channel configured on an OCM or Bypass subaggregate.

For VCM-Sync daisy chain configurations, control state diagnostic capabilities are geared towards Voice side of the channel. In order to fully test all data characteristics of the Sync module, you can temporarily reconfigure the other end of the channel so that both ends are data oriented, and then use the full suite of data channel diagnostics.

To perform a Control State Test on a data channel:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the data channel you wish to test.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the data channel.
3. Select the data channel you wish to test, then click **Control State Test** on the **Diagnostics** menu. (Alternatively, if the **Channel Properties Diagnostics** tab is open, you can click **Control State Test** there.)

The **Control State Test** dialog box appears:

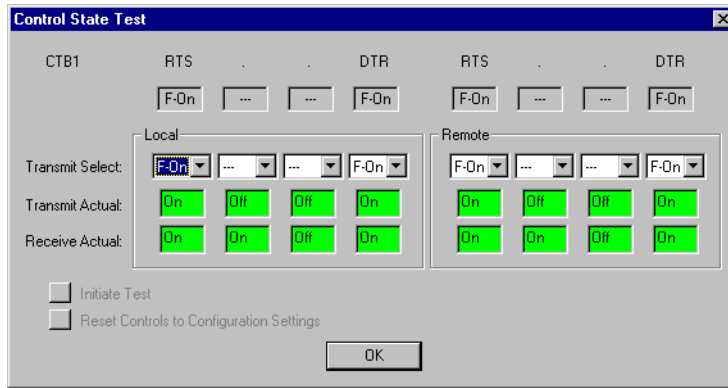


Figure 5-12 Control State Test Dialog Box

This dialog box provides four rows of configured, selected, actual, and received control values for source and destination channel cards (see [Table 5-18](#) for details).

4. In the available **Transmit Select** fields, select control values to be transmitted during the Control State Test. For each control, you can select: Force On (**F-On**), Force Off (**F-Off**), or Passthru (**---**).
5. Click **Initiate Test** to start the test.

See [Table 5-18](#) for explanation of results.

6. If desired, repeat step 4 and step 5 using different control values.

To return to the original configuration settings at any time, click **Reset Controls to Configuration Settings**.

7. When you are finished testing, click **OK** to close the dialog box and return control to the OCM-1000 Window.

Note *If you perform a control state test and exit the screen, there is no indication on the card or from the PC that the test is running.*

Table 5-18 Control State Test Settings and Status Indicators

Control Category	Description	Value/Status	Meaning
Configured (top row)	Configured Transmit EIA control values for channel		
Transmit Select	Control values transmitted during control state test.	F-On	Force On
		F-Off	Force Off
		---	Passthru
<p>* If the RTS/CTS loop is enabled in the data channel configuration, then the second Receive Actual control should have the same value as the first Transmit Actual control. This may cause the second Receive Actual control to be in error (Red) if it does not match the opposite end's first Transmit Actual control value</p> <p>† Each Receive Actual control is compared with the corresponding Transmit Actual of the opposite channel card (i.e. source receive values are compared to destination transmit values).</p>			

Table 5-18 Control State Test Settings and Status Indicators (Continued)

Control Category	Description	Value/Status	Meaning
Transmit Actual*	Actual control values transmitted during test.	Green	Either: <ul style="list-style-type: none"> • Transmit Actual values match Transmit Select values and Configuration settings • Transmit Select set to Passthru (matches Configuration)
		Red	Transmit Actual values do not match Transmit Select values.
		Yellow	Transmit Actual values match Transmit Select values but do not match Configuration settings.
Receive Actual*†	Actual control values received during the test.	Green	Either: <ul style="list-style-type: none"> • Receive Actual values match Transmit Select values • Transmit Select is set to Passthru (matches Configuration)
		Red	Either: <ul style="list-style-type: none"> • Receive Actual values do not match Transmit Select values • Receive Actual values do not match Transmit Actual values at opposite end of channel (whether forced or not)
<p>* If the RTS/CTS loop is enabled in the data channel configuration, then the second Receive Actual control should have the same value as the first Transmit Actual control. This may cause the second Receive Actual control to be in error (Red) if it does not match the opposite end's first Transmit Actual control value</p> <p>† Each Receive Actual control is compared with the corresponding Transmit Actual of the opposite channel card (i.e. source receive values are compared to destination transmit values).</p>			

Voice Channel Status and Diagnostics

Voice channel status, diagnostic, and test functions include:

- Viewing status information in the OCM-1000 window
- Displaying hardware switch status
- Displaying diagnostic status detail
- Performing a Self Test
- Performing a Data Path Test
- Performing a Signalling Test
- Performing a dB Test
- Performing an Echo Canceller Test

Note You can perform the above functions only for an in-service LIM in a network that is active and on a node whose communications are up.

Unless otherwise noted, you can perform these status, diagnostic, and test function on all voice channel cards, including DPV and VTP.

Viewing Voice Channel Status Information in the OCM-1000 Window

To display high-level voice channel status and diagnostic information in the OCM-1000 window:

1. In the left pane, select and set active (refer to *“Setting the Active Network” on page 4-54*) the network whose voice channel status you wish to view.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the voice channel.
3. In the left pane, select the subaggregate whose voice channel status you wish to view.

Fault status indicators along with other properties and status information for each configured voice channel on the selected subaggregate appear in right pane of the OCM-1000 window (see *Table 5-19*).

4. In the left pane, select the slot containing a voice channel card to view additional properties and status information about that card (see *Table 5-19*).

Table 5-19 Voice Channel Status and Diagnostics Indicators

For this parameter...	this status...	does/indicates the following:
Selecting a subaggregate icon displays the following status information for each configured voice channel:		
Header		
Node	L (03a) Sync - R1 (03a) Sync	9.600K 9.600K
Slot	L (04a) ADPCM - R1 (04a) ADPCM	CC 32K 32.800K
Port	L (08a) DPV - R1 (08a) DPV	9.600K 9.600K
Type	L (16a) VTP - R1 (16a) VTP	9.600K 9.600K
Fault Status†	Green*	OK: No faults or problems detected
	Red*	Fault: channel has one or more faults (see <i>“Displaying Voice Channel Diagnostic Status Detail” on page 5-42</i>).
	Blue	Status cannot be determined
Subaggregate (header)	User defined	Name of selected subaggregate
Channel	For each channel, the following source-destination information is displayed:	
Node	L, R1, R2	Source and destination nodes used by channel: L = Local, R1 = Remote 1, R2 = Remote 2
Slot	2-32	Source and destination slots used by card(s).
Port	a, b	Source and destination ports used by channel.
Type	ADPCM, PCM, CELP, VLBRV, DPV, VTP	Type of source and destination channel cards.
	Other	The equipment in this slot does not match the slot configuration (e.g., a LIM or other card is in a slot configured for a voice channel).
Rate	2.4–64 Kbps	Channel rate. Actual value range depends on channel type (refer to <i>Table 4-15 on page 4-32</i>).
Bandwidth	2.4–64 Kbps	Actual bandwidth used by this channel
<p>* Network must be active to display. † Displayed for active network whether or not object is selected. ‡ Only displayed if one of the channel ends is injecting a 511 or 2047 pattern. ** The dBm meter is active when a 1 kHz or VF idle test pattern is used (see data path test below). When the dBm meter is running, it reports the last peak value from the bus interface at the node originating the test pattern. The dBm Meter and Errors are always set to monitor from the bus interface.</p>		

Table 5-19 Voice Channel Status and Diagnostics Indicators (Continued)

For this parameter...	this status...	does/indicates the following:
Selecting a slot containing a voice card displays the following status information for that card:		
Header		
Slot (header)	2-32	Slot(s) used by card(s).
Type (header)	ADPCM, PCM, CELP, VLBRV, DPV, VTP, Sync (destination only). Other	Type of source and destination channel cards. The equipment in this slot does not match the slot configuration (e.g., a LIM or other card is in a slot configured for a voice channel).
Port	a, b	Source port used by channel.
Dest Node	Remote 1, Remote 2	Destination node used by channel card
Dest Slot	2-32	Destination slot used by channel card
Dest Port	a, b	Destination port used by channel card
Dest Card	ADPCM, PCM, CELP, VLBRV, DPV, VTP, Sync	Destination node used by channel card
Rate	2.4–64 Kbps	Channel rate. Actual value range depends on channel type (refer to Table 4-15 on page 4-32).
Bandwidth	2.4–64 Kbps	Bandwidth used by this channel
Test*	None	The voice channel is not currently being tested.
	Status message of form <Pattern><Type>@<Where>:	
	Pattern = User Data	The test pattern is user supplied data.
	Pattern = 2047†	The 2047 test pattern is generated at the test origin point.
	Pattern = 511*†	The 511 test pattern is generated at the test origin point.
	Pattern = 1 KHz	The 1-KHz test pattern is generated at the test origin point.
	Pattern = VF Idle	The VF Idle test pattern is generated at the test origin point.
	Type = LLB	Channel card is in local loopback.
	Type =RLB	Channel card is in remote loopback.
	Type = Remote	Opposite end is running a loopback
	Where = Bus	Test signal loops back at the bus interface of the loopback point node.
Where = Line	Test signal loops back at the line interface of the loopback point node.	
<p>* Network must be active to display. † Displayed for active network whether or not object is selected. ‡ Only displayed if one of the channel ends is injecting a 511 or 2047 pattern. ** The dBm meter is active when a 1 kHz or VF idle test pattern is used (see data path test below). When the dBm meter is running, it reports the last peak value from the bus interface at the node originating the test pattern. The dBm Meter and Errors are always set to monitor from the bus interface.</p>		

Table 5-19 Voice Channel Status and Diagnostics Indicators (Continued)

For this parameter...	this status...	does/indicates the following:
Error Count*‡	None	No errors have been detected.
	1 - 65,535	Displays the number of errors detected.
	If the Error counter exceeds its maximum value of 65,535, or if the channel detects an "instantaneous overflow," i.e., more than 255 errors in 0.5 seconds, then the errors will continue to accumulate with a greater than sign (>) accompanying the count.	
dBm Meter**	-55 to +3 dB	dB meter reading
<p>* Network must be active to display. † Displayed for active network whether or not object is selected. ‡ Only displayed if one of the channel ends is injecting a 511 or 2047 pattern. ** The dBm meter is active when a 1 kHz or VF idle test pattern is used (see data path test below). When the dBm meter is running, it reports the last peak value from the bus interface at the node originating the test pattern. The dBm Meter and Errors are always set to monitor from the bus interface.</p>		

Displaying Voice Channel Hardware Switch Status

You can display a voice channel's hardware switch settings and equipment status, at both ends of the channel, by opening the appropriate **Properties** dialog box and selecting the **HW Settings** tab.

To display voice channel hardware switch settings:

1. In the left pane of the OCM-1000 window, select and set active (refer to "[Setting the Active Network](#)" on page 4-54) the network containing the voice channel whose hardware settings you wish to display.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the desired voice channel.
3. Right-click the voice channel to open the pop-up menu.
4. Click **Properties** to open the **Channel Properties** dialog box.
5. Click the **HW Settings** tab to display it.

The appearance and contents of the HW Settings tab, depends on the type of voice channel selected, as illustrated in the following figures:

- For a VCM (ADPCM, VLBRV, PCM, CELP) channel, see [Figure 5-13](#) and [Table 5-20](#).
- For a DPV channel, see [Figure 5-14](#) [Table 5-21](#).

- For a VTP channel, see *Figure 5-15* and *Figure 5-22*.

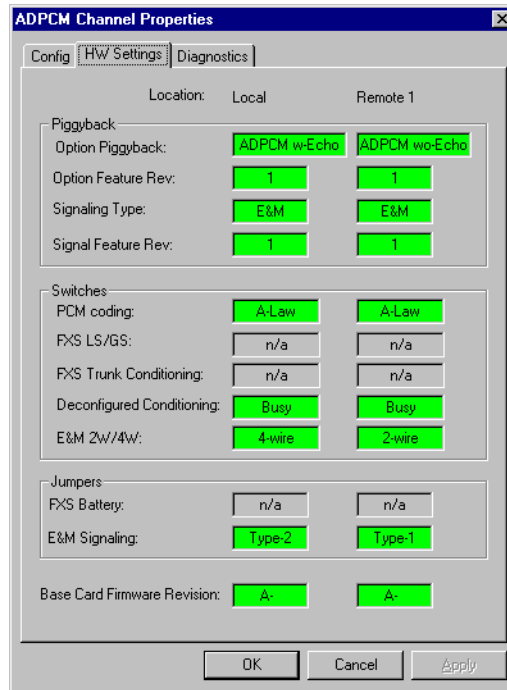


Figure 5-13 VCM (ADPCM) HW Settings Tabs

Table 5-20 VCM Hardware Switch Settings

For this Parameter	this state*...	indicates the following:
Piggyback		
Option Piggyback	VLBRV w-FAX	A VLBRV card with FAX option is in slot.
	VLBRV wo-FAX	A VLBRV card without FAX option is in the slot.
	ADPCM w-Echo	An ADPCM card with echo canceller option is in the slot.
	ADPCM wo-Echo	An ADPCM card without echo canceller option is in the slot.
	CELP w-FAX	A CELP card with FAX option is in the slot.
	CELP wo-FAX	A CELP card without FAX option is in the slot.
	CELP 9.6K w-FAX	A CELP 9.6 card with FAX option is in the slot.
	CELP 9.6K wo-FAX	A CELP 9.6 card without FAX option is in the slot.
Option Feature Rev.	1 - 256	Displays piggyback feature revision level.
Signalling Piggyback	E&M	E&M signalling option is selected.
	FXS	FXS signalling option is selected.
	FXO	FXO signalling option is selected.
Signal Feature Rev.	1 - 256	Displays any feature revision level of piggyback.
* n/a indicates that the parameter is not selectable for the interface type.		
Green background: the configured software setting matches the hardware switch setting.		
Red background: the configured software setting does not match the hardware switch setting and will cause a Config Mismatch alarm.		

Table 5-20 VCM Hardware Switch Settings (Continued)

For this Parameter	this state*...	indicates the following:
Switches		
PCM Coding	A-law	A-law PCM coding is selected.
	Mu-law	Mu-law PCM coding is selected.
	n/a	VLBRV channel selected
FXS LS/GS	Loop start	FXS loop start is selected.
	Ground start	FXS ground start is selected.
	n/a	The E&M or FXO signalling option is selected (no FXS loop start or ground start selection).
FXS Trunk Conditioning	Quiet	Quiet FXS trunk conditioning is selected.
	Reorder	Reorder FXS trunk conditioning is selected.
	n/a	The E&M or FXO signalling option is selected (no FXS trunk conditioning selection).
Deconfigured Conditioning	Busy	Busy out-of-service conditioning is selected.
	Idle	Idle out-of-service conditioning is selected.
	n/a	The FXS or FXO signalling option is selected.
E&M 2w/4w	2-wire	2-wire E&M is selected.
	4-wire	4-wire E&M is selected.
	n/a	The FXS or FXO signalling option is selected.
Jumpers		
FXS Battery	External	The external FXS battery is selected.
	Internal	The internal FXS battery is selected.
	n/a	The E&M or FXO signalling option is selected.
E&M Signalling	Type-1	Type-1 E&M signalling is selected.
	Type-2	Type-2 E&M signalling is selected.
	Type-5	Type-5 E&M signalling is selected.
	SSCD5A	SSCD5A E&M signalling is selected.
	n/a	The FXS or FXO signalling option is selected.
Base Card Firmware Revision	(Alphanumeric)	Displays voice channel base card firmware revision level.
<p>* n/a indicates that the parameter is not selectable for the interface type.</p> <p>Green background: the configured software setting matches the hardware switch setting.</p> <p>Red background: the configured software setting does not match the hardware switch setting and will cause a Config Mismatch alarm.</p>		

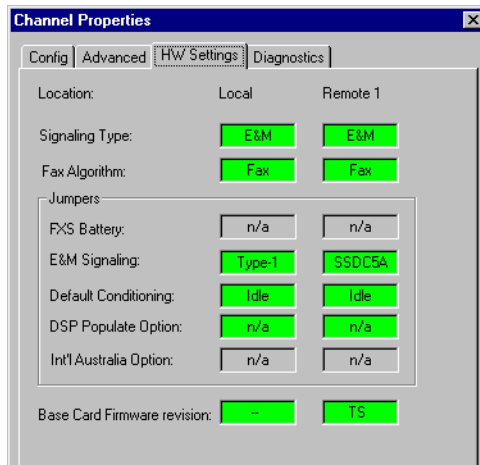


Figure 5-14 DPV HW Settings Tabs

Table 5-21 DPV Hardware Switch Settings

For this Parameter	this state*...	indicates the following:
Location	Local, Remote 1, Remote 2	Node where channel is located (read-only)
Signalling Type	E&M	The E&M signalling option is selected.
	FXS	The FXS signalling option is selected.
	FXO	The FXO signalling option is selected.
Fax Algorithm	Fax	Fax transmission is enabled.
	No Fax	Fax transmission is disabled.
Jumpers		
FXS Battery	External	The external FXS battery is selected.
	Internal	The internal FXS battery is selected.
	n/a	The E&M or FXO signalling option is selected.
E&M Signalling	Type-1	Type-1 E&M signalling is selected.
	Type-2	Type-2 E&M signalling is selected.
	Type-5	Type-5 E&M signalling is selected.
	SSCD5A	SSCD5A E&M signalling is selected.
	n/a	The FXS or FXO signalling option is selected.
Default Conditioning (E&M option only)	Busy	Busy out-of-service conditioning is selected.
	Idle	Idle out-of-service conditioning is selected.
DSP Populate Option	(Future Update)	
Int'l Australia Options	On	This option applies to Type-5 E&M signalling only.)
	Off	
Basecard Firmware Revision	(Alphanumeric)	Displays the DPV firmware revision level.
<p>* n/a indicates that the parameter is not selectable for the interface type. Green background: the configured software setting matches the hardware switch setting. Red background: the configured software setting does not match the hardware switch setting and will cause a Config Mismatch alarm.</p>		

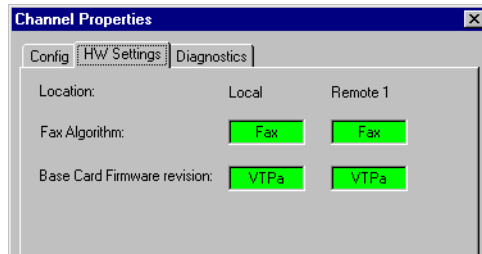


Figure 5-15 VTP HW Settings Tabs

Table 5-22 VTP Hardware Switch Settings

For this Parameter	this state* ...	indicates the following:
Location	Local, Remote 1, Remote 2	Node where channel is located (read-only)
Fax Algorithm	Fax	Fax transmission is enabled.
	No Fax	Fax transmission is disabled.
Basecard Firmware Revision	(Alphanumeric)	Displays the DPV firmware revision level.
<p>* n/a indicates that the parameter is not selectable for the interface type. Green background: the configured software setting matches the hardware switch setting. Red background: the configured software setting does not match the hardware switch setting and will cause a Config Mismatch alarm.</p>		

Displaying Voice Channel Diagnostic Status Detail

For any configured voice channel, you can display voice channel diagnostic status detail: a list of all active faults that currently exist for the channel.

You can display voice channel diagnostic status detail by opening the **Voice Channel Properties** dialog box and selecting the **Diagnostics** tab.

To display a voice channel's diagnostic status detail:

1. In the left pane of the OCM-1000 window, select and set active (refer to "[Setting the Active Network](#)" on page 4-54) the network containing the voice channel whose status detail you wish to display.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the voice channel.
3. Right-click the voice channel to open the pop-up menu.
4. Click **Properties** to open the **Channel Properties** dialog box.
5. Click the **Diagnostics** tab to display it.

Figure 5-16 shows the **Diagnostics** tab for a ADPCM voice channel.

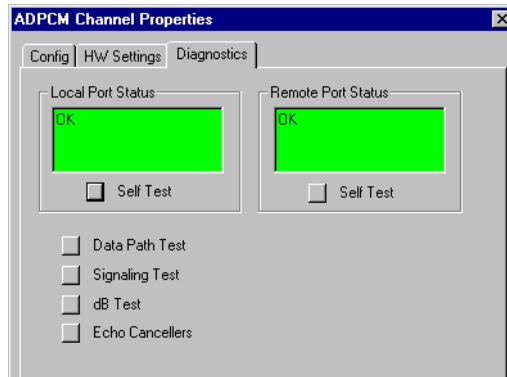


Figure 5-16 Voice Channel Diagnostics Tab

The **Local Port Status** and **Remote Port Status** boxes list any active data channel faults on the local and remote ports, respectively. If faults exist, they are listed on a **red** background. If no faults exist, the message, OK appears on a **green** background. The message Not Available on a **blue** background indicates that the fault status could not be determined. If the equipment type is configured incorrectly, the message, Config Mismatch, appears.

Note *A Config Mismatch may occur if the wrong equipment was configured. Check the Equip Type parameter. If the Equip Type is correct, select Display Hardware Switches or Diagnostic Tests to find the equipment configuration mismatch (displayed in red).*

You can also use this tab to:

- Initiate a voice channel Self Test on the local and remote nodes
- Initiate a Data Path Test
- Initiate a Signalling Test
- Initiate a dB Test
- Initiate an Echo Canceller Test

Performing a Voice Channel Self Test

Performing a voice channel Self Test lets you check the operation of local and remote voice channel cards.

Note *Performing a Self Test on a channel card interrupts data and performing a Self Test on a dual voice channel card interrupts data on both A and B channels.*

To perform a voice channel Self Test:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the voice channel you wish to self test.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the voice channel and the slot containing the card.

3. Select the LIM slot containing the voice card you wish to test, then click **Self Test** on the **Diagnostics** menu. (Alternatively, if the **Channel Properties Diagnostics** tab is open, you can click **Self Test** there for either port.)

A dialog box appears informing you that the test will disrupt data.

4. Click **Yes** (or press **Y**) to continue the test. To cancel the test, click **No** (or press **N**).

When the test starts, a **Self Test** dialog box appears indicating test status and results (for a list of status messages, see [Table 5-8 on page 5-13](#)).

5. When the test is complete, click **OK** to close the **Self Test** dialog box.

Performing a Voice Channel Data Path Test

Performing a voice channel Data Path Test lets you check the status of the data path for any configured voice channel.

To perform a Data Path Test on a voice channel:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the voice channel you wish to test.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the voice channel.
3. Right-click the voice channel you wish to test, then click **Data Path Test** on the pop-up menu. (Alternatively, select the voice channel and click **Data Path Test** on the **Diagnostics** menu. If the **Channel Properties Diagnostics** tab is open, you can click **Data Path Test** there.)

The **Data Path Test** dialog box appears:

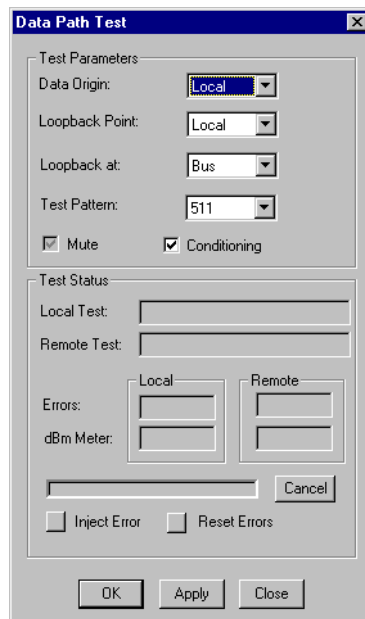


Figure 5-17 Voice Channel Data Path Test Dialog Box

4. Specify settings by selecting the appropriate option button, check box, or list item or by typing data into a text box. For detailed information about each setting, see [Table 5-23](#). For

additional detail about interactions between different settings, see [Table 5-24](#).

5. When you have entered all settings, do one of the following:
 - Click **OK** to start the test and close the **Data Path Test** dialog box.
 - Click **Apply** to start the test without closing the **Data Path Test** dialog box.

A dialog box appears informing you that the test will disrupt data and network communications.

6. Click **Yes** (or press **Y**) to continue the test. To cancel the test, click **No** (or press **N**).

When the test starts, a progress bar indicates completion status. While the test is running, you may:

- Click **Cancel** to stop the test before completion
- Click **Inject Error** to send an error message to the switch and generate a diagnostic error.
- Click **Reset Errors** to reset accumulated diagnostic errors or the dB Meter to zero.
- Click **Close** to close the **Data Path Test** dialog box during the test or after completion.

To reopen the **Data Path Test** dialog box while the test is running, reselect the voice channel and choose **Data Path Test** again.

Table 5-23 Voice Channel Data Path Test Settings

For this parameter	this setting	indicates/does the following
Data Origin**	Local*	The test pattern originates at the local node. Default for OCM subaggregate only.
	Remote_1	The test pattern originates at the Remote 1 node.
	Remote_2	The test pattern originates at the Remote 2 node.
	For dissimilar channels (i.e. VCM-Sync daisy chain configurations), the Data Origin cannot be the Sync side of the channel.	
Loopback Point**	Local*	The test pattern loops back to the local node. Default for OCM subaggregate only.
	Remote_1	The test pattern loops back to the Remote 1 node.
	Remote_2	The test pattern loops back to the Remote 2 node.
	None	No loopback.
Loopback At	Line	The test pattern loops back at the line interface of the loopback point node.
	Line may change automatically depending on the selection of other data path test parameters and is not always a user selection.	
	Bus*	The test pattern loops back at the bus interface of the loopback point node.
	Bus may change automatically depending on the selection of other data path test parameters and is not always a user selection.	
	None	There is no loopback.
* Default		
† The 2047 and 511 patterns cause the Errors display to show accumulated bit errors at the test origin point.		
‡ The 1 kHz or VF Idle patterns cause the dB Meter to retain “latched peak” setting.		

Table 5-23 Voice Channel Data Path Test Settings (Continued)

For this parameter	this setting	indicates/does the following
Test Pattern	1 KHz‡	The 1.004-kHz test is generated and the dBm meter display is started.
	VF Idle‡	The VF idle (quiet) test is generated and the dBm meter display is started.
	User Data	The test pattern is user supplied data.
	2047†	The 2047 test pattern is generated at the test origin point.
	511*†	The 511 test pattern is generated at the test origin point.
Clamp/Mute	Off*	The test data is not clamped and passes through the line/bus interfaces.
	On	The test data is clamped at both ends of the test.
	If the Test Pattern option is set to User Data , test data is not clamped at the test origin point. If the Loopback at option is set to None , test data is not clamped.	
Conditioning	On*	The configured conditioning goes into effect when the test is initiated.
	Off	The conditioning remains as is when the test is initiated.
* Default		
† The 2047 and 511 patterns cause the Errors display to show accumulated bit errors at the test origin point.		
‡ The 1 kHz or VF Idle patterns cause the dB Meter to retain "latched peak" setting.		

Table 5-24 Interactions for Voice Channel Data Path Test Settings

IF			THEN			
Data Origin equals	and Loopback Point equals	and Loopback At equals	Loopback At must be	Test Pattern can be	Clamp/Mute can be	Conditioning can be
For voice channels configured on an OCM subaggregate:						
	None		None	1 KHz, VF Idle	Off	On, Off
Same node		Bus		1 KHz, VF Idle,	On, Off	On, Off
		Line		511, 2047	On	On, Off
Different nodes*		Bus		(All)	On, Off	On, Off
		Line		1 KHz, VF Idle, User Data	On, Off	On, Off
* If the Data Origin and Loopback Point selections are different, then the loopback point is the bus interface for 2047 and 511 test patterns and the line interface for user-supplied test patterns, 1 kHz tests and VF idle tests.						

Performing a Voice Channel Signalling Test

Performing a voice channel Signalling Test lets you verify and test the signaling states for any configured voice channel.

To perform a Signalling Test on a voice channel:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the module you wish to test.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the voice channel.
3. Select the voice channel you wish to test, then click **Signalling Test** on the **Diagnostics** menu. (Alternatively, if the **Channel Properties Diagnostics** tab is open, you can click **Signalling Test** there.)

The **Signalling Test** dialog box appears:

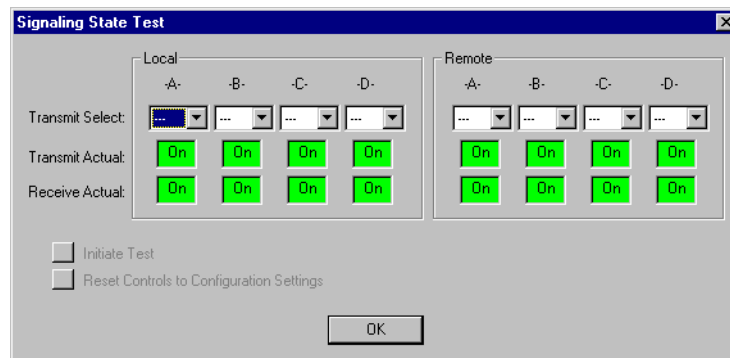


Figure 5-18 Signalling Test Dialog Box

This dialog box provides three rows of actual and selected control values for source and destination channel cards (see [Table 5-25](#) for details).

The default settings for the **Transmit Select** fields are the voice card’s configured **Transmit Signaling** values, which are displayed as **Passthru**. The **Transmit Actual** and **Receive Actual** rows initially display the actual control values that are being transmitted and received when the dialog box is opened.

The fields in this dialog box are enabled based on the Signaling State of the channel:

- 2-state channel—only column A is enabled for source and destination channel cards (see [Table 5-26](#))
- 4-state channel—columns A and B are enabled (see [Table 5-27](#))
- 16-state channel—all columns (A, B, C, and D) are enabled

For VTP-VTP channels—whether 2-state, 4-state (or 16-state)—the external functions (e.g., “Ringing,” “Not Ringing”) specified in the last column of [Table 5-26](#) and [Table 5-27](#) cannot be determined

4. In the available **Transmit Select** fields, select control values to be transmitted during the Signalling Test. For each control, you can select: Force On (**F-On**), Force Off (**F-Off**), or Passthru (---).
5. Click **Initiate Test** to start the test.
See [Table 5-25](#) for explanation of results.
6. If desired, repeat step 4 and step 5 using different control values.

To return to the original configuration settings at any time, click **Reset Controls to Configuration Settings**.

- When you are finished testing, click **OK** to close the dialog box and return control to the OCM-1000 Window.

Table 5-25 Signalling Test Settings and Status Indicators

Control Category*	Description	Value/Status	Meaning
Transmit Select	Selected control values to be transmitted during signalling test.	F-On	Force On
		F-Off	Force Off
		---	Passthru
Transmit Actual†	Actual control values transmitted during test.	Green	Either: <ul style="list-style-type: none"> • Transmit Actual values match Transmit Select values and Configuration settings • Transmit Select set to Passthru (matches Configuration)
		Red	Transmit Actual values do not match Transmit Select values.
		Yellow	Transmit Actual values match Transmit Select values but do not match Configuration settings.
Receive Actual‡	Actual control values received during the test.	Green	Either: <ul style="list-style-type: none"> • Receive Actual values match Transmit Select values • Transmit Select is set to Passthru (matches Configuration)
		Red	Either: <ul style="list-style-type: none"> • Receive Actual values do not match Transmit Select values • Receive Actual values do not match Transmit Actual values at opposite end of channel (whether forced or not)

* For VCM-Sync daisy chain configurations, all **Configured** and **Actual** values for the Sync side of the channel are inapplicable. In this case, diagnostic transmissions are not exchanged between the two sides of the channel.

† If, during VCM Channel configuration, **Receive Signaling** is set to a value other than **Passthru**, then this configured setting overrides any signal actually received by the card.

‡ Each **Receive Actual** control is compared with the corresponding **Transmit Actual** of the opposite channel card (i.e. source receive values are compared to destination transmit values).

Table 5-26 2-State Signalling State Test Options

Signalling Type	For this node...	if A is...	then the following:
FXS-E&M	E&M	F-Off	E-Lead Idle
		F-On	E-Lead Busy
	FXS	F-Off	Not Ringing
		F-On	Ringing
E&M-E&M	both nodes	F-Off	E&M E-Lead Idle
		F-On	E&M E-Lead Busy or Looped

Table 5-27 4-State Signalling Test Options

Signalling Type	For this node...	if A is...	and B is...	then the following:
FXS-FXS	both nodes	F-On	*	Ringing if On-Hook
		F-Off	*	Not Ringing
FXS-FXO	FXO	F-Off	*	On-Hook
		F-On	*	Off-Hook
	FXS	*	F-Off	Ringing
		*	F-On	Not Ringing

* Does not matter, either 1 or 0.

Performing a Voice Channel dB Test

Performing a voice channel dB Test lets you verify and test the signaling level for any configured voice channel.

To perform a dB Test on a voice channel:

1. In the left pane of the OCM-1000 window, select and set active (refer to [“Setting the Active Network” on page 4-54](#)) the network containing the voice channel you wish to test.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the voice channel.
3. Select the voice channel you wish to test, then click **dB Test** on the **Diagnostics** menu. (Alternatively, if the **Channel Properties Diagnostics** tab is open, you can click **dB Test** there.)

The **dB Test** dialog box appears:

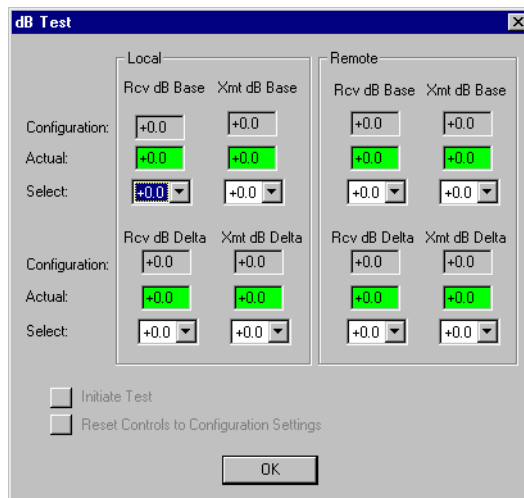


Figure 5-19 dB Test Dialog Box

This dialog box provides six rows of configured, actual, and selectable dB values for source and destination channel cards. Depending on what type of voice channel you are testing, see one of the following tables for details:

- For VCM (ADPCM, PCM, VLBRV, CELP) channels, see [Table 5-28](#)

- For DPV and VTP channels, see [Table 5-29](#).
4. In the available **Select** fields, select db values to be transmitted during the dB Test. For available values in each source or destination field group, see [Table 5-28](#) for VCM channels or [Table 5-29](#) for DPV/VTP channels.
 5. Click **Initiate Test** to start the test.
See [Table 5-28](#) or [Table 5-29](#) for explanation of results.
 6. If desired, repeat step 4 and step 5 using different control values.
To return to the original configuration settings at any time, click **Reset Controls to Configuration Settings**.
 7. When you are finished testing, click **OK** to close the dialog box and return control to the OCM-1000 Window.

Table 5-28 dB Test Settings and Status Indicators for VCM Cards

Parameter	Description/Source	Status/Value	Meaning/Signal Configuration
Configuration†			
Rcv dB Delta, Xmt dB Delta	Configured dB Delta values as obtained from the OCM-1000 configuration database.	Green*	Corresponding Select settings OK; no errors returned from card.
		Red	Illegal test value in corresponding Select field returned error status from card.
Rcv dB Base, Xmt dB Base	Configured dB Base values as obtained from voice card.	Green*	Corresponding Select settings OK; no errors returned from card.
		Red	Illegal test value in corresponding Select field returned error status from card.
Actual‡			
Rcv dB Delta, Xmt dB Delta Rcv dB Base, Xmt dB Base	Actual values as obtained from voice card.	Green*	Corresponding Select settings match Configuration settings.
		Yellow	Corresponding Select settings do not match Configuration settings.
Select			
Rcv dB Base	Selected Rcv dB Base value to be transmitted during test.	0.0	FXS and FXO signalling (2-wire)**
		0.0* or 7.0	E&M 4-wire signalling**
Xmt dB Base	Selected Xmt dB Base value to be transmitted during test.	0.0	FXS and FXO signalling (2-wire)
		-16.0 or 0.0*	E&M 4-wire signalling
<p>* Default</p> <p>† Default value for Rcv dB Delta is derived from configuration database.</p> <p>‡ For VCM-Sync daisy chain configurations, all Configured and Actual values for the Sync side of the channel are inapplicable and displayed as n/a. In this case, diagnostic transmissions are not exchanged between the two sides of the channel. If the VCM is configured for either FXO or FXS signaling types, the Transmit dB Base and Receive dB Base values are inapplicable and displayed as n/a.</p> <p>** VCMs configured as FXS or FXO are always 2-wire, and selection options are always limited as noted. VCMs configured as E&M can be either 2-wire or 4-wire, depending on the hardware switch setting.</p>			

Table 5-28 dB Test Settings and Status Indicators for VCM Cards(Continued)

Parameter	Description/Source	Status/Value	Meaning/Signal Configuration
Rcv dB Delta	Selected Rcv dB Delta value to be transmitted during test.	-6.0 to 0.0*	FXS and FXO signalling (2-wire)
		-6.0 to 1.5 (0.0*†)	E&M 4-wire signalling
Xmt dB Delta	Selected Xmt dB Delta value to be transmitted during test.	-6.0 to *0.0	FXS and FXO signalling (2-wire)
		-6.0 to 1.5 (0.0*†)	E&M 4-wire signalling
<p>* Default</p> <p>† Default value for Rcv dB Delta is derived from configuration database.</p> <p>‡ For VCM-Sync daisy chain configurations, all Configured and Actual values for the Sync side of the channel are inapplicable and displayed as n/a. In this case, diagnostic transmissions are not exchanged between the two sides of the channel. If the VCM is configured for either FXO or FXS signaling types, the Transmit dB Base and Receive dB Base values are inapplicable and displayed as n/a.</p> <p>** VCMs configured as FXS or FXO are always 2-wire, and selection options are always limited as noted. VCMs configured as E&M can be either 2-wire or 4-wire, depending on the hardware switch setting.</p>			

Table 5-29 dB Test Settings and Status Indicators for DPV/VTP Cards

Parameter	Description/Source	Status/Value	Meaning/Signal Configuration
Configuration‡			
Rcv dB Delta, Xmt dB Delta Rcv dB Base, Xmt dB Base	Configured dB Base and dB Delta values as obtained from the OCM-1000 configuration database.	Green*	Corresponding Select settings OK; no errors returned from card.
		Red (DPV only)	Illegal test value in corresponding Select field returned error status from card.
Actual‡			
Rcv dB Delta, Xmt dB Delta Rcv dB Base, Xmt dB Base	Actual values as obtained from voice card.	Green*	Corresponding Select settings match Configuration settings.
		Yellow	Corresponding Select settings do not match Configuration settings.
Select			
Rcv dB Base	Selected Rcv dB Base value to be transmitted during test.	0.0	FXS and FXO signalling (2-wire)**
		0.0* or 7.0	E&M 4-wire signalling**
Xmt dB Base	Selected Xmt dB Base value to be transmitted during test.	0.0	FXS and FXO signalling (2-wire)
		-16.0 or 0.0*	E&M 4-wire signalling
Rcv dB Delta	Selected Rcv dB Delta value to be transmitted during test.	-6.0 to 0.0*	FXS and FXO signalling (2-wire)
		-6.0 to 1.5 (0.0*†)	E&M 4-wire signalling
<p>* Default</p> <p>† Default value for Rcv dB Delta is derived from configuration database.</p> <p>‡ For DPV/VTP-Sync daisy chain configurations, all Configured and Actual values for the Sync side of the channel are inapplicable and displayed as n/a. In this case, diagnostic transmissions are not exchanged between the two sides of the channel. If the VCM is configured for either FXO or FXS signaling types, the Transmit dB Base and Receive dB Base values are inapplicable and displayed as n/a.</p> <p>** DPVs and VTPs configured as FXS or FXO are always 2-wire, and selection options are always limited as noted. DPVs and VTPs configured as E&M can be either 2-wire or 4-wire, depending on the hardware switch setting.</p>			

Table 5-29 dB Test Settings and Status Indicators for DPV/VTP Cards(Contin-

Parameter	Description/Source	Status/Value	Meaning/Signal Configuration
Xmt dB Delta	Selected Xmt dB Delta value to be transmitted during test.	-6.0 to *0.0	FXS and FXO signalling (2-wire)
		-6.0 to 1.5 (0.0*†)	E&M 4-wire signalling
* Default † Default value for Rcv dB Delta is derived from configuration database. ‡ For DPV/VTP-Sync daisy chain configurations, all Configured and Actual values for the Sync side of the channel are inapplicable and displayed as n/a. In this case, diagnostic transmissions are not exchanged between the two sides of the channel. If the VCM is configured for either FXO or FXS signaling types, the Transmit dB Base and Receive dB Base values are inapplicable and displayed as n/a. ** DPVs and VTPs configured as FXS or FXO are always 2-wire, and selection options are always limited as noted. DPVs and VTPs configured as E&M can be either 2-wire or 4-wire, depending on the hardware switch setting.			

Performing a Voice Channel Echo Cancellers Test

Performing a voice channel Echo Cancellers Test lets you adjust and monitor the echo canceller parameters, for any voice channel except CELP, without affecting the configuration. Once desired parameter settings, the configuration can be updated using the **Config** tab in the appropriate **Channel Properties** dialog box (for detailed information see *“Modifying Channel Properties” on page 4-51*).

To perform an Echo Cancellers Test on a voice channel:

1. In the left pane of the OCM-1000 window, select and set active (refer to *“Setting the Active Network” on page 4-54*) the network containing the voice channel you wish to test.
2. If necessary, expand the network, node, LIM, and subaggregate branches to display the voice channel.
3. Select the voice channel you wish to test, then click **Echo Cancellers Test** on the **Diagnostics** menu. (Alternatively, if the **Channel Properties Diagnostics** tab is open, you can click **Echo Cancellers Test** there.)

The **Echo Cancellers Test** dialog box appears:

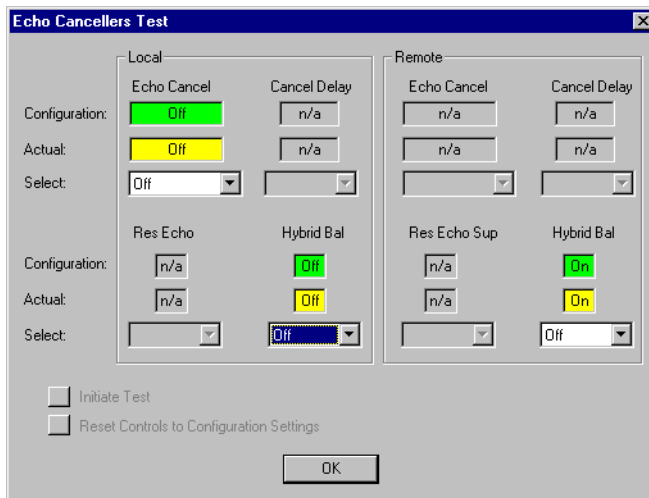


Figure 5-20 Echo Cancellers Test Dialog Box

This dialog box provides six rows of configured, actual, and selectable values for source and destination channel cards. Depending on what type of voice channel you are testing, see one of the following tables for details:

- For VCM (ADPCM, PCM, VLBRV) channels, see [Table 5-30](#) for details
- For DPV and VTP channels, see [Table 5-31](#) for details.

Note *The voice channel type and associated options determine the default settings of the **Echo Cancellers Test** dialog box. This menu/function is unavailable for the CELP VCM.*

4. In the available **Select** fields, select the values to be transmitted during the Echo Cancellers Test. For available values in each source or destination field group, see [Table 5-30](#) (for VCM cards) or [Table 5-31](#) for DPV/VTP cards.
5. Click **Initiate Test** to start the test.
Refer to [Table 5-30](#) or [Table 5-31](#) for explanation of results.
6. If desired, repeat step 4 and step 5 using different control values.
To return to the original configuration settings at any time, click **Reset Controls to Configuration Settings**.
7. When you are finished testing, click **OK** to close the dialog box and return control to the OCM-1000 Window.

Once the settings are optimized, the switches on the VCM can be set to new states.

Table 5-30 Echo Cancellers Test Settings, Status Indicators for VCM Cards

Parameter	Description/Source	Status/Setting	Meaning
Configuration†			
Echo Cancel‡ Cancel Delay‡ Residual Echo Supp‡ Hybrid Balancer	Configured values as obtained from voice card.	Green*	Configured values OK.
Actual†			
Echo Cancel Cancel Delay Residual Echo Supp Hybrid Balancer	Actual values as obtained from voice card.	Green*	Corresponding Select settings match Configuration settings.
		Red	Actual value is not applicable to the current situation.
		Yellow	Corresponding Select settings do not match Configuration settings.
Select			
Echo Canc	Selected Echo Cancel value to be transmitted during test.	On	
		Off*	
		External Control High	
		External Control Low	
Canc Delay	Selected Cancel Delay value to be transmitted during test.	0 ms*	
		7 ms	
		14 ms	
Res Echo Sup	Selected Residual Echo Suppression value to be transmitted during test.	On	
		Off*	
Hybrid Bal	Selected Hybrid Balancer value to be transmitted during test.	On	
		Off*	
<p>* Default</p> <p>† For VCM-Sync daisy chain configurations, all Configured and Actual values for the Sync side of the channel are inapplicable and displayed as n/a. In this case, diagnostic transmissions are not exchanged between the two sides of the channel.</p> <p>‡ If selected VCM is an ADPCM without an echo canceller installed, or if Echo Cancel displays Off, the Configuration values are n/a (not applicable) for: Echo Cancel, Cancel Delay, and Residual Echo Suppression.</p>			

Table 5-31 Echo Cancellers Test Settings, Status Indicators for DPV/VTP Cards

Parameter	Description/Source	Status/Setting	Meaning
Configuration†			
Echo Cancel‡ Cancel Delay‡ Residual Echo Supp‡	Configured values as obtained from voice card.	Green*	Configured values OK.
Actual‡			
Echo Cancel Cancel Delay Residual Echo Supp	Actual values as obtained from voice card.	Green*	Corresponding Select settings match Configuration settings.
		Red	Actual value is not applicable to the current situation.
		Yellow	Corresponding Select settings do not match Configuration settings.
Select			
Echo Canc	Selected Echo Cancel value to be transmitted during test.	On	
		Off*	
		External Control High	
		External Control Low	
Canc Delay	Selected Cancel Delay value to be transmitted during test.	0 ms*	
Res Echo Sup	Selected Residual Echo Suppression value to be transmitted during test.	On	
		Off*	
Hybrid Bal	Selected Hybrid Balancer value to be transmitted during test.	On	
		Off*	
* Default † For VCM-Sync daisy chain configurations, all Configured and Actual values for the Sync side of the channel are inapplicable and displayed as n/a. In this case, diagnostic transmissions are not exchanged between the two sides of the channel. ‡ If selected VCM is an ADPCM without an echo canceller installed, or if Echo Cancel displays Off , the Configuration values are n/a (not applicable) for: Echo Cancel , Cancel Delay , and Residual Echo Suppression .			

Losing Power to an OCM During a Diagnostic Test

If one of the OCMs loses power during a diagnostic test, the down OCM will not run the diagnostic when it powers back up. Although the down OCM stops running the diagnostic, the other side of the circuit continues to run the test until you cancel it.

If you lose power to an OCM during a diagnostic test, cancel the test and run it again when the down OCM is back up.

Summary

This chapter described how to monitor equipment, perform diagnostic tests, and handle alarms.

Glossary

ACELP

Algebraic Code Excited Linear Prediction

Adaptive Differential Pulse Code Modulation (ADPCM)

An encoding technique, standardized by the CCITT, that allows an analog voice conversation to be carried within a 32 Kbps digital channel; 3 or 4 bits are used to describe each sample, which represents the difference between two adjacent samples; sampling is done 8,000 times a second.

ADPCM

Adaptive Differential Pulse Code Modulation

Aggregate

The combination of two or more channels into one data stream.

Alarms

A signal that is raised when a malfunction is detected in the system. Major alarms need immediate attention; minor alarms are not immediately detrimental to the working of the system. Major alarms indicate that hardware on a Common Module is malfunctioning; minor alarms indicate that the malfunction is in one of the Data or Voice Channel cards.

AMI

Alternate Mark Inversion Line Encoding

Asynchronous

Transmission that is not related to a specific frequency or to the timing of the transmission facility; transmission characterized by individual characters or bytes with start and stop bits from which a receiver derives the necessary timing for sampling bits; start-stop transmission.

B7

Bit 7 Zero Suppression

B8 Zero Suppr

Bit 8 Zero Stuffing (zero suppression)

B8ZS

Bit 8 Zero Stuffing (zero suppression)

Backplane

This is the back panel of OCM Shelves. It holds the external connectors used by all the modules.

Base Card

A board that can have one or more cards called "piggybacks" plugged into it. It can be tested, removed, and replaced as a unit independent from the piggyback card(s).

Bit

A binary digit, the representation of a signal, wave, or state, as either a binary zero or a one.

Bit Eight Zero Suppression (B8ZS)

Timing is critical in a digital T1 network. If too many consecutive zeros are in the aggregate data stream, the system may lose synchronization. B8ZS is a method used to meet the "ones density" constraints by taking strings of zeros, converting them to ones and zeros, and placing them back into the aggregate bit stream.

Blue Alarm

A Blue Alarm indicates that all ones are being sent on the T1 line. This implies that an Alarm Indication Signal (AIS) has been sent out on the network. The principle error conditions for this type of alarm are: CRC, bipolar violations, frame alignment error, and multiframe alignment errors. A Blue Alarm is considered a network alarm.

Bps

Bits per second; basic unit of measure for serial data transmission capacity; also Kbps (kilobits), for thousands of bits per second; Mbps (megabits), for millions of bits per second; Gbps (gigabits), for billions of bits per second; Tbps (terabits), for trillions of bits per second.

Bridge

A device for connecting similar LANs using the data link layer MAC source and destination addresses contained in the data frames of all LAN traffic.

Buffer

A storage device used to streamline data transfer when there is a slight difference in data rates caused by, for example, doppler shift or separate clock sources.

Bundle

A sequentially ordered group of DS0s that have a common termination point.

CAS

Channel Associated Signalling

CCM

Common Control Module

Central Processing Unit (CPU)

The CPU card provides the central processing power for the diagnostic system.

CELP

Code Excited Linear Prediction

CEPT

Conference of European Postal and Telecommunications Administrations

Channel

End point of a circuit path. The channel is the card at each end of the path.

Channel Associated Signalling (CAS)

A bit-oriented signalling process that is transferred via time slot 16 of a frame. CAS is based on CCITT specification G.704

Channel Service Unit (CSU)

The terminating element of a digital circuit located at the customer site.

A component of customer premises equipment (CPE) used to terminate a digital circuit, such as DDS or T1, at the customer site; performs certain line-conditioning features, ensures network compliance per FCC rules, and responds to loopback commands from central office; also, ensures proper ones density in transmitted bit stream and performs bipolar violation correction.

Clear to Send (CTS)

A signal indicating to the terminal that a modem is ready to transmit.

Clock

An oscillator-generated signal that provides a timing reference for a transmission link; used to control the timing of functions as sample interval, signalling rate, and duration of signal elements; an "enclosed" digital network typically has only one "master" clock.

Comite European de Poste et Telegraphe (CEPT)

European Conference of Postal and Telecommunications Administrations (an intergovernmental organization).

Common Control Module (CCM)

The OCM main controller unit.

Common Module or Common Card

A generic term for any module that, when removed, will cause a major alarm.

Conditioning

The purpose of “conditioning” is to react to a disruption of the communication network in a manner that minimizes the impact to the circuit user.

Configure

To establish the required interface type and operating characteristics for a channel port or link port, or to assign an appropriate portion of available buffer storage to a given channel.

Control Data

Control characters that are sent serially along with data. These characters cause functions such as framing, addressing, synchronization, and error checking to be performed. Control data are also used to indicate handshaking protocols.

CPU

Central Processing Unit

CRC

Cyclic Redundancy Check

CS-ACELP

Conjugate-Structure Algebraic Code Excited Linear Prediction

CSU

Channel Service Unit

CTS

Clear to Send

Cyclic Redundancy Check (CRC)

A characteristic link-level feature of (typically) bit-oriented data communications protocols, wherein data integrity of a received frame or packet is checked using a polynomial algorithm based on the content of the frame, and then matched with the result performed by the sender and included in a (typically 16-bit) field appended to the frame; basic error-checking mechanism for link-level data transmissions.

DACS (Digital Access Cross-Connect System) Network

A byte oriented (DS0) digital T1 network service.

Data

Digitally represented information, which includes voice, text, facsimile, and video.

Data Carrier Detect (DCD)

A signal sent from a data set that informs the terminal that a carrier waveform is being received; also called Carrier Detected, Carrier Found, Carrier On, etc.

Data Communications

Transmitting and receiving coded digital signals between computers or other digital devices or systems according to agreed upon specifications or standards.

Data Communications Equipment (DCE)

Equipment that provides the signal conversion, connection control, and coding required for communication between data terminal equipment and data circuits; may be independent (e.g., a modem) or an integral part of a computer.

Dataphone Digital Service (DDS)

Dataphone Digital Service; private-line digital service offered intra-LATA by BOCs, inter-LATA by AT&T Communications, with data rates typically at 2.4, 4.8, 9.6, and 56 Kbps; now a part of the services listed by AT&T under the Accunet family of offerings.

Data Terminal Equipment (DTE)

Generally refers to end-user devices, such as terminals and computers that connect to DCE, which either generate or receive the data carried by the network.

Data Terminal Ready (DTR)

A signal from the terminal to the modem indicating that the terminal is ready to receive and transmit.

dB

Decibel; a unit of measurement used to express the ratio of two values, usually the power of electrical or electromagnetic signals; equal to 10 times the logarithm derived from a ratio of the two power levels, which are expressed in watts; the relative gain or loss of a signal when the measured signal value is compared in a ratio to another, usually its input, value.

dBm

Decibel reference to one milliwatt; relative strength of a signal, calculated in decibels, when the signal is compared in a ratio to a value of one milliwatt; used mainly in telephony to refer to relative strength of a signal (e.g., at 0 dBm, a signal delivers 1 milliwatt to a line load, while at -30 dBm a signal delivers 0.001 milliwatts to a load).

DCD

Data Carrier Detect

DCE

Data Communications Equipment

DDS

Dataphone Digital Service

Diagnostics

Tests used to detect malfunctions in a system or component.

Digital Signal Level 0 (DS0)

A single 64 Kbps channel in which the data stream is divided into 8-bit bytes.

Diversity

The ability to automatically switch data from one communications link to another communications link when a failure in the first link occurs. The two links operate at the same data rate and connect the same nodes, however, only one link transfers data at one time.

DOS

Disk Operating System

DPV

Dual Private Voice Module

DS0 (Digital Signal Level 0)

A single 64 Kbps channel. The data stream is divided into eight-bit bytes. DS0 is a byte-oriented environment.

DS1 (Digital Signal Level 1)

A combination of 24 DS0 channels and 8000 framing bits into a 1.544 Mbps data stream.

DSX1

An interface that converts a formatted data signal into the proper signal levels for the digital T1 network. Also called a cross-connect.

DTE

Data Terminal Equipment

E & M

The signalling technique used with voice switching equipment (such as a PBX) to establish a connection between the voice equipment.

ESF

Extended Superframe

Ethernet

A LAN for connecting devices within the same building, operating over twisted-pair wire or coaxial cable at speeds up to 10 Mbps. It operates at the Physical and Data Link layers of the OSI model, specifying CSMA/CD.

Extended Superframe (ESF)

A modified D4 framing format. The basic D4 framing structure contains one frame bit followed by 24 8-bit time slots or a 193-bit frame. An ESF contains 24 193-bit frames and allows a greater amount of access to digital network services (see *Superframe*).

Facsimile (FAX)

The communications process in which graphics or text documents are scanned, transmitted via a (typically dial-up) phone line, and reconstructed by a receiver; facsimile device operation typically follows one of the CCITT standards for information representation and transmission (Group 1 analog, with page transmission in four or six minutes; Group 2, with page transmission in two or three minutes, and Group 3 digital, with page transmission in less than one minute); also FAX.

FAX

Facsimile

F-Off

Forced-Off

F-On

Forced-On

Forced-Off (F-Off)

To disable a signal artificially.

Forced-On (F-On)

To enable a signal artificially.

Foreign Exchange (FX)

A telephone line arrangement where calls into the switched network from a customer location enter the network through a Central Office other than the one that normally serves the customer location. In communications systems, a service in which a user end device can be connected to a user end device in another country.

Forwarding

The process of transferring a data frame from one LAN to another based on some characteristic of the frame, such as MAC addresses of the frame or protocol type.

FW

Firmware

FXO

Foreign Exchange Office

FXS

Foreign Exchange Station

GS

Ground Start

Hertz (Hz)

The number of cycles per second transmitted or received (abbreviated as Hz).

High-Level Data Link Control (HDLC)

A bit-oriented method for sending data over a single communications link.

HW

Hardware

Improved Multiband Excitation (IMBE)

A proprietary speech compression algorithm, developed and owned by Digital Voice Systems, Inc. (DVSI). Used in the DPV.

IMS

A DOS-based windows package running under HP OpenView.

Int

Internal

International Telecommunications Union - Telecommunications Standardization Sector (ITU-T)

International Telecommunications Union - Telecommunications Standardization Sector. A committee that sets international communications standards.

Internet Protocol (IP)

Internet Protocol. Provides a common layer over dissimilar networks; the network layer over which the TCP/IP Protocol Suite runs.

Internetworking Management System (IMS)

An advanced network management system that allows you to monitor and manage network

devices (e.g. TPP and OPP) from a single workstation. IMS runs on a PC and is a Windows-based application that uses the standard window/menu/button design to provide an easy-to-use network management interface.

Internetwork Packet Exchange (IPX)

The proprietary internetworking protocol of Novell[®] NetWare[®].

Isochronous

A method for transmitting asynchronous data by synchronous means. A transmission format where the asynchronous characters (i.e., those delineated with Start and Stop bits) are sent with a clocking connection between the transmitter and receiver.

Kbit

Kilobit (1,000 bits)

LAN

Local Area Network

LIM

OCM-1000 Line Interface Module

Line Interface Module (LIM)

OCM-1000 module which provides 0-24 DS0 aggregate.

Link

The combination of communications devices, media and software intelligence that is required to effect data communications.

Local Area Network (LAN)

Generally defined as a network whose boundaries do not exceed a single campus.

LLB

Local Loopback or Line Loopback

LS

Loop Start

MAU

Multiple Access Unit

Mbit

Megabit or one million bits

Media Access Control (MAC)

This is a unique six byte address assigned to the LAN network interface. All LAN packets contain a source address field and a destination address field in the frame header.

Module

An assembly which has definable performance characteristics so that it can be tested, removed, and replaced as a unit. A module can have other cards called "piggybacks" or "plug-ins" installed on it. In most cases, in this manual, the terms "module" and "card" are used interchangeably.

ms

Milliseconds

Multidrop

A communications arrangement in which multiple devices share a common transmission channel, though only one may transmit at a time.

Multiple Access Unit (MAU)

A device that allows up to four terminals to share one modem on a first-come/first-served basis. When used, the port that raises RTS first gets the channel and locks out the other ports. One restriction of the MAU function is that one of the ports used must be port 1. It is possible to mix MAU ports and multiplex channels on the same unit. For example, three channels at 2400 Bps can be multiplexed with three 2400 Bps ports configured for the MAU function. When one of the three ports raises RTS, the data on that line is multiplexed and transferred with the other three multiplexed channels. The other two ports are locked out until RTS is dropped. Three full-time and three part-time data links can be accommodated.

Multiplexer

Any multipoint device that allows two or more users to share a common physical transmission medium; employed in pairs, one at each end of the communications channel, where each device performs both multiplexing of the multiple user inputs and demultiplexing of the channel back into the separate user data streams.

Multipoint

A network with two remotes.

Network

A group of nodes that are connected together with aggregate trunks.

Network Frame

A contiguous group of octets (8-bit bytes) at the lowest sub-layer of the OSI data link layer (layer 2), bounded by HDLC flags. Unlike a TDM frame, it has no frame synchronization bit and no time slot interchange. A network frame may well be carried inside one or more TDM frames across a TMS circuit.

Network Management

Administrative services performed in managing a network, such as network topology and software configuration, downloading of software, monitoring network performance, maintaining network operations, and diagnosing and troubleshooting problems.

Node

A junction in a network or any addressable location in a network.

OCM

Office Communications Manager

OCM-1000

A point-to-point version of the OCM. The OCM-1000 does not operate with the TMS Controller.

OCM-1510

A split shelf version of the OCM which allows two, independent OCM nodes to occupy the same shelf.

OCM Packet Processor (OPP)

OCM Packet Processor. A module installed in an OCM Enclosure or Shelf that interfaces externally with public frame relay networks or frame relay devices such as LAN bridges, routers and frame relay PADs. OPP is the OCM counterpart to the TPP which provides bridging and routing functions.

OOS

Out of Synchronization

OPP

OCM Packet Processor

Packet Switching

A data transmission technique wherein user information is segmented and routed in discrete data envelopes called packets, each with its own appended control information for routing, sequencing, and error checking; a transmission technique that allows a communications channel to be shared by many users, each using the circuit only for the time required to transmit a single packet; a network that operates in this manner.

Parity Bit

An additional non-information bit appended to a group of bits, typically to a 7- or 8-bit byte, which indicates whether the number of ones in the group of bits is an odd or even number; a basic and elementary mechanism for error checking.

Piggyback Card

A card that plugs into a base card.

PC

Personal Computer

PCM

Pulse Code Modulation

Personal Computer (PC)

All references herein are to IBM PC and compatible microcomputers.

Point-to-Point

A circuit that connects two points directly, with generally no intermediate processing nodes or computers, although there could be switching facilities; a type of connection, such as a phone-line circuit, that links two, and only two, logical entities.

Port

Any switchable entity. A port may be a logical entity that is not necessarily realized through a physical connector. For example, a single Frame Relay interface can support many Frame Relay ports.

Pulse Code Modulation (PCM)

Digital transmission technique that involves sampling of an analog information signal at regular time intervals and coding the measured amplitude value into a series of binary values, which are transmitted by modulation of a pulsed, or intermittent, carrier; a common method of speech digitizing using 8-bit code words or samples and a sampling rate of 8 KHz.

RCV

Receive

Red Alarm

A network alarm that is produced by the receiver to indicate that it has lost its input signal, frame alignment, loss of sync, or error rate exceeding a predetermined level. A Red Alarm is considered a network alarm.

Request to Send (RTS)

A signal to the sending modem that the terminal is ready to transmit; part of modem handshaking.

Rev

Revision

RI

Ring Indicator

RLB

Remote Loopback

Router

A device for connecting LANs and other communications media using higher level protocols than the data link layers. Various higher level protocols require their own specific routing protocols, such as IP (Internetworking protocol suite) routing, IPX (Novell protocol suite) routing, Appletalk routing, and various international standard routing mechanisms.

Router System

A router system is made up of one router module, or multiple router modules that are connected internally and function together as one large router.

RTS

Request to Send

Satellite Links

The use of geostationary orbiting satellites to relay transmissions from one sending earth station to another, perhaps multiple other, earth stations.

Self-Test

A diagnostic test mode in which the UUT is disconnected from the telephone facility and its transmitter's output is connected to its receiver's input to permit the looping of test messages (originated by the UUT test circuitry) through the modem to check its performance.

Subaggregate

A collection of data channels and supervisory communications and frame synchronization information routed to a single destination. One or more subaggregates may be carried on a single physical aggregate and routed to different destinations via a DACS network. Subaggregates can be of different types:

- OCM - This type carries OCM proprietary data which includes overhead of synchronization and supervisory communication as well as channel data.
- Network - This type carries network (DS0) compatible data. This data originates from a non-TMS device and terminates on a non-TMS device.

Superframe

A D4 frame consists of 1 frame bit followed by 24 eight-bit time slots. A D4 superframe contains 12 consecutive 193-bit frames.

SW

Software

Synchronous

Data communications in which characters or bits are sent at a fixed rate, with the transmitting and receiving devices synchronized, eliminating the need for start and stop bits necessary in asynchronous transmission and significantly increasing data throughput rates.

Synchronous Data Link Control (SDLC)

A bit-oriented synchronous communications protocol developed by IBM where the message may contain any collection or sequence of bits without being mistaken for a control character. SDLC is used in IBM's System Network Architecture (SNA).

T1

AT&T term for a digital carrier facility used to transmit a DS-1 formatted digital signal at 1.544 Mbps.

TDM

Time-Division Multiplexer

Time Division Multiplexer (TDM)

Processes two or more channels of data for transmission over a shared trunk by allocating time slots to each channel.

Timing

Lets the operator select the node clock source.

TMS

Transport Management System

Transition Encoding (T-ENC)

Blind sampling at four times the incoming data rate.

Transmission Control Protocol (TCP)

The transport-layer protocol of the Internet Protocol Suite.

Token Ring

A LAN type that uses the token passing method and arranges the computers in a ring sequence.

Undef

Undefined

Very Low Bit Rate Voice Module (VLBRV)

An analog voice channel card which maximizes voice channel bandwidth utilization while offering low bit rate values of 9.6, 4.8, and 2.4 Kbps.

VCM

Voice Channel Module

VLBRV

Very Low Bit Rate Voice

VTP

Voice Transcoder Platform

Wide Area Network (WAN)

Generally defined as a network operating outside the limits of a LAN.

XMT

Transmit

Index

A

- active network
 - setting 4-54 to 4-55
 - status information 5-2, 5-6
- adding *See* creating
- Admin menu and commands 3-6
- ADPCM channels
 - See also* channels, voice channels
 - configuring 4-37 to 4-40
 - hardware switch settings 5-39
- Advanced tab 4-53, 5-2
- alarm (audible)
 - function overview 5-3
 - setting 3-11 to 3-12
- alarm history, viewing 5-8 to 5-9
- alarm messages
 - CCM 5-10
 - data and voice channels 5-11
 - LIM 5-10
- Async channels
 - See also* channels, data channels
 - configuring 4-33 to 4-35
- automatic network scan 3-11 to 3-12

B

- bandwidth 4-4
- baud rates, setting or modifying 3-10 to 3-11
- Bypass subaggregates
 - configuration requirements 4-20
 - data conditioning settings 4-25
 - setup page 4-23
 - signal conditioning settings 4-25

C

- capacity of OCM-1000 system 1-2
- CCMs
 - alarm messages 5-10
 - diagnostic status detail 5-11 to 5-12
 - redundancy toggle 5-11
 - Self Test 5-12 to 5-13
 - status information 5-8
- CELP channels
 - See also* channels, voice channels

- configuring 4-37 to 4-40
 - hardware switch settings 5-39
- CELP-Sync channels, configuring 4-48
- channel properties
 - Advanced tab 4-53, 5-2
 - Config tab 4-53, 5-2
 - Diagnostics tab 4-53, 5-3
 - HW Settings tab 4-53, 5-2
 - property pages (table) 4-52
- channels
 - See also* voice channels, data channels, DPV channels, VTP channels
 - configuring
 - ADPCM, PCM, CELP, VLBRV 4-37 to 4-40
 - combinations (CELP, VLBRV, DPV, VTP, Sync) 4-48 to 4-50
 - DPV 4-40 to 4-45
 - dual cards 1-3
 - G.703 4-35
 - overview 4-27 to 4-28
 - SpectraComm cards 4-51
 - Sync, Async, Isoc, T-Encode 4-33 to 4-35
 - Turbo 4-36
 - VTP 4-46 to 4-47
 - country codes for DPV 4-45
 - creating 4-28 to 4-30
 - crossovers 4-27
 - data rates 4-32
 - deleting 4-54
 - DPV card description 1-4
 - G.703 technical characteristics 4-35
 - modifying properties 4-51 to 4-54
 - multi-port communications support 4-28
 - property pages (table) 4-52
 - Receive Signaling settings
 - ACPCM, PCM, CELP, VLBRV channels 4-40
 - DPV channels 4-45
 - Receive VF delta dB settings for voice channels 4-40
 - remote signaling type settings
 - DPV channels 4-43
 - voice channels 4-38
 - sequential 1-2
 - settings
 - ACPCM, PCM, CELP, VLBRV channels 4-38
 - all channel types 4-31

- data channels 4-34
- DPV channels 4-42
- SpectraComm cards 4-51
- VTP channels 4-47
- setup pages (table) 4-30
- signal conditioning settings
 - ACPCM, PCM, CELP, VLBRV channels 4-39
 - DPV channels 4-44
 - DPV-VTP channels 4-49
 - VTP channels 4-47
- signaling type settings, DPV-VTP channels 4-48
- symbol and pop-up menu 3-4
- Turbo technical characteristics 4-36
- VTP card description 1-4
- XMT and Receive VF delta dB settings, DPV channels 4-45
- XMT EIA control settings, data channels 4-35
- clocking priority on LIMs 1-3
- closing network tree branches 3-8
- collapsing network tree branches *See* closing network tree branches
- colors, fault status 5-2
- COM ports, setting or modifying 3-10 to 3-11
- communication status, network 5-5
- Config tab 4-53, 5-2
- configuration
 - creating new 3-14
 - downloading 4-56 to 4-61
 - files 3-12
 - opening file 3-14 to 3-15
 - saving changes 3-13 to 3-14
- Configuration Download 4-57 to 4-58
- configuring
 - See also* creating, modifying
 - ADPCM, PCM, CELP, VLBRV channels 4-37 to 4-40
 - data and voice channels (overview) 4-27 to 4-28
 - data channels (Sync, Async, Isoc, T-Encode) 4-33 to 4-35
 - DPV channels 4-40 to 4-45
 - G.703 data channels 4-35
 - LIMs (overview) 4-8 to 4-9
 - networks (overview) 4-2 to 4-3
 - slots on a node 4-3
 - SpectraComm cards 4-51
 - subaggregates (overview) 4-20
 - Turbo data channels 4-36
 - voice channel combinations (CELP, VLBRV, DPV, VTP, Sync) 4-48 to 4-50
 - VTP channels 4-46 to 4-47
- Control State Test, data channels 5-33 to 5-35
- country codes, DPV channels 4-45
- creating
 - channels 4-28 to 4-30

- LIMs 4-9 to 4-12
- networks 4-4 to 4-5
- new configuration 3-14
- remote nodes 4-6 to 4-7
- subaggregates 4-21 to 4-23
- crossing channels 4-27

D

- data channels
 - See also* channels
 - alarm messages 5-11
 - configuring
 - G.703 4-35
 - Sync, Async, Isoc, T-Encode 4-33 to 4-35
 - Turbo 4-36
 - Control State Test 5-33 to 5-35
 - Data Path Test 5-30 to 5-33
 - data rates 4-32
 - diagnostic status detail 5-29 to 5-30
 - Diagnostics tab 5-29
 - dual types 4-27
 - G.703 technical characteristics 4-35
 - Self Test 5-30
 - settings 4-34
 - status information 5-27 to 5-29
 - Turbo technical characteristics 4-36
 - types 4-27
 - XMT EIA control settings 4-35
- data conditioning settings, Network or Bypass subaggregates 4-25
- Data Path Test
 - data channel 5-30 to 5-33
 - LIM 5-18 to 5-20
 - subaggregate 5-24 to 5-26
 - voice channel 5-44 to 5-46
- data rates, channel settings 4-32
- data, entering 3-8 to 3-10
- dB Test (voice channel) 5-49 to 5-52
- deleting
 - channels 4-54
 - LIMs 4-19
 - networks 4-6
 - nodes 4-8
 - subaggregates 4-27
- diagnosing network problems, general procedure 5-4 to 5-5
- diagnostic information, function overview 5-2 to 5-3
- diagnostic status detail
 - CCM 5-11 to 5-12
 - data channel 5-29 to 5-30
 - LIM 5-17
 - subaggregate 5-23 to 5-24
 - voice channel 5-42 to 5-43

diagnostic tests
 availability and overview 5-3 to 5-4
 losing power during 5-56

Diagnostics menu and commands 3-5, 5-3

Diagnostics tab
 data channel 5-29
 diagnosing network problems 5-5
 diagnostic status detail information 4-53, 5-3
 LIM 5-17
 subaggregate 5-24
 voice channel 5-43

dialog boxes, using 3-8 to 3-10

display resolution, verifying and setting 2-3

diverse LIMs
 settings 4-16
 support for 1-5

document conventions xvi

Download As Required 4-56 to 4-57

Download menu and commands
 Configuration Download 4-57 to 4-58
 Download As Required 4-56 to 4-57
 Software Download 4-58 to 4-59
 Software Integrity 4-59 to 4-60
 Software Revision List 4-61
 summary 3-5

downloading software and configuration 4-56 to 4-61

DPV channels
See also channels, voice channels
 card description 1-4
 configuring 4-40 to 4-45
 country codes 4-45
 ground start 1-3
 hardware switch settings 5-41
 HW Settings tab 5-41
 Receive Signaling settings 4-45
 remote signaling type settings 4-43
 settings 4-42
 setup page 4-40, 4-41
 signal conditioning settings 4-44
 source and destination pairings 4-28
 XMT and Receive VF delta dB settings 4-45

DPV-Sync channels, configuring 4-48

DPV-VTP channels
 configuring 4-48
 signal conditioning settings 4-49
 signaling type settings 4-48

dual channels, configuring 1-3

E

E1 LIMs
See also LIMs
 settings 4-15
 setup page 4-11

Echo Cancellers Test, voice channels 5-52 to 5-55

entering data 3-8 to 3-10

ESF statistics, LIMs 5-20 to 5-21

exiting the OCM-1000 software 3-2

expanding network tree branches *See* opening network tree branches

F

fault status, colors 5-2

fault tolerance 1-4

File menu and commands 3-5

G

G.703 data channels
 configuring 4-35
 technical characteristics 4-35

General DataComm, Inc., contact information xv

ground start for DPV channel cards 1-3

H

hardware switch settings
 ADPCM, PCM, CELP, VLBRV channel 5-39
 DPV channel 5-41
 LIM 5-16
 VTP channel 5-42

hardware switch status, displaying
 LIMs 5-15 to 5-16
 voice channels 5-38 to 5-42

hiding
 status bar 3-8
 toolbar 3-7

HW Settings tab
 channel properties 4-53
 diagnosing network problems 5-5
 diagnostic information 5-2
 DPV channel 5-41
 LIM 5-15
 voice channel (ADPCM, PCM, CELP, VLBRV) 5-39
 VTP channel 5-42

I

installation
 procedure 2-2 to 2-3
 requirements 2-2

Isoc channels
See also channels, data channels
 configuring 4-33 to 4-35

K

keyboard conventions xvi

L

LIMs

- See also* T1 LIMs, E1 LIMs, V.xx LIMs, Substrate LIMs
- alarm messages 5-10
- changing location, 4-18
- clocking priority 1-3
- configuring (overview) 4-8 to 4-9
- creating 4-9 to 4-12
- Data Path Test 5-18 to 5-20
- deleting 4-19
- diagnostic status detail 5-17
- Diagnostics tab 5-17
- displaying ESF statistics 5-20 to 5-21
- hardware switch settings 5-16
- hardware switch status, displaying 5-15 to 5-16
- HW Settings tab 5-15
- modifying properties 4-17 to 4-19
- redundancy toggle 5-14
- Self Test 5-18
- settings
 - diverse LIMs 4-16
 - E1 types 4-15
 - T1 types 4-14
 - V.xx and Substrate types 4-16
- status information 5-13 to 5-14
- support for diverse 1-5
- symbol and pop-up menu 3-4
- timing and clocking settings for V.xx and substrate types 4-17

Line Interface Modules *See* LIMs

link rate settings, subaggregates 4-25

logging into the OCM-1000 software 3-2

M

manual scope and organization xv

menu bar, using 3-5 to 3-6

menus and commands (table) 3-5 to 3-6

modifying

- channel properties 4-51 to 4-54
- LIM properties 4-17 to 4-19
- network properties 4-5
- node properties 4-7 to 4-8
- subaggregate properties 4-26 to 4-27

mouse conventions xvi

multi-port communications, channel cards that support 4-28

N

network communication status 5-5

network management capabilities 1-4

network scan (automatic), setting 3-11 to 3-12

Network subaggregates

- configuration requirements 4-20
- data conditioning settings 4-25
- description 1-4
- setup page 4-22
- signal conditioning settings 4-25

networks

- See also* active network
- alarm history 5-8 to 5-9
- alarms 5-3
- communication status 5-5
- configuring (overview) 4-2 to 4-3
- creating 4-4 to 4-5
- deleting 4-6
- diagnosing problems 5-4 to 5-5
- modifying properties 4-5
- scanning 4-55 to 4-56
- setting active network 4-54 to 4-55
- status information 5-6 to 5-8
- symbol and pop-up menu 3-3

nodes

- configuring slots 4-3
- creating remote 4-6 to 4-7
- deleting 4-8
- modifying properties 4-7 to 4-8
- status information 5-7
- symbol and pop-up menu 3-4

O

objects, in OCM-1000 window 3-3 to 3-4

OCM subaggregates

- configuration requirements 4-20
- description 1-3
- setup page 4-22

OCM-1000 software

- display resolution 2-3
- fault tolerance 1-4
- hardware and software requirements 2-2
- installing 2-2 to 2-3
- network management capabilities 1-4
- primary functions, 1-7
- starting and exiting 3-2
- support for diverse LIMs 1-5
- technical summary 1-2

OCM-1000 system

- capacity 1-2
- parameters, setting or modifying 3-11 to 3-12
- password *See* password
- setup tasks 3-10 to 3-12

OCM-1000 window

- closing network tree branches 3-8
- illustration 3-3
- menu bar, using 3-5 to 3-6

- menus and commands (table) 3-5 to 3-6
- opening network tree branches 3-8
- selecting objects 3-8
- status and diagnostic information 5-2
- status bar, using 3-7 to 3-8
- symbols and objects 3-3 to 3-4
- toolbar commands 3-7
- toolbar, using 3-7 to 3-8
- understanding and using 3-2 to 3-10
- opening
 - configuration file 3-14 to 3-15
 - network tree branches 3-8
- organization of manual xv

P

- password
 - setting or modifying 3-11
 - typing for first login 3-2
- PCM channels
 - See also* channels, voice channels
 - configuring 4-37 to 4-40
 - hardware switch settings 5-39
- point-to-multipoint communications
 - configuring subaggregates 4-20
 - description 1-3
- pop-up menus 3-3 to 3-4, 3-8
- power, losing during a diagnostic test 5-56
- property pages, channels (table) 4-52

R

- Receive Signaling settings
 - ACPCM, PCM, CELP, VLBRV channels 4-40
 - DPV channels 4-45
- Receive VF delta dB settings, voice channels 4-40
- redundant CCMs, toggle in and out of service 5-11
- redundant LIMs, toggle in and out of service 5-14
- related publications xviii
- remote signaling type settings
 - ACPCM, PCM, CELP, VLBRV channels 4-38
 - DPV channels 4-43

S

- saving configuration changes 3-13 to 3-14
- scanning networks
 - Automatic Network Scan 4-56
 - Scan Networks, 4-55
- scope of manual xv
- selecting objects 3-8
- Self Test
 - CCM 5-12 to 5-13
 - data channel 5-30
 - LIM 5-18

- voice channel 5-43 to 5-44
- sequential channels 1-2
- service support xvii
- setting
 - active network 4-54 to 4-55
 - audible alarm 3-11 to 3-12
 - automatic network scan 3-11 to 3-12
 - COM ports and baud rates 3-10 to 3-11
 - display resolution 2-3
 - system parameters 3-11 to 3-12
 - system password 3-11
- settings
 - ACPCM, PCM, CELP, VLBRV channels 4-38
 - channels (all types) 4-31
 - country codes for DPV channels 4-45
 - data channels 4-34
 - data conditioning for Network or Bypass
 - subaggregates 4-25
 - data conditioning, Network or Bypass
 - subaggregates 4-25
 - data rates 4-32
 - diverse LIMs 4-16
 - DPV channels 4-42
 - E1 LIMs 4-15
 - link rates, subaggregates 4-25
 - Receive Signaling
 - ACPCM, PCM, CELP, VLBRV channels 4-40
 - DPV channels 4-45
 - Receive VF delta dB for voice channels 4-40
 - remote signaling type
 - ACPCM, PCM, CELP, VLBRV channels 4-38
 - DPV channels 4-43
 - signal conditioning
 - ACPCM, PCM, CELP, VLBRV channels 4-39
 - DPV channels 4-44
 - DPV-VTP channels 4-49
 - VTP channels 4-47
 - signaling type, DPV-VTP channels 4-48
 - SpectraComm cards 4-51
 - subaggregates 4-24
 - T1 LIMs 4-14
 - timing and clocking for V.xx and subrate LIMs 4-17
 - V.xx and Subrate LIMs 4-16
 - VTP channels 4-47
 - XMT and Receive VF delta dB, DPV channels 4-45
 - XMT EIA controls, data channels 4-35
- setup pages, channels (table) 4-30
- setup tasks 3-10 to 3-12
- showing
 - status bar 3-8
 - toolbar 3-7
- signal conditioning settings
 - ACPCM, PCM, CELP, VLBRV channels 4-39
 - DPV channels 4-44

- DPV-VTP channels 4-49
- Network or Bypass subaggregates 4-25
- VTP channels 4-47
- Signaling Test, voice channel 5-46 to 5-49
- signaling type settings, DPV-VTP channels 4-48
- slots
 - configuring 4-3
 - status information 5-7
- Software Download 4-58 to 4-59
- Software Integrity 4-59 to 4-60
- Software Revision List 4-61
- software, downloading 4-56 to 4-61
- SpectraComm cards
 - configuring 4-51
 - settings 4-51
 - support for 1-4
- starting the OCM-1000 software 3-2
- status bar
 - information displayed 5-2
 - showing or hiding 3-8
 - using 3-7 to 3-8
- status information
 - active network 5-2, 5-6
 - CCM 5-8
 - data channel 5-27 to 5-29
 - function overview 5-2 to 5-3
 - LIM 5-13 to 5-14
 - network 5-6 to 5-8
 - network communication 5-5
 - node 5-7
 - slot 5-7
 - subaggregate 5-22 to 5-23
 - voice channel 5-36 to 5-38
- subaggregates
 - configuring (overview) 4-20
 - creating 4-21 to 4-23
 - data conditioning settings 4-25
 - Data Path Test 5-24 to 5-26
 - deleting 4-27
 - diagnostic status detail 5-23 to 5-24
 - Diagnostics tab 5-24
 - link rate settings 4-25
 - modifying properties 4-26 to 4-27
 - OCM and Network descriptions 1-3 to 1-4
 - settings 4-24
 - signal conditioning settings 4-25
 - status information 5-22 to 5-23
 - symbol and pop-up menu 3-4
- Subrate LIMs
 - See also* LIMs
 - settings 4-16
 - setup page 4-12
- symbols, in OCM-1000 window 3-3 to 3-4
- Sync channels

- See also* channels, data channels
- configuring 4-33 to 4-35
- setup page 4-33
- system *See* OCM-1000 system

T

- T1 LIMs
 - See also* LIMs
 - settings 4-14
 - setup page 4-11
- technical summary 1-2
- T-Encode channels
 - See also* channels, data channels
 - configuring 4-33 to 4-35
- timing and clocking, settings for V.xx and subrate LIMs 4-17
- toolbar
 - commands 3-7
 - showing or hiding 3-7
 - using 3-7 to 3-8
- training xvii
- Transmit EIA controls *See* XMT EIA controls
- Turbo data channels
 - configuring 4-36
 - technical characteristics 4-36

U

- username, typing for first login 3-2

V

- V.xx LIMs
 - See also* LIMs
 - settings 4-16
 - setup page 4-12
- View menu and commands 3-6
- VITAL Network Services xvii
- VLBRV channels
 - See also* channels, voice channels
 - configuring 4-37 to 4-40
 - hardware switch settings 5-39
- VLBRV-Sync channels, configuring 4-48
- Voice Channel Modules (VCMs) *See* voice channels, ADPCM channels, PCM channels, CELP channels, VLBRV channels
- voice channels
 - See also* channels, ADPCM channels, PCM channels, CELP channels, VLBRV channels, DPV channels, VTP channels
 - alarm messages 5-11
 - configuring
 - ADPCM, PCM, CELP, VLBRV 4-37 to 4-40
 - combinations (CELP, VLBRV, DPV, VTP,

Sync) 4-48 to 4-50
 DPV 4-40 to 4-45
 VTP 4-46 to 4-47
Data Path Test 5-44 to 5-46
data rates 4-32
dB Test 5-49 to 5-52
diagnostic status detail 5-42 to 5-43
Diagnostics tab 5-43
Echo Cancellers Test 5-52 to 5-55
hardware switch status, displaying 5-38 to 5-42
HW Settings tab 5-39
Receive Signaling settings 4-40
Receive VF delta dB settings 4-40
remote signaling type settings 4-38
Self Test 5-43 to 5-44
settings 4-38
setup page 4-37
signal conditioning settings 4-39
Signaling Test 5-46 to 5-49
slot restrictions 4-28
source and destination pairings 4-28
status information 5-36 to 5-38
types 4-27
voice compression, 1-4

VTP channels
 See also channels, voice channels
 card description 1-4
 configuring 4-46 to 4-47
 hardware switch settings 5-42
 HW Settings tab 5-42
 network subaggregate requirements 4-28
 settings 4-47
 setup page 4-46
 signal conditioning settings 4-47
 source and destination pairings 4-28
VTP-DPV channels *See* DPV-VTP channels
VTP-Sync channels, configuring 4-48

X

XMT and Receive VF delta dB settings, DPV
 channels 4-45
XMT EIA controls
 settings for data channels 4-35

Y

Year 2000 compliance 1-3



General DataComm