

System Release 5.1 for Linux

Release Guide

Copyright © 2002 Intel Corporation

05-1672-001



PRINTED ON RECYCLED PAPER

Copyright Notice

Copyright © 2002 Intel Corporation. All Rights Reserved.

Information in this document is provided in connection with Intel® products. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Intel's Terms and Conditions of Sale for such products, Intel assumes no liability whatsoever, and Intel disclaims any express or implied warranty, relating to sale and/or use of Intel® products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright or other intellectual property right. Intel products are not intended for use in medical, life saving, or life sustaining applications.

Intel may make changes to specifications and product descriptions at any time, without notice.

This document as well as the software described in it is furnished under license and may only be used or copied in accordance with the terms of the license. The information in this manual is furnished for informational use only, is subject to change without notice, and should not be construed as a commitment by Intel Corporation. Intel Corporation assumes no responsibility or liability for any errors or inaccuracies that may appear in this document or any software that may be provided in association with this document.

Except as permitted by such license, no part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means without express written consent of Intel Corporation.

Some names, products, and services mentioned herein are the trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Other names and brands may be claimed as the property of others.

Publication Date: January, 2002

Part Number: 05-1672-001

Intel Corporation
Telecommunications and Embedded Group
1515 Route 10
Parsippany NJ 07054
U.S.A.

For **Technical Support**, visit the Dialogic support website at:
<http://support.dialogic.com>

For **Sales Offices** and other contact information, visit the main Dialogic website at:
<http://www.dialogic.com>

Table of Contents

About This Information	7
Purpose	7
Intended Audience	7
How to Use This Information	7
Related Information	8
Release Overview	9
What's New In This Release?	9
New Products and Features List	9
System Requirements	11
Hardware Requirements	11
System Hardware Requirements	11
Special System Hardware Requirements for DM3	12
System Software Requirements	12
New Features	13
Administrative Software Features	13
New Administrative Commands	13
DM3 cPCI Like for Like Replacement	13
Selective Startup Mode (MultiBoard Download)	14
SNMP Support for DS1/ISDN	14
SRL Device Mapper Functions	14
Hardware Product Features	15
DM3 Fax Products	16
DM3 Voice, Fax and Network (VFN) Products	18
DM3 IPLink Products	20
IP Media Library	23
DM3 MediaSpan Products	25
High Density Station Interface (HDSI) Products	27
SpringWare Hardware	30
Development Software Features	31
Continuous Speech Processing (CSP)	31
DSP-Based Group 3 Fax (DSP Fax).....	34
GlobalCall 2.1	35
H.100 CT Bus Support for SpringWare Products	38
IP Media Library.....	38
R4 on DM3.....	38
R4 ISDN Support for BRI Call Waiting	41
Symmetric Multi-Processor (SMP) Support	43
Diagnostic and Utilities Features	43

Antares Rec-Play Diagnostics	43
dm3post	43
Universal Dialogic Diagnostics (UDD) for SpringWare Products	43
Supported Hardware	46
Media with Interface Products	46
IPLink Products	46
Media with Analog Loop Start Interface Products	47
Media with Digital Network Interface Products	48
DM3 MediaSpan Products	49
PBX Integration Products	50
Media Products	51
Conferencing Products	51
Fax Products	51
Speech Products	51
Voice Products	51
Network Interface Products	52
Analog Network Interface Products	52
Digital Network Interface Products	53
Station Interface Products	54
Other Interface Products	54
Separately Orderable Products	55
GlobalCall Protocols Version 2.00 Package	55
Installation and Configuration	56
Installing Hardware	56
Configuring Hardware	56
Installing or Uninstalling Software	56
Configuring Software	56
DM3 Diagnostic Tools	57
DM3 IPLink Applications	57
DM3 Fax	57
DM3 MediaSpan	57
DM3 Media Loads	58
DM3 Product Configuration Table	60
DM3 Protocol Support	60
DSP-Based Fax	70
MSI Boards Country Specific Parameter Files	71
DM3 ISDN NFAS	78
Release Documentation	79
System Release Software Documentation	79
Administrative Software Documentation	80
Development Software Documentation	80
Digital Network Interface (R4)	80
DM3 IPLink	80
GlobalCall	80

PBX Integration.....	80
R4 Conferencing.....	80
R4 Fax.....	81
R4 ISDN.....	81
R4 on DM3.....	81
Routing.....	81
Speech.....	81
Voice.....	81
Diagnostic and Utilities Software Documentation.....	81
Master Feature List.....	82
Administrative Software Features.....	82
Licensing for SpringWare Products.....	82
Hardware Product Features.....	82
SpringWare Support Table.....	82
Firmware Load Support for SpringWare.....	84
SpringWare Support for Major Voice Features and Network Interfaces.....	86
DM3 Support for Major Voice Features and Network Interfaces.....	87
SpringWare and DM3 Hardware Interoperability.....	89
DM3 Hardware Interoperability.....	91
Development Software Features.....	91
GlobalCall Features.....	92
PBX Integration Features.....	95
Routing Features.....	95
R4 Conferencing Features.....	95
R4 Fax Features.....	96
R4 ISDN Features.....	99
R4 Network Interface Support.....	103
Signaling Features.....	104
Speech Features.....	104
System Features.....	105
Voice Features.....	105
Diagnostic Utilities, Remote Administration, and Sample Programs.....	108
DPNSS for SpringWare.....	108
ISDIAG Features.....	108
Remote Administration (SNMP Support) - BoardWatch 5.1.1.....	109
Sample Demonstration Programs.....	109

About This Information

This section describes the purpose and intended audience for this documentation. Here are the sections contained:

- Purpose
- Intended Audience
- How to Use This Information
- Related Information

Purpose

This release guide provides information about the system release that has been shipped along with this documentation.

Intended Audience

This release guide is intended for the following type of customers:

- Distributors
- System Integrators
- Toolkit Developers
- Independent Software Vendors (ISVs)
- Value Added Resellers (VARs)
- Original Equipment Manufacturers (OEMs)

How to Use This Information

This information is designed so that information can be found quickly. Major sections include:

- Release Overview
- System Requirements
- New Features
- Supported Hardware

System Release 5.1 for Linux Release Guide

- Separately Orderable Products
- Installation and Configuration
- Release Documentation
- Master Features List

Related Information

See the following for additional information:

- Dialogic FirstCall InfoServer Support web site: <http://support.dialogic.com>.
- The Release Update (05-1673-001) contains information about known problems and issues for this release. It is available from the FirstCall InfoServer Support website referenced above.

Release Overview

What's New In This Release?

This release guide addresses the highlights of System Release (SR) Version 5.1 for Linux. SR 5.1 introduces Conferencing, Continuous Speech Processing (CSP), Transaction Record, Internet Coders, and TrueSpeech* support on our higher-density DM3™ products, enabling developers to deploy industry leading media-processing solutions that utilize the enhanced functionality, density, scalability and availability of our board-level products.

SR 5.1 is designed to enable customers focused on the service providers and high-end enterprise with the tools they need to create new and enhanced applications and solutions for their current and next generation network products. Current SR 5.0 developers can utilize the advanced functionality and new features contained in SR 5.1 in their current development environments with little down time.

SR 5.1 includes all of the hardware and software included in System Release 5.0 plus additional new hardware and software features.

Application developers can develop applications using R4 APIs such as Voice, Fax, and GlobalCall for both SpringWare and DM3 boards.

New Products and Features List

This release introduces new products and features in the following areas:

- New Administrative Support features
- New Hardware Products:
 - DM3 Fax products
 - DM3 IPLink Release 5.0 products
 - DM3 MediaSpan Release 4.0 products
 - DM3 Voice, Fax and Network Interface (VFN) products
 - High Density Station Interface products
- New Development Software features
 - Continuous Speech Processing
 - GlobalCall for IP Call Control

System Release 5.1 for Linux Release Guide

- R4 on DM3
- DM3 Media Loads and Protocol Support
- New Diagnostics and Utilities

System Requirements

The basic requirements to install and run this system release are described in the following categories:

- Hardware Requirements
- System Software Requirements

NOTE: Please refer to the RedHat website (<http://www.redhat.com/>) for additional information about system requirements.

Hardware Requirements

Hardware requirements are broken down into the following groups:

- System Hardware Requirements
- Special System Hardware Requirements for DM3

System Hardware Requirements

The **recommended** hardware configuration for this release is:

- 200 MHz Pentium class or better
- 64 MB RAM
- 600 MB free space on hard disk (for systems including both DM3 and SpringWare components)
- CD-ROM drive
- VGA display
- Pointing device

The **minimum** hardware configuration for this release is:

- Pentium class processor
- 32 MB RAM
- 500 MB free space on hard disk (for DM3 only installs) 200 MB free space on hard disk (for SpringWare only installs)
- CD-ROM drive
- VGA display
- Pointing device

Special System Hardware Requirements for DM3

To develop computer telephony solutions with DM3 products requires:

- At least 128 MB RAM for a system that contains less than three DM3 boards
- 512 MB RAM for a system that contains three or more DM3 boards

System Software Requirements

- Red Hat Linux 7.1 or 7.2
- Kernel Errata from <http://www.redhat.com/support/errata/RHSA-2001-142.html>
NOTE: For instructions on how to apply this Errata, refer to <http://www.redhat.com/support/resources/howto/kernel-upgrade/kernel-upgrade.html>
- Linux Streams version 2.13.9 can be found at: <http://www.gcom.com/home/linux/lis/download.html>
- Development toolset: Red Hat 7.2 supports gcc 2.96-RH, gdb 5.0, glibc 2.2.4 by default. This is the recommended toolset for SR 5.1.
- If using BoardWatch/SNMP, the following rpms from Red Hat must also be installed on the managed node:

Item	7.1	7.2
RPM Filenames	ucd-snmp-4.2-12.i386.rpm ucd-snmp-utils.4.2-12.i386.rpm	ucd-snmp-4.2-3.i386.rpm ucd-snmp-utils.4.2-3-1.i386.rpm
Location of RPMs	Distribution CD-ROM	http://www.net-snmp.org

NOTE 1: The *ucd-snmp* project was recently renamed *net-snmp*. The rpm names are likely to change in the future.

New Features

The new features introduced in this release are broken out into the following categories:

- Administrative Software Features
- Hardware Product Features
- Development Software Features
- Diagnostic and Utilities Features

Administrative Software Features

The following new Administration features are available in this release:

- New Administrative Commands
- DM3 cPCI Like for Like Replacement
- Selective Startup Mode (MultiBoard Download)
- SNMP Support for DS1/ISDN
- New Standard Runtime Library (SRL) Functions

New Administrative Commands

The following new administrative commands are available:

- The **detect** command prints a list of all boards in the system along with their bus and slot number, addressable unit identifier (AUID), and other information.
- The **tbmodify** command allows the system administrator to remove a board from the telephony bus or add a board to the telephony bus from the command line.

***NOTE:** For further information about these commands, see the System Release 5.1 for Linux Software Installation Guide.*

DM3 cPCI Like for Like Replacement

This release supports controlled Like for Like Replacement of any DM3 CompactPCI (cPCI) board. This feature allows you to physically remove a DM3 cPCI board from the system and replace it with an identical device model without shutting down the Dialogic System Service. In order to utilize this capability, the board must be pre-configured and restarted after replacement.

NOTE: For more information about this feature, see the System Release 5.1 for Linux Software Installation Guide .

Selective Startup Mode (MultiBoard Download)

Selective Startup Mode provides the ability to continue initializing a group (or set) of DM3 boards regardless of a single board failure. This means that download and initialization of the system will continue to occur even when 1 or more DM3 boards fail to initialize properly. Some Examples:

- On a 10 board system, one board fails, nine are still available.
- On a 10 board system, nine fail to download, one is still available.

In those cases where the DM3 board is acting as the clock master in a mixed system, if no DM3 board is able to provide clock (i.e., all fail to download), then the SpringWare boards will fail to initialize as well. In all other cases, the SpringWare boards will not be affected by the failure of a DM3 board to initialize.

In those cases where the SpringWare board is acting as the clock master in a mixed system, if no SpringWare board is able to provide clock (i.e., all fail to download), then the DM3 boards will fail to initialize as well. In all other cases, the DM3 will not be affected by the failure of a SpringWare board to initialize.

However, if in the mixed system one of the SpringWare boards is Master Clock capable, and all of the DM3 boards have failed to start, the system will continue to initialize the other SpringWare boards.

This capability is enabled only for those systems with at least two DM3 boards.

SNMP Support for DS1/ISDN

BoardWatch now offers MIB (Management Information Base) modules for DS1 and ISDN:

- The DS-1 module provides management stations with an interface to review DS-1 trunk lines, monitor their status, and report fault conditions using a SNMP trap. It also provides a 24-hour historical fault metrics log in the current, interval, and total tables.
- The ISDN module provides management stations with an interface to review ISDN B- and D-channels, monitor their status, and report fault conditions using SNMP traps.

NOTE: Please refer to the *BoardWatch User's Guide for Linux* for more information regarding this feature.

SRL Device Mapper Functions

SRL Device Mapper functions are contained in the SRL Device Mapper Library Interface (SDM API), a subset of the Dialogic Standard Runtime Library for Linux (SRL). They return information about the structure of the system, such as a list of all the virtual boards on a physical board. The SDM API works for any component that exposes R4 devices.

New Features

The SRL Device Mapper functions return information about the structure of the system based upon the following conventions:

- A physical board *owns* zero or more virtual boards.
- A virtual board *owns* zero or more sub devices.
- A virtual board *is* an R4 device.
- A sub device *is* an R4 device.
- One or more jacks *are associated with* one or more R4 devices.

The SRL Device Mapper functions and the information they return are listed below.

- **SRLGetAllPhysicalBoards()**--retrieves a list of all physical boards in a node
- **SRLGetVirtualBoardsOnPhysicalBoard()**--retrieves a list of all virtual boards on a physical board
- **SRLGetSubDevicesOnVirtualBoard()**--retrieves a list of all sub devices on a virtual board
- **SRLGetJackForR4Device()**--retrieves the jack number of an R4 device

NOTE 1: *The SDM API provides a set of atomic transforms, such as a list of all virtual boards on a physical board. For more complicated transforms, such as information about all the sub devices on a physical board, combine multiple SRL Device Mapper functions.*

NOTE 2: *For more detailed information about the SRL Device Mapper Library Interface, see the Voice Software Reference: Standard Runtime Library for Linux.*

Hardware Product Features

The following new hardware features are being introduced in this release:

- DM3 Fax Products
- DM3 Voice, Fax and Network (VFN) Products
- DM3 IPLink Products
- DM3 MediaSpan Products
- High Density Station Interface (HDSI) Products
- SpringWare Hardware

NOTE: *For descriptions of the boards contained in this release, please refer to the Supported Hardware section.*

DM3 Fax Products

DM3 Fax Hardware

The following fax boards are supported in this release:

- DM/F240-PCI
- DM/F240-cPCI
- DM/F300-PCI
- DM/F300-cPCI
- DM/F240-1T1-PCI
- DM/F300-1E1-PCI

DM3 Fax Software Features

DM3 Fax provides the following features:

- Advanced call progress features on Dialogic high density fax products
- Hardware-independent fax resource model (T.30, MH, MR, MMR, ECM, image conversion, v.17, v.21, v.27, v.28, etc.).
- Highest density Dialogic fax solution - up to 240 channels in a single chassis. The maximum density is 8 boards for E1 (8x30=240) or T1 (8x24=192).
- Integrated fax board (DM/F240-T1-PCI and cPCI) supports a full span of T-1 fax capability in a single PCI or cPCI slot.
- Integrated fax board (DM/F300-E1-PCI and cPCI) supports a full span of E-1 fax capability in a single PCI or cPCI slot.
- 24- and 30-channel fax resource boards (DM/F240-PCI or cPCI and DM/F300-PCI or cPCI) compatible with Dialogic Network Interface products enable world-wide deployment of high density fax solutions.
- Downloadable firmware, allows simple software upgrades instead of hardware replacement when Dialogic adds new features to DM3 Fax products.
- T.30 state transition and resource trace
- Image conversion: TIFF and ASCII
- DLL version number retrieval
- Diagnostic Tools (qscript files)
 - **NOTE:** See the *DM3 Diagnostic Utilities Reference Guide* for more information.
- Call Analysis Software (integrated T-1 and E-1 versions only)
 - PerfectCall Call Analysis
 - Positive Voice Detection (PVD)
 - Positive Answering Machine Detection (PAMD)

New Features

- Frequency Detection
- Special Information Tones (SIT) Frequency Detection
- Busy Tone Detection
- FAX or Modem Tone Detection
- Silence Detection
- Tone Detection/Generation Software (integrated T-1 and E-1 versions only)
 - R2MF Signaling (based on GTD and GTG)
 - PerfectDigit DTMF Signaling
 - Global Tone Detection (GTD)
 - Global Tone Generation (GTG)
 - Disconnect Tone Supervision
 - Dual Tone Multi Frequency (DTMF)
 - Multi Frequency (MF) Dial and Detect
 - Selectable Dual-Tone Resolution
- DM3 Fax Software
 - 14.4 Kbps Transmit/Receive
 - ITU T.30 compliant
 - 100% Group 3 compatibility
 - Polling and turnaround polling
 - Error Correction Mode (ECM)
 - Bad scan line detection and correction
 - Image concatenation, compression formats and resolutions
 - Scaling to and from all supported page sizes, compression formats and resolutions
 - Support for A3, A4 and B4 page sizes
 - Receive MH, MR and MMR advanced compression
 - Send MH, MR, MMR and ASCII advanced compression
 - Normal (100dpi), fine (200dpi), and superfine (400dpi) resolution
 - Simple header overlay
 - Image bit order (MSB/LSB) conversion
 - ASCII configuration:
 - Left/right/top margin
 - Line spacing
 - Tab stop

System Release 5.1 for Linux Release Guide

- Wrapping
 - Extended characters greater than ASCII #127
 - V.17 Fax
 - R4 API support (R4 on DM3)
 - Shareable Fax Resources
- NOTE:** See the R4 on DM3 section under Software Features for a list of new features supported.*

DM3 Voice, Fax and Network (VFN) Products

The DM3 VFN Series consists of integrated T-1 and E-1 boards providing a full span of feature-rich voice and fax processing in a single PCI slot. The availability of 24/30 universal voice and fax channels on each DM3 VFN Series board ensures that applications will be able to process any incoming or outgoing voice and/or fax transaction at any time, provided there is an open channel. Four DM3 VFN products may be combined in a single chassis, enabling applications to support up to 120 channels of high-performance voice and fax.

DM3 VFN Hardware

The following new integrated voice, fax and network boards are supported in this release:

- DM/VF240-1T1-PCI
- DM/VF300-1E1-PCI

DM3 VFN Software Features

The new features associated with DM3 VFN are:

- V.17 Fax
 - Basic Voice (equivalent to Media Load 1 - see the Media Load Table found in the Installation and Configuration section for more information)
 - Single board start/stop
 - R4 API (R4 on DM3)
- NOTE:** See the R4 on DM3 section under Development Software Features for a list of features supported with this API. You can also refer to the Compatibility Guide for the Dialogic R4 API on DM3 Products for Linux.*
- High performance DM3 architecture: Native Linux DM3 device drivers designed to exploit the features, performance, and functionality provided by the Linux operating system.
 - Pre-built clusters: Voice and fax features are clustered together and dedicated to network interface channels. In this release, we support both fixed and flexible routing depending on the cluster configuration (pcd file) that is used.

New Features

- Multiple protocol support:
 - NOTE:** See the *DM3 Protocol Support Table* in the *Installation and Configuration* section for a list of supported protocols and *pcd files*.
- Interoperability with BoardWatch 5.1.1 and Simple Network Management Protocol (SNMP):
 - NOTE:** *BoardWatch 5.1.1 does not support single board start/stop for SpringWare boards but it does for DM3 boards.*
- T.30 state transition and resource trace
- DLL version number retrieval
- Call analysis software
 - PerfectCall call analysis
 - Positive Voice Detection (PVD)
 - Positive Answering Machine Detection (PAMD)
 - Frequency detection
 - Special Information Tones (SIT) frequency detection
 - Busy tone detection
 - FAX or modem tone detection
 - Silence detection
- Tone detection/generation software
 - R2MF signaling (based on GTD and GTG)
 - PerfectDigit DTMF signaling
 - Global Tone Detection (GTD)
 - Global Tone Generation (GTG)
 - Dual Tone Multi Frequency (DTMF)
 - Multi Frequency (MF) dial and detect
- DM3 fax software
 - 14.4 Kbps transmit/receive
 - ITU T.30 compliant
 - 100% Group 3 compatibility
 - Error Correction Mode (ECM)
 - Bad scan line detection and correction
 - Image concatenation, compression formats, and resolutions
 - Scaling to and from all supported page sizes, compression formats, and resolutions

System Release 5.1 for Linux Release Guide

- Support for A3, A4, and B4 page sizes
- Receive MH, MR, and MMR advanced compression
- Send MH, MR, and MMR advanced compression
- Normal (100dpi) and fine (200dpi) resolution
- Image conversion: TIFF-F and ASCII
- Simple header overlay

DM3 IPLink Products

The DM3 IPLink platform allows a “voice over IP” call to be connected via the DM3 platform to the SCbus. Using IPLink boards equipped with a PSTN network front end, you can build a single board digital IP - PSTN gateway application. Adding additional SCbus boards for analog connectivity or station interface and technologies such as conferencing, voice recognition, or text-to-speech makes a variety of applications possible.

DM3 IPLink Hardware Products

The following IPLink boards with a 100 BaseT Ethernet connectors are introduced in this release:

- DM/IP241-1T1-PCI-100BT
- DM/IP301-1E1-PCI-100BT
- DM/IP481-2T1-PCI-100BT
- DM/IP481-2T1-cPCI-100BT
- DM/IP601-2E1-PCI -100BT
- DM/IP601-2E1-cPCI-100BT
- DM/IP601-cPCI-100BT

DM3 IPLink Software Features

The following features are new to this Linux system release:

- Non-standard RAS: Allows the user to implement proprietary protocols between the application and the gatekeeper over RAS.
- Improved Quality of Service (QoS): Support for threshold alarms and IP Precedence
- IP switching (bridging two calls) with minimum latency for use in IP voice mail applications
- PSTN interface on IPLink board: The PSTN network interface on IPLink boards enables single-board gateway design.
- Multiple protocol support

New Features

NOTE: See the *DM3 Protocol Support Table in the Installation and Configuration section* for a list of supported protocols.

- Support for GSM (TIPHON), G.729A, G.723.1, and G.711 coders
- Full-duplex communication with all coders
- RadVision Stack: Compliant with ITU-T H.323 specification, includes allowing periodic registration with gatekeeper. For example, a voice mail server can be designed to register as a voice gateway using a different prefix for each board in the chassis
- GateKeeper registration: the capability to register a gateway with a gatekeeper via the application
- H.323 Revision 2 Fast Start: Support for the fast start feature of H.323 Rev. 2, allowing the system to set up a call without the use of the H.245 control channel
- Comprehensive support for industry-standard H.323 clients including Microsoft NetMeeting™, VocalTec IPhone™, Intel Video Phone™, Intel Internet Phone™
- Supports standard Internet protocols including TCP/IP, UDP, and RTP/RTCP
- Embedded TCP/IP data networking interface (optional) CT Bus™ interoperability for PCI (H.100) systems
- IPVoice Stream Resource: Enables running the call control protocol on the host.
 - Split call control (H.323, SIP, MGCP, proprietary) implementation.
 - Call control is implemented on the host, and the RTP part implemented on the board.
- Q.931 Facility message: Support for non-standard information element in the Facility message over Q.931 channel
- Object ID support when sending Non-Standard Command
- Packet redundancy: Complies with RFC 2198 (Redundancy)
- Vendor-specific information can be sent during call setup
- Call control functions necessary for IP telephony, including: answering incoming calls from either the IP network or the PSTN network, collecting relevant information from the incoming call, making a corresponding call on the complementary network, and bridging the two calls
- Call Analysis
 - Limited call analysis
 - Silence detection
- Voice quality parameters
- Volume Adjustment

System Release 5.1 for Linux Release Guide

- Two parameters that enable you to adjust the strength of the signal transmitted to the PSTN:
 - **Gain Control** enables you to adjust a signal before it is transmitted over the SCbus to the PSTN
 - **Volume Control** is a scale factor by which decoded PCM data is multiplied before being transmitted over the SCbus to the PSTN
- Voice Activity Detection (VAD) for maximum bandwidth utilization, embedded high performance echo cancellation, and out-of-band DTMF processing compliant with the International Multimedia Teleconferencing Consortium Interoperability Agreement 1.0
- DTMF volume/gain controls: Allows setting separate parameters to control DTMF volume and gain independent of those set for voice
- Improved echo cancellation
- Basic play and record: Allows recording and playback of 64kbps Mu-law and A-Law PCM, 32kbps OKI, and 24kbps OKI
- Basic DTMF and MF detection: The PSTN Network Cluster can detect both DTMF and MF tones. The H.323 Protocol Network Cluster detects only DTMF tones
- Call progress analysis capabilities include busy, ringback, SIT tone detection, Positive Answering Machine Detection (PAMD), Positive Voice Detection (PVD), Fax/Modem Detection, Beep Initiated Record, and Automatic Gain Control (AGC) on record
- Simple Network Management Protocol (SNMP): TCP/IP level SNMP
- IPTDebug - a diagnostic tool that saves the H.323 component debugging output in binary mode and allows the gateway debugging information file to be transmitted over UDP/IP to a remote debugging station.
- SCbus for integration with other standards-based CT resource platforms
- Split Call Control (access to RTP, VSR) via the IPML
- IP Precedence (100 BaseT) - IP Precedence is part of Type of Service Byte
- CSP (as a shared resource that can be routed to either the IP or PSTN interface)
- H.323 Rev 2 Completion
- Flexible Routing
- 100 BaseT support

IPLink New Features

The following new features are available for the first time in this release and are described in detail below:

- GlobalCall Support for IP and PSTN

New Features

- Improved Fast Start Compatibility
- Disable Fast Start Parameter
- IP Media Library
- CauseReason Field in H.323 ReleaseComplete Message
- Type of Service Byte
- New RTCP Time Parameters
- Support for Flexible Routing

GlobalCall Support for IP and PSTN

GlobalCall API now supports writing voice over IP applications when using the Embedded H.323 stack (NetTSP). GlobalCall support for split call control applications is not available in this release.

NOTE: See the *GlobalCall IP Technology User's Guide* for a complete description of how to use the GlobalCall library for voice over IP applications.

Improved Fast Start Compatibility

IPLink declares only maximum capabilities per coder in the Fast Start Element (FSE) when in Fast Start mode. If IPLink receives an FSE in the SETUP message and the capabilities do not match, it switches to the Slow Start procedure and opens an H.245 session, and retries capability negotiation with all the possible coder attributes. Fast Start may be disabled by the **H323_PrmForceSlowStart** parameter.

Disable Fast Start Parameter

The **H323_PrmForceSlowStart** parameter disables the H.323 Fast Start and forces the gateway to use the call establishment procedure as in H.323 Rev. 1. This parameter must be manually added to the FCD file.

NOTE: See the *DM3 IPLink User's Guide* for a description of this parameter and the *DM3 Configuration File Reference* for information about how to modify configuration parameters.

IP Media Library

The IP Media Library is an R4 compatible library for controlling media on IP devices (ipvs_*.pcd). Host-based call control applications that use call control stacks other than those supplied with IPLink use this library for application development.

The IP Media Library supports:

- System Control Functions - manage channel, parameter and event operations
- Input/Output Functions - transfer digits and data
- Media Session Functions - perform session management

System Release 5.1 for Linux Release Guide

- Quality of Service (QoS) Functions - control QoS alarms and alarm thresholds
NOTE: See the IP Media API Software Reference for a complete description of the library.

CauseReason Field in H.323 ReleaseComplete Message

This release allows the application to define the ReleaseCompleteReason, selecting either Q.931 Cause or H.225.0 ReleaseCompleteReason as its disconnect reason mechanism.

A new parameter, **prmStandardDisconnectReasonEnabled**, has been added to the FCD file to allow the application to select how to implement the disconnect reason mechanism.

NOTE: See the DM3 IPLink User's Guide for a description of this parameter.

Demo

The following IPLink demo is included in this release:

- Gateway demo using GlobalCall and R4

Type of Service Byte

Applications can modify the Type of Service byte in the IP header of the transmitted datagrams to improve the mobility of the UDP/TCP packets.

NOTE: See the DM3 IPLink User's Guide for a complete description.

New RTCP Time Parameters

The following paragraphs describe new time parameters:

- **RTCP Time Interval** - The RTCP Time Interval parameter (PrmRTCPTimeInterval) allows changing the RTCP interval between two adjacent RTCP packets.
- **RTCP Timeout** - The RTCP Timeout parameter (PrmRTCPTimeout) enables configuring the maximum interval after which, if no RTCP packets are received, the call is disconnected.

Support for Flexible Routing

Flexible Routing is now available for all IPLink protocols. PCD files are identified by "evr" (exportable voice resources) in the file name.

See the Compatibility Guide for the Dialogic R4 API on DM3 Products for Linux for more information about Flexible Routing.

DM3 MediaSpan Products

DM3 MediaSpan Hardware

This release supports the following hardware:

- DualSpan Series A Voice Boards
 - DM/V480A-2T1-PCI
 - DM/V600A-2E1-PCI
 - DM/V480A-2T1-cPCI
 - DM/V600A-2E1-cPCI
- QuadSpan Voice Boards
 - DM/V480-4T1-PCI
 - DM/V600-4E1-PCI
 - DM/V960-4T1-PCI
 - DM/V1200-4E1-PCI
 - DM/V480-4T1-cPCI
 - DM/V600-4E1-cPCI
 - DM/V960-4T1-cPCI
 - DM/V1200-4E1-cPCI
- QuadSpan Series A Voice Boards
 - DM/V960A-4T1-PCI
 - DM/V1200A-4E1-PCI
 - DM/V960A-4T1-cPCI
 - DM/V1200A-4E1-cPCI
- QuadSpan DTI Tone Processing with Network Interface Boards
 - DM/T960-4T1-PCI
 - DM/T1200-4E1-PCI
 - DM/T960-4T1-cPCI
 - DM/T1200-4E1-cPCI
- QuadSpan DTI Network Interface Only Boards
 - DM/N960-4T1-PCI
 - DM/N1200-4E1-PCI
 - DM/N960-4T1-cPCI
 - DM/N1200-4E1-cPCI
- QuadSpan Resource Only Boards

System Release 5.1 for Linux Release Guide

- DM/V2400A-PCI
- DM/V2400A-cPCI

NOTE: Limitations exist with the DM/V2400 product that application developers need to be aware of. For complete information, refer to the support website:

<http://support.diallogic.com/releases/unix51/linux51>

DM3 MediaSpan Software Features

DM3 MediaSpan products offer the following new features:

- High Performance DM3 Architecture
- H.100 (PCI) including SCbus compatibility mode and H.110 (cPCI) CT Bus Support

- Multiple Protocol Support

NOTE: See the DM3 Protocol Support Table in the Installation and Configuration section for a list of supported protocols.

- Interoperability with BoardWatch 5.1.1 and Simple Network Management Protocol (SNMP).

For the media features that are supported as part of various Media Load configurations, see the DM3 Media Loads section under Installation and Configuration for more information on supported configurations:

- Support for Continuous Speech Processing (CSP)
- Basic DTMF and MF Detection
- Basic Play and Record that allows recording and playback of:
 - 48 Kbps and 64 Kbps Mu-Law and A-Law G.711 PCM
 - 24 Kbps OKI ADPCM
 - 32 Kbps OKI ADPCM
- GSM and G.726 voice coders
- TrueSpeech voice coder
- 11kHz 8 and 16-bit linear coder

NOTE: For specific information regarding which MediaSpan boards support which coders and features, please refer to the DM3 Media Load Table and DM3 Protocol Support Table both found in the Installation and Configuration section of this guide.

- Conferencing

NOTE: For information about using the R4 DCB API for conferencing, see the Compatibility Guide for the Dialogic R4 API on DM3 Products for Linux.

New Features

- Silence Compressed Record (SCR) – enables recording of a caller's message with silent pauses eliminated, resulting in smaller size voice files with no loss of intelligibility.
- Transaction Record – enables recording of a two-party conversation by allowing two time slots from a single channel to be recorded. This feature is useful for Call Center applications where it is necessary to archive a verbal transaction or record a live conversation.
- Speed and volume control
- User-defined Global Tone Detection (GTD) and Global Tone Generation (GTG)
- NFAS on NI-2 and 4ESS
- 2-Way FSK
- Flexible Routing for all protocols.

***NOTE:** See the R4 on DM3 section under the Software Features section for a list of the features supported by R4 on DM3 including a definition of Flexible Routing.*

High Density Station Interface (HDSI) Products

The Dialogic High Density Station Interface (HDSI) is an open-architecture platform for computer telephony that integrates large-scale switching and voice processing resources under a single hardware and software architecture. Dialogic offers the High Density Station Interface solution in both PCI and Compact PCI (cPCI) configurations, which provide the industry's highest density analog station connectivity in a single computer chassis slot.

The HDSI is a Dialogic assembly consisting of either an HDSI-PCI board with H.100 compliant CT Bus connectivity, or an HDSI-cPCI board assembly (including a cPCI Baseboard and a Rear I/O Module) with H.110 compliant CT Bus connectivity, connected to a Station Interface Box (SIB). (The CT Bus provides switching between trunks and stations and also allows expansion for additional Dialogic network and resource boards.) Utilizing just one computer chassis slot, this solution can support up to 120 stations with tone detection and generation, and FSK Caller ID transmission.

The Dialogic Station Interface Box is a single unit that supports 48 stations in the base model configuration. However, the SIB is a modular unit that is designed to accept Dialogic plug-in components to accommodate 72, 96, and 120 stations. The SIB features a "hot swap" capability, which allows you to break and re-establish connections to the HDSI-PCI board (or to the HDSI-cPCI board assembly) without powering down or rebooting the system.

HDSI Hardware Support

Dialogic supports the following hardware (Dialogic HDSI hardware package including an HDSI board and the SIB) for use with an HDSI system:

System Release 5.1 for Linux Release Guide

- HDSI-PCI/480
- HDSI-PCI/720
- HDSI-PCI/960
- HDSI-PCI/1200
- HDSI-cPCI/480
- HDSI-cPCI/720
- HDSI-cPCI/960
- HDSI-cPCI/1200

Telephones

Although standard analog telephones will work, they may not support caller ID compatibility. The following telephones have been tested and are supported by HDSI in this release:

- AT&T model 706
- Cidco model CT 250 (FSK enabled)
- ITT 2500 Series
- Lucent model 210
- Lucent model 925
- Master model MT-001
- Nortel model 390 (FSK enabled)
- Panasonic model KX-2315
- Southwestern Bell Freedom Phone

HDSI Software Features

The HDSI series of products provide the following features and benefits:

- HDSI-cPCI board assembly
- H.110 compliant CT Bus connectivity
- An enhanced, modular design enabling you to deploy configurations of 48, 72, 96, and 120 station interfaces utilizing a single PCI slot.
- H.100 compliant CT Bus connectivity, which provides switching between trunks and stations and allows you to share resources
- On-board tone generation
- On-board DTMF detection
- FSK send Caller ID support
- FSK Message Waiting Indicator (MWI) support (on-hook only)
- Programmable ring cadence options

New Features

- The capability to ring telephones with a Ringer Equivalence Number (REN) of two, per station
- The SIB provides battery power to station sets
- Unobtrusive monitoring of connections
- Programmable channel volume control from the application

This product utilizes the Dialogic R4 on DM3 interface to provide support for the existing Dialogic Modular Station Interface (MSI) R4 API, as well as the Voice (dx_) R4 API (for tone detection and generation).

NOTE 1: For more detailed information about the Dialogic High Density Station Interface, refer to the *High Density Station Interface Series Hardware Installation Guide*.

NOTE 2: For more information about Voice API restrictions, refer to the *Compatibility Guide for the Dialogic R4 API on DM3 Products for Linux*.

The following countries are supported on the HDSI/1200:

- Austria
- Australia
- Belgium
- Denmark
- France
- Germany
- Hong Kong
- Ireland
- Italy
- Japan
- Luxembourg
- Mexico
- Malaysia
- Netherlands
- New Zealand
- Norway
- Portugal
- Singapore
- South Africa
- Spain

System Release 5.1 for Linux Release Guide

- Switzerland
- United Kingdom
- United States

***NOTE:** See the section on MSI Boards Country Specific Parameter Files for information on configuring these boards to comply with country-specific settings.*

SpringWare Hardware

SpanPlus Resource Board PCI Hardware

The following new SpanPlus resource boards have been added in this release:

- D/160JCT
- D/320JCT

D/82JCT-U

The following new features have been added to this board:

- Support for Norstar, Siemens and Hicom switches
- DSP-based fax
- G.726 coder
- Mitel 420 emulation
- ROLM and Mitel 430 emulation
- Optiset demos
- Gain control and law conversion
- CSP (Continuous Speech Processing) support

D/42JCT-U

This board has the same features as the standard D/82JCT-U board, but offers 4 channels rather than 8.

D/120JCT-JP

Contains the following features:

- Japanese Caller ID
- Polarity reversal
- CSP (Continuous Speech Processing) support
- DSP-based Fax

D/41JCT-LS

This is a 4-channel analog loop-start product with a CT Bus interface. The D/41JCT-LS now supports CSP (Continuous Speech Processing) and DSP-based Fax.

VFX/41JCT-LS

This is a 4-channel analog loop-start product with a CT Bus interface. This product now supports CSP (Continuous Speech Processing) and enhanced DSP-based Fax.

Development Software Features

The following new software features are being introduced in this release:

- Continuous Speech Processing (CSP)
- DSP-Based Fax (DSP Fax)
- GlobalCall 2.1
- H.100 CT Bus Support for SpringWare Products
- IP Media Library
- R4 on DM3
- R4 ISDN Support for BRI Call Waiting
- Symmetric Multi-Processor (SMP) Support

Continuous Speech Processing (CSP)

Continuous Speech Processing (CSP) is software that supports development of host-based automatic speech recognition (ASR) applications on specific Dialogic boards. It provides many features such as high-performance echo cancellation, voice energy detection, barge-in, voice event signaling, pre-speech buffering, full-duplex operation and more.

The CSP software consists of library functions, device drivers, firmware, and sample demonstration programs.

In this release, CSP is supported on the J-series SpringWare-based products and specific DM3 boards.

NOTE: *To run CSP on DM3 boards, please refer to the DM3 Media Loads section.*

SpringWare Features

The following features are available on SpringWare boards:

- **Full Duplex Operation:** for each voice channel supported, the application can simultaneously send and receive voice data.

System Release 5.1 for Linux Release Guide

- **Echo Cancellation (EC):** high-quality echo cancellation is provided to significantly reduce echo of the outgoing prompt that exists on the incoming signal.
- **Voice Activity Detector (VAD):** the ability to detect significant energy (indicating that voice is present) in the incoming voice data.
- **Barge-In:** when the VAD detects significant energy in the incoming voice data, CSP can optionally terminate prompts playing on that channel.
- **Voice Event Signaling:** when the VAD detects significant energy in the incoming voice data, CSP can optionally send a message to the host processor.
- **Pre-speech Buffering:** incoming voice data is stored in a circular buffer in the firmware. If the VAD detects significant energy, the buffer may be sent to the host for processing. In this case, the buffer would contain the initial portion of the speech that is useful to an ASR resource.
- **Modifying certain voice activity detector (VAD) parameters on the fly:** ability to modify certain VAD parameters, such as the speech threshold, while streaming or recording is in progress.
- **Barge-in and play event generation:** ability to generate both TDX_BARGEIN and TDX_PLAY events when a prompt is interrupted, rather than just TDX_BARGEIN event.
- **Re-initializing the voice activity detector (VAD):** ability to re-arm the VAD when non-speech, such as a cough, is detected.
- **Use of an external reference signal:** ability to send an echo-reference signal from another device across the TDM bus to the CSP voice channel. Using this feature allows you to share the echo canceller and VAD resource on one CSP voice channel with other devices.
- **Unified API:** the R4 API for CSP is the same regardless of the underlying hardware.

CSP-Supported SpringWare Boards

The following SpringWare boards support CSP:

- D/120JCT-LS
- D/240JCT-T1
- D/480JCT-T1
- D/480JCT-2T1
- D/600JCT-E1
- D/600JCT-2E1
- D/41JCT-LS
- VFX/41JCT-LS

New Features

- D/42JCT-U
- D/82JCT-U

NOTE: Please refer to the Supported Hardware section of this release guide for detailed information regarding these boards.

DM3 Features

CSP supports the same features as SpringWare plus the following new features on DM3:

- **Echo canceller convergence event notification** – ability to send an event to the host application when the echo canceller has converged (that is, the echo component has been significantly reduced). Using this feature provides an extra safeguard to help determine when echo-cancelled data is ready for further processing.
- **More powerful voice activity detector (VAD)** – on DM3 boards, the VAD performs sophisticated calculations using a combination of energy and zero-crossing mode (where the energy level goes to zero for a time period) to accurately determine the start of speech. The adaptive nature of the VAD on DM3 boards reduces the need to fine-tune VAD parameters.

CSP-Supported DM3 Boards

The following DM3 hardware now supports CSP:

- MediaSpan Boards
 - DM/V480A-2T1-PCI
 - DM/V480A-2T1-cPCI
 - DM/V600A-2E1-PCI
 - DM/V600A-2E1-cPCI
 - DM/V960A-4T1-PCI
 - DM/V960A-4T1-cPCI
 - DM/V1200A-4E1-PCI
 - DM/V1200A-4E1-cPCI
 - DM/V2400A-PCI
 - DM/V2400A-cPCI
- IPLink Boards
 - DM/IP241-1T1-PCI-100BT

NOTE: Limitations exist with the DM/V2400 product that application developers need to be aware of. For complete information, refer to the support website:
<http://support.dialogic.com/releases/unix51/linux51>

System Release 5.1 for Linux Release Guide

- DM/IP301-1E1-PCI-100BT
- DM/IP481-2T1-PCI-100BT
- DM/IP481-2T1-cPCI-100BT
- DM/IP601-2E1-PCI-100BT
- DM/IP601-2E1-cPCI-100BT
- DM/IP601-cPCI-100BT

NOTE 1: Please refer to the Supported Hardware section of this release guide for detailed information regarding these boards.

NOTE 2: For more information on CSP, see the Continuous Speech Processing documentation set.

DSP-Based Group 3 Fax (DSP Fax)

DSP-Based Group 3 Fax Software Features

The following new features are supported:

NOTE: DSP-Based Fax (also known as DSP Fax) and CSP are mutually exclusive except on the D/41JCT-LS and VFX/41JCT-LS. Please refer to the SpringWare Support Matrix found in the Hardware Features section of the Master Features for a table showing how this feature, ISDN and CSP work together.

- Fax Resource Management capabilities

NOTE: The fax resource manager is firmware functionality that shields the user from having to keep track of which specific channels have fax capability. It provides fax resources/support on any channel, at any time, as long as there are fewer than the maximum number of fax resources currently being used.

- 14.4 Kbps Transmit
- 9.6 Kbps Receive
- 14.4 Kbps Receive under Enhanced DSP-based fax
- MH, MR transmit/receive line coding
- MH, MMR storage coding

NOTE: 14.4 Kbps receive and enhanced error correcting schemes are only available when enhanced DSP-Based Fax is being used. Currently, only the VFX/41JCT-LS has this capability.

DSP-Based Fax Hardware

The boards that are supported by this product are:

New Features

- D/120JCT-LS
- D/240JCT-T1
- D/300JCT-E1
- D/480JCT-T1
- D/480JCT-2T1
- D/600JCT-E1
- D/600JCT-2E1
- D/41JCT-LS
- D/82JCT-U
- VFX/41JCT-LS
- D/42JCT-U
- D/320JCT
- D/160JCT

NOTE 1: *Please refer to the Supported Hardware section for detailed information regarding these boards.*

NOTE 2: *Please refer to the Master Features section for a table describing channel support for DSP-Based Fax.*

GlobalCall 2.1

The following new features are supported on DM3 in this release:

- **GlobalCall Support for IP** – GlobalCall supports IP interfaces providing call control capabilities for establishing calls over an IP interface. For DM3 IPLink boards, GlobalCall supports a system configuration where the IP signaling stack is running as embedded software on the board with media streaming also handled by the board. This is supported for DM3 IPLink using NetTSC and the embedded RadVision H.323 stack.
- **Selective Call Control Library Initialization** - Enhancements to the **gc_Start()** function enable the application developer to specify which call control libraries should be started. Previously, all call control libraries were started regardless of the technology being used.
- **Simplified Error Handling** - Enables the retrieval of all error information in a single function call. The new **gc_ErrorInfo()** function retrieves all error information associated with a failed function and the new **gc_ResultInfo()** function retrieves all information associated with a GlobalCall event.

The following new features are only supported on SpringWare in this release:

- **GlobalCall Call State Model Enhancements** - GlobalCall maintains a generic call state model from which technology-specific call state models can be derived. The generic call state model maintains a consistent call control

System Release 5.1 for Linux Release Guide

paradigm across all technologies supported by GlobalCall and has been enhanced to support overlap send and receive capabilities.

- **GlobalCall Alarm Management System (GCAMS)** - Supports the management of alarms generated by Alarm Source Objects (ASOs). An ASO can be a network library (such as the R4 DTI library), a call control library, or a component within a call control library. GCAMS enables a GlobalCall application to configure which alarms are blocking and non-blocking, of which alarms the application should be notified, and the flow of alarms (for example, first alarm on and last alarm off) to an application.
- **GlobalCall Feature Transparency and Extension (FTE)** - Provides the flexibility to extend the generic GlobalCall API to access all technology- or protocol-specific features unique to any given network interface that were previously accessible only through its native technology call control library. All technology-specific features may be accessed by the application via a single GlobalCall interface eliminating the need to use the underlying call control library APIs directly.

***NOTE:** This is supported for DM3 IPLink using NetTSC and the embedded RadVision H.323 stack.*

- **GlobalCall Real Time Configuration Manager (RTCM)** - Enables an application to retrieve or modify configuration data associated with network interfaces in real time. This includes the dynamic configuration of parameters associated with physical or logical entities (such as, a system, board, network interface, channel or call), protocol parameters (such as CDP parameters), or call control library parameters (such as the default call state mask value for a channel). In addition, RTCM allows an application to query for the ID that corresponds to the specified name. For example, retrieve the protocol ID given the protocol name or retrieve the CDP parameter ID given the CDP parameter name.

***NOTE:** This is supported for DM3 IPLink using NetTSC and the embedded RadVision H.323 stack.*

- **GlobalCall Service Request (GCSR)** - Enables a device to send a request to another remote device for some kind of service. Examples of services that may be requested are: device registration, channel setup, call setup, information requests, or operational requests. The service request feature can be used for device registration in BRI technology.

***NOTE:** This feature is used by ISDN BRI and IP.*

- **PDKRT Support for Analog Protocols** - Enhancements to the PDKRT call control library to support Analog PDK protocols.
- **GlobalCall Basic Call Control Demo** - A new demonstration program that exercises some of the capabilities of GlobalCall.

***NOTE 1:** See the GlobalCall Application Development Guide for more information regarding this demo.*

New Features

NOTE 2: See the *Compatibility Guide for the Dialogic R4 API on DM3 Products for Linux* for more information regarding what is supported under SpringWare and what is supported on DM3..

GlobalCall SpringWare Hardware Compatibility

The following SpringWare boards have been tested in this release:

NOTE: Not all boards in each family are tested. If one board in a family has been tested, the behavior of other boards in the same family is expected to be the same.

- BRI/80 PCI
- BRI/80SC
- BRI/160 PCI
- BRI/160SC
- D/41EPCI
- D/41ESC
- D/160SC-LS
- D/120JCT-LS
- D/300JCT-E1
- D/300PCI-E1
- D/300SC-E1
- D/300SC-2E1
- D/600JCT-2E1
- D/600JCT-2E1 75
- D/600JCT-2E1 120
- D/600SC-2E1
- D/240JCT-T1
- D/240PCI-T1
- D/240SC-T1
- D/240SC-2T1
- D/480JCT-2T1
- D/480SC-2T1
- D/41JCT-LS
- VFX/41JCT-LS
- VFX/40PCI
- VFX/40ESC PLUS

GlobalCall DM3 Hardware Compatibility

GlobalCall supports PSTN interfaces on DM3 boards (including the DI series of boards and IPLink boards). However, GlobalCall does not support the following:

- The DM/F series of boards.
- IP interfaces on IPLink series of boards when a split call control configuration is used.
- Station interfaces on the DI series of boards.
- Station interfaces on the HDSI series boards.

H.100 CT Bus Support for SpringWare Products

Limited H.100 support for SpringWare products as follows:

- 8 MHz
- 4096 time slots
- Third party board support (no clock fallback)
- SCbus compatibility mode

All JCT SpringWare boards support H.100 in this release.

IP Media Library

The IP Media Library is an R4 compatible library for controlling media on IP devices (ipvs_*.pcd). Host-based call control applications that use call control stacks other than those supplied with IPLink use this library for application development.

The IP Media Library supports:

- System Control Functions - manage channel, parameter and event operations
- Input/Output Functions - transfer digits and data
- Media Session Functions - perform session management
- Quality of Service (QoS) Functions - control QoS alarms and alarm thresholds

***NOTE:** See the IP Media API Software Reference for a complete description of the library.*

R4 on DM3

***NOTE:** See the Compatibility Guide for the Dialogic R4 API on DM3 Products for Linux for additional information.*

R4 on DM3 Software Features

The following new features are supported:

- R4 Voice API (**dx_**) for voice functionality
- R4 CSP API (**ec_**)

New Features

- Limited R4 DTI API (**dt_**)
 - R4 GlobalCall API (**gc_**) for network call control
 - R4 Fax API (**fx_**)
 - Dialogic Conference Bridge (**dcb_**)
 - Modular Station Interface (**ms_**)
 - GlobalCall support for IP when using DM3 IPLink with the embedded (on board) H.323 stack
 - GlobalCall T-1 CAS and ISDN protocols
 - GlobalCall E-1 CAS R2MF protocols
 - GlobalCall basic call control
 - GlobalCall ISDN supplementary services - any IE
 - overlap send/receive
 - user-to-user messages
 - congestion control
 - facility message
 - notify message
- NOTE:** This release of the R4 API on DM3 does not have provisions for administrative services such as Clock Fallback, and other features not currently supported by the R4 APIs.*
- Call Control Specific
 - Call Progress Analysis via GlobalCall
 - Reset Line Device (**gc_ResetLineDev()**)
 - Multiple Call Objects per channel
 - Overlap Send/Receive
 - Proceeding Message
 - Layer 2 Access
 - 2-Way FSK
 - NFAS on NI-2 and 4ESS
 - Hot Download of R2MF protocols
 - IPLink Split Call Control under R4 API
 - Embedded Call Control with GlobalCall API
 - Media Specific:
 - Flexible Routing (all call control protocols)
 - Pre-record beep adjust

System Release 5.1 for Linux Release Guide

- Transaction Record
- CSP
- Conferencing (DCB API)
- R4 Fax API
- Shareable Fax Resources
- Silence Compress Record (SCR)
- Voice Specific
 - Basic Voice
 - Voice play, record, volume control, dial, get digits
 - GSM (MS & TIPHON) and G.726
 - 11 KHz linear (WAVE) 8-bit and 16-bit sample
 - All termination conditions (TPT) except LCOFF, PM_ON and PM_OFF
 - New I/O function termination conditions
DV_TPT structure
 - TPT termination conditions for maxtime; maxdtmf; iddtime; digmask; 6K and 8K ADPCM and PCM; and vox and wave support
 - TrueSpeech coder
 - Dynamic and User-defined Global Tone Detection (GTD) and Global Tone Generation (GTG)
 - GTG play cadence (**dx_playtoneEx()**)
 - Speed Control (OKI and PCM 8Kbps)

The “Exportable Voice Resources” and “Shareable Fax Resources” features are referred to as flexible routing. This terminology will be used going forward. The following support features for fixed and flexible routing are available in this release:

- QuadSpan and DualSpan DM3 products using DM3 Media Loads support flexible routing only.
- DM/IP boards support fixed or flexible routing.
- DM/VF boards support fixed or flexible routing.
- DM/F boards support flexible routing.
- HDSI supports fixed routing only.

EXAMPLES OF ROUTING TERMINOLOGY

NOTE: *The following paragraph refers to chapters found in the Compatibility Guide for the Dialogic R4 API on DM3 Products for Linux.*

This release provides support for two types of routing configuration: fixed and flexible. Fixed routing, which was the only configuration available in previous system releases containing R4 on DM3, is a restricted routing, whereas flexible routing is compatible with the routing capabilities in the R4 API. Since the routing configuration affects the routing capability and resource management features that are supported, both routing configurations are documented in the Compatibility Guide. The routing information in the Compatibility Guide is presented under the assumption that flexible routing will be used. However, because fixed routing is an option, information on fixed routing is provided.

R4 on DM3 supports two types of routing configuration:

- **Fixed Routing Configuration:** Applies only to DM3 boards. With fixed routing, the resource devices (voice/fax) and network interface devices are permanently coupled together in a fixed configuration. Only the network interface timeslot device has access to the CT Bus. For example, on a DM/V960-4T1 board, each voice resource channel device is permanently routed to a corresponding network interface timeslot device on the same physical board. The routing of these resource and network interface devices is predefined and static. The resource device also does not have access to the CT Bus and so cannot be routed independently on the CT Bus. No off-board sharing or exporting of voice/fax resources is allowed.
- **Flexible Routing Configuration:** This configuration is compatible with R4 API routing on earlier-generation boards; that is, earlier-generation boards use flexible routing. Flexible routing is available for DM3 boards starting with R4 on DM3 in System Release 5.1. With flexible routing, the resource devices (voice/fax) and network interface devices are independent, which allows exporting and sharing of the resources. All resources have access to the CT Bus. For example, on a DM/V960-4T1 board, each voice resource channel device and each network interface timeslot device can be independently routed on the CT Bus.

R4 ISDN Support for BRI Call Waiting

New support for Call Waiting supplementary service is provided for ISDN BRI according to CCITT Q.953 and ETS 300 058-1 specifications. This support allows a user to be notified of an incoming call (as per basic call procedures) with an indication that no information channel is available. The user then has the choice of accepting, rejecting or ignoring the incoming waiting call. Note that the support for sending a call waiting call is also provided for the Network Switch side of protocols. See the updated *ISDN Software Reference* for Dialogic R4 API usage (i.e. `cc_MakeCall`, `cc_WaitCall`, `cc_GetChanId`) for more information regarding this capability.

NOTE: For NTT protocol users, the API `cc_SetInfoElem()` has to be used to override the default Channel ID IE content. This is required to comply with NTT specifications that stipulate the first

System Release 5.1 for Linux Release Guide

reply to the SETUP message has to identify the B-channel on which the call is later conducted.

BRI Call Waiting Hardware

This feature is supported on the following hardware:

- BRI/SC
- BRI/PCI

BRI/SC Support

The following BRI features are supported:

- ISDN API
- User-to-user information
- Dialed Number Identification (DNIS)
- Multinational approvals with all popular protocols
- Automatic Number Identification (ANI)
- LAP-D Layer 2 access
- DialView Suite:
 - ISDN Diagnostic Program (isdiag)
 - ISDN Trace Utility (isdtrace)
- Basic Call Control
 - Makecall
 - Rejectcall
 - Layer 2 Access
 - Layer 3 Access
- 8 or 16 S/T interface supporting the following protocols:
 - National ISDN-1
 - Euro-ISDN
 - INS64
 - 5ESS
 - DMS
- Layer 3 supplementary services
 - Hold and Retrieve
 - Messaging In-band tone generation
 - Multiple D channel configuration
 - 5ESS custom messages

New Features

- Broadcast handling in point-to-multipoint configuration
- Each BRI is configurable as a TE (station) or as an NT (PSTN)

Symmetric Multi-Processor (SMP) Support

The drivers for this release are SMP safe, and this release will function on an SMP machine. This release provides SMP support with all Dialogic activity having affinity to one processor

Diagnostic and Utilities Features

The following new or enhanced diagnostic utilities are being introduced in this release:

- Antares Rec-Play diagnostics
- dm3post
- Universal Dialogic Diagnostics (UDD) for SpringWare PCI products

Antares Rec-Play Diagnostics

This utility exercises the Antares platform at the Application/System level. This is source code that is used as sample/example/demo code. This release adds the following:

- PCI support (for PCI Antares)

dm3post

The dm3post diagnostic tool, sometimes referred to as "POST On-Demand," can perform diagnostics on a stopped board at any time to detect and isolate possible hardware faults. This can enable you to locate and diagnose faulty boards.

Universal Dialogic Diagnostics (UDD) for SpringWare Products

This feature is an interactive diagnostic program that uses diagnostic firmware to test the functionality of Dialogic hardware. UDD relies on configuration files used by the Dialogic generic downloader: any board supported by UDD that is listed in the configuration file will appear on the initial UDD screen. For each supported board, UDD presents a list of tests that can be selected, deselected, and executed a specified number of times. The tests available are specific to each type of board. The following boards are supported by UDD in this release::

- D/21D
- D/21H
- D/41D

System Release 5.1 for Linux Release Guide

- D/41EPCI
- D/41ESC
- D/41H
- D/41JCT
- D/42JCT-U
- NE2 PCI
- D/42-NS
- D/80-PCI (Magnum derivation)
- D/80SC
- D/80SC-4LS
- D/82U-JCT
- D/120JCT-LS
- D/160JCT
- D/160SC
- D/160SC-LS
- D/160SC-8LS
- D/240JCT-T1
- D/240SC
- D/240SC-T1
- D/240SC-2T1
- D/240PCI-T1
- D/300JCT-E1
- D/300PCI-E1-75
- D/300PCI-E1-120
- D/300SC-E1
- D/300SC-2E1
- D/320JCT
- D/320-PCI
- D/320SC
- D/480JCT-2T1
- D/480SC-2T1
- D/600JCT-2E1
- D/600SC-2E1

New Features

- D/640SC
- DCB/960SC
- Dialog 4
- Dialog/4 PCI
- DTI/240SC
- DTI/241SC
- DTI/300SC
- DTI/301SC
- DTI/480SC
- DTI/481SC
- DTI/600SC
- DTI/601SC
- LSI/81SC
- LSI/161SC
- MSI/80SC
- MSI/80SC-R
- MSI/160SC
- MSI/160SC-R
- MSI/240SC
- MSI/240SC-R
- MSI Global
- MSI PCI
- MSI/80PCI-Global
- MSI/160PCI-Global
- Proline 2v
- VFX/40ESC
- VFX/40ESC Plus
- VFX/PCI

Supported Hardware

The following categories of hardware products are supported in this release:

- Media with Interface products
- Media products
- Network Interface products

Media with Interface Products

The supported Media with Interface Products are described in the following categories:

- IPLink Products
- Media with Analog Loop Start Interface Products
- Media with Digital Network Interface Products
- DM3 MediaSpan Products
- PBX Integration Products

IPLink Products

- **DM/IP241-1T1-PCI-100BT** - - Single T-1 span in a single slot, PCI form factor, NIC daughterboard with a 100 BaseT Ethernet connector.
- **DM/IP301-1E1-PCI-100BT** - Single E-1 span in a single slot; PCI form factor; NIC daughterboard with a 100 BaseT Ethernet connector.
- **DM/IP481-2T1-PCI-100BT** - Dual T-1 span in a single slot, PCI form factor, NIC daughterboard with a 100 BaseT Ethernet connector.
- **DM/IP481-2T1-cPCI-100BT** - Dual T-1 span in a single slot, cPCI form factor, NIC daughterboard with a 100 BaseT Ethernet connector.
- **DM/IP601-2E1-PCI-100BT** - Dual E-1 span in a single slot, PCI form factor, NIC daughterboard with a 100 BaseT Ethernet connector.
- **DM/IP601-2E1-cPCI-100BT** - Dual E-1 span in a single slot, cPCI form factor, NIC daughterboard with a 100 BaseT Ethernet connector.

IPLink Media Resource Boards

- **DM/IP601-cPCI-100BT** - IP Media Resource Interface which supports 60 IP ports with the 100BaseT interface and has available 60 Exportable Voice Resources.

Media with Analog Loop Start Interface Products

SpringWare Fax Boards

- **VFX/40ESCplus** - A 4-channel voice and fax solution with support for advanced voice processing features; V.17 fax with ECM and MMR in both transmit and receive modes.
- **VFX/40PCI** - A 4-channel analog SCbus-compatible PCI voice and fax solution with support for advanced voice processing features; V.17 fax with ECM and MMR in both transmit and receive modes.
- **VFX/41JCT-LS** - a four-port analog converged communications voice and fax processing board ideal for developers building enterprise unified messaging and interactive voice/fax response (IVR) applications for the global market. Similar to the D/41JCT-LS, it provides enhanced DSP-based fax capability.

SpringWare Voice Boards

- **D/21E** - A 2-channel voice board with call processing and analog loop start interface
- **D/41ESC** - A 4-channel call processing and analog loop start interface board.
- **D/41EPCI** - A 4-channel analog SCbus-compatible PCI voice processing board.
- **D/41JCT-LS** - A 4-channel voice board with call processing and analog loop start in a single PCI slot.
- **D/41H** - A half-size, 4-channel voice-store-and-forward expansion board (PC-AT height).
- **D/4-PCI** - A 4-channel DSP-based voice board with four analog line interfaces.
- **D/80SC-4LS** - An 8-channel voice board with 4 loop start network interface lines (2:1 ratio) and play/record, tone and call progress analysis. This board can only be obtained in the Dialogic BCP Hardware Package.
- **D/160SC-LS** - A 16-channel voice and loop start network interface board with play/record, tone, and call progress.
- **D/160SC-LS-IDPD** - A 16-channel voice and loop start network interface board with play/record, tone, call progress, and Global DPD support.
- **D/160SC-8LS** - A 16-channel voice board with 8 loop start network interfaces lines (2:1 ratio) and play/record, tone and call progress analysis. This board can only be obtained in the Dialogic BCP Hardware Package .
- **D/120JCT-LS** - An analog interface card with 12 channels of analog line interface and voice processing .

Media with Digital Network Interface Products

DM3 Fax Boards

- **DM/F240-1T1-PCI** - A single-slot PCI board that supports 24 intelligent fax channels and contains integrated network interface. PCI form factor, H.100 and SCSA compatible.
- **DM/F300-1E1-PCI** - A single-slot PCI board that supports 30 intelligent fax channels and contains integrated network interface. PCI form factor, H.100 and SCSA compatible.

DM3 VFN Boards

- **DM/VF240-1T1-PCI** - 24 channels of voice and fax processing and T-1 telephony signaling channels, PCI form factor
- **DM/VF300-1E1-PCI** - 30 channels of voice and fax processing and E-1 telephony signaling channels, PCI form factor

SpringWare Single Span Boards

- **D/240SC-T1** - A 24-channel voice and T-1 network interface board with play/record, tone, and call progress.
- **D/240SC-T1-IDPD** - A 24-channel voice and T-1 network interface board with play/record, tone, call progress, and Global DPD support.
- **D/300SC-E1** - A 30-channel voice and 75- or 120- Ohm E-1 network interface board with play/record, tone, and call progress.
- **D/300SC-E1-IDPD** - A 30-channel voice and 75- or 120-Ohm E-1 network interface board with play/record, tone, call progress, and Global DPD support.
- **D/240JCT-T1** - A 24-channel voice and T-1 network interface board in PCI form factor with play/record, tone, and call progress analysis.
- **D/300JCT-E1** - A 30-channel voice and 75- or 120-Ohm E-1 network interface board in PCI form factor with play/record, tone, and call progress analysis.
- **D/240PCI-T1** - A 24-channel voice and T-1 network interface board in PCI form factor with play/record, tone, and call progress analysis
- **D/300PCI-E1** - A 30-channel voice and 75- or 120-Ohm E-1 network interface board in PCI form factor with play/record, tone, and call progress analysis
- **D/480JCT-1T1** - This is a single-span network board with dual-span voice resources. This enables the board to do both CSP and ISDN together on the same network interface (24 channels of ISDN on the first span and 24 channels of CSP on the second span). It has an H.100 compliant CT Bus.
- **D/600JCT-1E1** - This is a single-span network board with dual-span voice resources. This enables the board to do both CSP and ISDN together on the

Supported Hardware

same network interface (30 channels of ISDN on the first span and 30 channels of CSP on the second span). It has an H.100 compliant CT Bus.

SpringWare Dual Span Boards

- **D/240SC-2T1** - A DualSpan board with 24 channels of voice processing and 48 channels of network interface.
- **D/300SC-2E1** - A DualSpan board with 30 channels of voice processing and 60 channels of 75- or 120-Ohm E-1 network interface.
- **D/480SC-2T1** - A DualSpan board with 48 channels of voice processing and 48 channels of network interface.
- **D/600SC-2E1** - A DualSpan board with 60 channels of voice and 60 channels of 75- or 120-Ohm E-1 network interface.
- **D/480JCT-2T1** - 48 channels of voice processing with CSP and digital network interface supporting robbed bit only, H.100 compliant CT Bus.
- **D/600JCT-2E1** - 60 channels of voice processing with CSP and digital network interface supporting robbed bit only, H.100 compliant CT Bus.

DM3 MediaSpan Products

DM3 DualSpan Series A Voice Boards

- **DM/V480A-2T1-PCI** - 48 channels of voice processing and telephony signaling channels with two T-1 lines; SCbus and CT Bus compatible; PCI form factor
- **DM/V600A-2E1-PCI** - 60 channels of voice processing and telephony signaling channels with two E-1 lines; SCbus and CT Bus compatible; PCI form factor.
- **DM/V480A-2T1-cPCI** - 48 channels of voice processing and telephony signaling channels with two T-1 lines; CT Bus compatible; cPCI form factor
- **DM/V600A-2E1-cPCI** - 60 channels of voice processing and telephony signaling channels with two E-1 lines; CT Bus compatible; cPCI form factor.

DM3 QuadSpan Voice Boards

- **DM/V480-4T1-PCI** - 48 channels of voice processing plus 48 channels of tone processing and 96 telephony signaling channels. The network interface has four T-1 lines and is SCbus and CT Bus compatible; PCI form factor.
- **DM/V480-4T1-cPCI** - 48 channels of voice processing, plus 48 channels of tone processing, and 96 telephony signaling channels. The network interface has four T-1 lines and is CT Bus compatible; cPCI form factor.
- **DM/V600-4E1-PCI** - 60 channels of voice processing plus 60 channels of tone processing and 120 telephony signaling channels. The network interface has four E-1 lines and is SCbus and CT Bus compatible; PCI form factor.

System Release 5.1 for Linux Release Guide

- **DM/V600-4E1-cPCI** - 60 channels of voice processing plus 60 channels of tone processing and 120 telephony signaling channels. The network interface has four E-1 lines and is CT Bus compatible; cPCI form factor.
- **DM/V960-4T1-PCI** - 96 channels of voice processing and telephony signaling channels. The network interface has four T-1 lines and is SCbus and CT Bus compatible; PCI form factor.
- **DM/V960-4T1-cPCI** - 96 channels of voice processing and telephony signaling channels. The network interface has four T-1 lines and is CT Bus compatible; cPCI form factor.
- **DM/V1200-4E1-PCI** - 120 channels of voice processing and telephony signaling channels. The network interface has four E-1 lines and is SCbus and CT Bus compatible; PCI form factor..
- **DM/V1200-4E1-cPCI** - 120 channels of voice processing and telephony signaling channels. The network interface has four E-1 lines and is CT Bus compatible; cPCI form factor.

DM3 QuadSpan Series A Voice Boards

- **DM/V960A-4T1-PCI** - 96 channels of media and telephony signaling channels. The network interface has four T-1 lines and is SCbus and CT Bus compatible; PCI form factor.
- **DM/V960A-4T1-cPCI** 96 channels of media and telephony signaling channels. The network interface has four T-1 lines and is CT Bus compatible; cPCI form factor.
- **DM/V1200A-4E1-PCI** - 120 channels of media and telephony signaling channels. The network interface has four E-1 lines and is SCbus and CT Bus compatible; PCI form factor.
- **DM/V1200A-4E1-cPCI** - 120 channels of media and telephony signaling channels. The network interface has four E-1 lines and is CT Bus compatible; cPCI form factor.

PBX Integration Products

- **D/42JCT-U** - A 4-channel voice-processing board that can emulate a number of phones from different vendors. The trunk interface section of the board uses special digital PBX signaling link technology to interface with the supported PBXs. This board is in the PCI form factor, and it provides SCbus and H.100 connectivity.
- **D/82JCT-U** - An 8-channel voice-processing board that can emulate a number of phones from different vendors. The trunk interface section of the board uses special digital PBX signaling link technology to interface with the supported PBXs. This board is in the PCI form factor, and it provides SCbus and H.100 connectivity.

Media Products

The supported media products are described in the following categories:

- Conferencing Products
- Fax Products
- Speech Products
- Voice Products

Conferencing Products

Dialogic Audio Conferencing Products

- **DCB/320SC** - A conferencing board for 32 conferencing resources.
- **DCB/640SC** - A conferencing board for 64 conferencing resources.
- **DCB/960SC** - A conferencing board for 96 conferencing resources.

Fax Products

DM3 Fax Resource Boards

- **DM/F240-PCI** - A 24-channel fax resource board that supports T-1 solutions. SCbus and CT Bus compatible, PCI form factor. Easy integration with SCbus network interface boards such as the D/240SC-T1 and DTI/241SC-T1.
- **DM/F300-PCI** - A 30-channel fax resource board that supports E-1 solutions. SCbus and CT Bus compatible, PCI form factor. Easy integration with SCbus network interface boards such as the D/300SC-T1 and DTI/301SC-T1.
- **DM/F240-cPCI** - A 24-channel fax resource board that supports T-1 solutions. CT Bus compatible, cPCI form factor.
- **DM/F300-cPCI** - A 30-channel fax resource board that supports E-1 solutions. CT Bus compatible, cPCI form factor.

Speech Products

- **Antares 3000/60 PCI** - A PCI board containing 512 Kb (128 K words) of local SRAM and 8 MB (2M word) of global DRAM.

Voice Products

- **D/80SC** - An 8-channel voice board with play/record, tone, and call progress
- **D/80PCI** - An 8-channel voice resource board; PCI form factor, H.100 and SCSA compatible.
- **D/160SC** - A 16-channel voice board with play/record, tone, and call progress.

System Release 5.1 for Linux Release Guide

- **D/160SC-HS** - A 16-channel voice board with play/record, tone and call progress in a half PC slot..
- **D/160JCT** -16 independent channels in a single PCI slot connect to digital network interfaces.
- **D/240SC** - A 24-channel voice board with play/record, tone, and call progress
- **D/320SC** - A 32-channel voice board with play/record, tone, and call progress
- **D/320SC-IDPD** - A 32-channel voice board with play/record, tone, call progress, and Global DPD support.
- **D/320-PCI** - A 32-channel voice resource board that supports E-1 and T-1 solutions; PCI form factor, H.100 and SCSA compatible.
- **D/320JCT** -32 independent channels in a single PCI slot connect to digital network interfaces.
- **D/640SC** - A 64-channel voice board with play/record, tone, and call progress analysis.

DM3 QuadSpan Resource Only Boards

- **DM/V2400A-PCI** – Up to 240 voice media and tone channels with no network interface, SCbus and CT Bus compatible; PCI form factor.
- **DM/V2400A-cPCI** – Up to 240 voice media and tone channels with no network interface: CT Bus compatible; cPCI form factor.

***NOTE:** Limitations exist with the DM/V2400 product that application developers need to be aware of. For complete information, refer to the support website:*

<http://support.dialogic.com/releases/unix51/linux51>

Network Interface Products

The supported network interface products are described in the following categories:

- Analog Network Interface Products
- Digital Network Interface Products
- Station Interface Products
- Other Interface Products

Analog Network Interface Products

- **LSI/81SC** - An 8-channel loop start network interface board with tone and call progress.

Supported Hardware

- **LSI/161SC** - A 16-channel loop start network interface board with tone and call progress.

Digital Network Interface Products

SpringWare Boards

- **DTI/240SC** - A 24-channel T-1 network interface board.
- **DTI/241SC** - A 24-channel T-1 network interface board with tone and call progress.
- **DTI/300SC** - A 30-channel 75- or 120- Ohm E-1 network interface board.
- **DTI/301SC** - A 30-channel 75- or 120- Ohm E-1 network interface board with tone and call progress.
- **DTI/480SC** - A 48-channel T-1 network interface board.
- **DTI/481SC** - A 48-channel T-1 network interface board with tone and call progress.
- **DTI/600SC** - A 60-channel 75- or 120-Ohm E-1 network interface board.
- **DTI/601SC** - A 60-channel 75- or 120-Ohm network interface board with tone and call progress.

QuadSpan DTI Tone Processing Boards

- **DM/T960-4T1-PCI** - 96 channels of tone processing channels with four T-1 lines; SCbus and CT Bus compatible; PCI form factor.
- **DM/T1200-4E1-PCI** - 120 channels of tone processing channels. The network interface has four E-1 lines and is SCbus and CT Bus compatible; PCI form factor.
- **DM/T960-4T1-cPCI** - 96 channels of tone processing channels with four T-1 lines; CT Bus compatible; cPCI form factor.
- **DM/T1200-4E1-cPCI** - 120 channels of tone processing channels with four E-1 lines; CT Bus compatible; cPCI form factor.

QuadSpan DTI Network Interface Only Boards

- **DM/N960-4T1-PCI** - 96 channels of network interface only with four T-1 lines; SCbus and CT Bus compatible; PCI form factor.
- **DM/N1200-4E1-PCI** - 120 channels of network interface only with four E-1 lines; SCbus and CT Bus compatible; PCI form factor.
- **DM/N960-4T1-cPCI** - 96 channels of network interface only with four T-1 lines; CT Bus compatible; cPCI form factor.
- **DM/N1200-4E1-cPCI** - 120 channels of network interface only with four E-1 lines; CT Bus compatible; cPCI form factor.

Station Interface Products

All of the boards listed in this table support ringing.

- **MSI/80SC-Global** - 8 stations supporting SCbus.
- **MSI/160SC-Global** - 16 stations supporting SCbus.
- **MSI/240SC-Global** - 24 stations supporting SCbus.
- **MSI/80PCI-Global** - 8 stations, PCI form factor.
- **MSI/160PCI-Global** - 16 stations, PCI form factor.
- **HDSI-PCI/480** - 48 stations, PCI form factor.
- **HDSI-PCI/720** - 72 stations, PCI form factor.
- **HDSI-PCI/960** - 96 stations, PCI form factor.
- **HDSI-PCI/1200** - 120 stations, PCI form factor.
- **HDSI-cPCI/480** - 48 stations, cPCI form factor.
- **HDSI-cPCI/720** - 72 stations, cPCI form factor.
- **HDSI-cPCI/960** - 96 stations, cPCI form factor.
- **HDSI-cPCI/1200** - 120 stations, cPCI form factor.
- **BRI/80SC** - An 8-channel ISDN digital interface board for SCbus based systems.
- **BRI/160SC** - A 16-channel ISDN high-density digital interface board for SCbus based systems.
- **BRI/80PCI** - An 8-channel ISDN digital interface board in a PCI form factor for SCbus based systems.
- **BRI/160PCI** - A 16-channel ISDN digital interface board in a PCI form factor for SCbus based systems.

Other Interface Products

- **SCX160 SCxbus Adapter** - A Dialogic SCxbus switchless adapter board that extends the SCbus into other nodes by converting SCbus TTL signals into SCxbus SCSI-3 RS485 type signals and vice versa.

Separately Orderable Products

This section describes separately orderable products that are not part of the system release but are required to perform some of the functions supported by the system release:

- GlobalCall Protocols Version 2.00 Package

GlobalCall Protocols Version 2.00 Package

The GlobalCall Protocols Version 2.00 package includes the following protocols for use on the PSTN interfaces of SpringWare boards:

- Analog, E-1 CAS, and T-1 Robbed Bit protocols
- PDK Analog, E-1 CAS and T-1 Robbed Bit protocols

PDK protocols provide the ability to use many of the new GlobalCall API features included in this system release and provide for future protocol feature compatibility with DM3 protocols to be released in the future.

The GlobalCall Protocols Version 2.00 Package contains:

- GlobalCall PDK and ICAP/ANAPI protocol binaries
- *GlobalCall Protocols Version 2.00 for UNIX and Windows Release Notes (05-1451-002)*, which provides information on installing and using the GlobalCall protocols and describes the differences between PDK and ICAP/ANAPI protocols.
- *GlobalCall Country Dependent Parameters (CDP) Reference (05-0870-005)*, which contains the parameters associated with each of the countries needed for utilizing GlobalCall

NOTE: The *GlobalCall Protocols Version 2.00 package can be downloaded from the Dialogic FirstCall InfoServer Support web site at:*

<http://support.dialogic.com/releases/protocols/gcprotocols20/>

Installation and Configuration

The Installation and Configuration section provides information about the following topics:

- Installing Hardware
- Configuring Hardware
- Installing or Uninstalling Software
- Configuring Software

Installing Hardware

Install the boards in the chassis according to the instructions on the *Quick Install* card included with each board.

Configuring Hardware

Configure the boards you will be using in your system according to the instructions in *System Release 5.1 for Linux Software Installation Guide*.

Installing or Uninstalling Software

Follow the instructions in the *System Release 5.1 for Linux Software Installation Guide*.

Configuring Software

This section contains specific information for configuring various types of software applications:

- DM3 Diagnostic Tools
- DM3 IPLink Applications
- DM3 Fax
- DM3 MediaSpan
- DM3 Media Loads

Installation and Configuration

- DM3 Protocol Support
- DSP-Based Fax
- MSI Boards Country Specific Parameter Files
- DM3 ISDN NFAS

DM3 Diagnostic Tools

For information about DM3 diagnostic and debugging tools, see the *DM3 Diagnostics Utilities Reference*.

DM3 IPLink Applications

IPLink Demos

A good way to get started and see how IPLink applications work is to run the following demos based on the GlobalCall R4 API:

- IPT Media Gateway Demo (R4 based IP Gateway)
- GlobalCall Basic Call Control Demo

These can be found at: `.../dialogic/demos/ipt/gc_demos`.

NOTE: See the *DM3 IPLink User's Guide for Linux* for more information about this product. Also the *IPT Media Gateway Demo User's Guide* for information about the demo.

DM3 Fax

With DM3 Fax products, you develop applications using the Dialogic R4 API. Therefore, you should first refer to the *Compatibility Guide for the Dialogic R4 API on DM3 Products for Linux*.

The term Dialogic R4 API (Dialogic System Software Release 4 Application Programming Interface) is used to identify the well-established and time-proven Dialogic interface used for creating computer telephony applications tailored to Dialogic hardware products. The *Compatibility Guide* describes the R4 API support for DM3 products. This guide provides information about porting to DM3 products using the R4 APIs as well as migrating existing applications for SpringWare products to DM3 products.

Once you have read the *Compatibility Guide*, you should refer to the *Fax Software Reference*.

DM3 MediaSpan

With DM3 MediaSpan products, you develop applications using the Dialogic R4 API. Therefore, you should first refer to the *Compatibility Guide for the Dialogic R4 API on DM3 Products for Linux*.

Once you have read the *Compatibility Guide*, you should refer to the *Voice Software Reference*. This comprehensive guide and function reference for the R4

System Release 5.1 for Linux Release Guide

API includes the *Features Guide for Linux*, *Programmer's Guide for Linux*, and *Standard Runtime Library for Linux*.

For information about call control software features provided by the GlobalCall API, see the following documents:

- *GlobalCall API Software Reference*
- *GlobalCall E-1/T-1 Technology User's Guide*
- *GlobalCall ISDN Technology User's Guide*

For information about the SCbus and SCbus routing, see the *SCbus Routing Guide*.

DM3 Media Loads

The media loads provided for this release are mainly supported on the DM3 MediaSpan product line. However, there is some limited Media Load support for the DM3 IPLink products as well. They are as follows:

Media Load	Boards Supported
1 - Basic Voice*	DM/IP481-2T1-PCI-100BT DM/IP601-2E1-PCI-100BT
2 - Enhanced Voice	DM/IP241-1T1-PCI-100BT DM/IP301-1E1-PCI-100BT DM/IP481-2T1-cPCI-100BT DM/IP601-2E1-cPCI-100BT DM/IP601-cPCI-100BT

* Only PCM play/record should be used with this Media Load on these boards.

There are new PCD/FCD files for different media loads – a media load consists of Product Configuration Description (PCD) and Feature Configuration Description (FCD) files and associated firmware loads, which are downloaded to each DM3 board. The PCD/FCD files are customized by feature set as well as by protocol. The feature sets are available in different media loads as shown in the following table. In most cases, the PCD/FCD file names will indicate the associated media load and protocol, for example, ml2_qsa_4ess.pcd. A complete list of all PCD/FCD file names for all boards is given in the DM3 Protocol Support table. Here are descriptions of the media loads that are being supported in this release.

Installation and Configuration

Media Load	Description
1 Basic Voice	<ul style="list-style-type: none"> • Provides play, record • Provides digit generation (for DTMF and MF digits) • Provides digit detection (for DTMF only) • All half duplex voice operations • Supported Coders: <ul style="list-style-type: none"> • 64Kbps & 48Kbps G.711 PCM VOX and WAV • 24Kbps & 32Kbps OKI ADPCM VOX and WAV • 88/176Kbps Linear PCM VOX and WAV • Speed Control on 8KHz coders • Volume Control • GTG/GTD • dx_dial() can be used for call analysis (post connect only) • Transaction Record • All call control features when using a board with a network interface
1b 2-Way FSK	<ul style="list-style-type: none"> • Basic Voice (Media Load 1) plus ADSI/2-way FSK
2 Enhanced Voice	<ul style="list-style-type: none"> • Basic Voice (Media Load 1) plus: • CSP • Enhanced Coders: <ul style="list-style-type: none"> • G.726 at 32K • GSM (TIPHON and MS) • Silence Compressed Record: <ul style="list-style-type: none"> • G.711 • ADPCM • G.726
6 Ultra Voice	<ul style="list-style-type: none"> • Enhanced Voice (Media Load 2) and TrueSpeech coder
9b Conferencing Resource	<ul style="list-style-type: none"> • Conferencing only resource load. It is very much like a traditional DCB with added conferencing capabilities like Echo Cancellation. • Conferencing with Echo Cancellation and basic DTMF and basic tariff tone support. • Conferencing (up to 60 conferences per DCB DSP device) • No Voice channels • Adds 16 ms Echo Cancellation

System Release 5.1 for Linux Release Guide

Media Load	Description
10 Voice and Conferencing	<ul style="list-style-type: none"> Enhanced Voice (Media Load 2) plus Conference Resource: Conferencing and Voice devices are independent. This Media Load instantiates both enhanced voice devices as well as DCB DSP conferencing resources.

DM3 Product Configuration Table

The following table shows product configurations based on these media loads:

Board	Media Load					
	Basic Voice (1)	Two Way FSK (1b)	Enhanced Voice (2)	Ultra Voice (6)	Voice/ Conf (10)	Conf Resource (9b)
QuadSpan PCI/cPCI	120 E-1 96 T-1					
QuadSpan A PCI		120 E-1 96 T-1	120 E-1 96 T-1	120 E-1 96 T-1		120 Conf
QuadSpan A cPCI		120 E-1 96 T-1	120 E-1 96 T-1			120 Conf
DualSpan A PCI			60 E-1 48 T-1	60 E-1 48 T-1	60/60 E-1 48/60 T-1	
DualSpan A cPCI			60 E-1 48 T-1		60/60 E-1 48/60 T-1	
DM/V2400A PCI	240				60/60	120 Conf
DM/V2400A cPCI	240				120/60	120 Conf
IPLink DualSpan PCI	60 E-1 48 T-1					
IPLink SingleSpan PCI			30 E-1 24 T-1			
IPLink DualSpan cPCI			60 E-1 48 T-1			

DM3 Protocol Support

For information about using and configuring the DM3 GlobalCall resource protocols, see the *DM3 Configuration File Reference*.

Installation and Configuration

Below are listed the protocols and PCD files supported for each of the following products:

- DM3 Fax
- DM3 IPLink
- DM3 MediaSpan
- DM3 Voice, Fax and Network (VFN)
- High Density Station Interface (HDSI)

DM3 Fax

The table below shows the protocols on specific DM3 Fax boards and the corresponding PCD file that is downloaded to the board.

fn = used for fixed routing

fn3 = used for flexible routing

Model	Protocol	PCD File
DM/F240-PCI (and cPCI)		fax24
DM/F300-PCI (and cPCI)		fax30
DM/F240-1T1-PCI	Robbed bit	fn_t1 fn3_t1
	4ESS	fn_isdn_4ess fn3_isdn_4ess
	5ESS	fn_isdn_5ess fn3_isdn_5ess
	DMS	fn_isdn_dms fn3_isdn_dms
	NTT	fn_isdn_ntt fn3_isdn_ntt
	NI2	fn_isdn_ni2 fn3_isdn_ni2
	QSIG (T1)	fn_isdn_qsigt1 fn3_isdn_qsigt1
DM/F300-1E1-PCI	R2MF	fn_r2mf fn3_r2mf
	NET5	fn_isdn_net5 fn3_isdn_net5
	QSIG (E1)	fn_isdn_qsige1 fn3_isdn_qsige1

DM3 VFN

The table below shows the protocols on specific DM3 VFN boards and the corresponding PCD file that is downloaded to the board.

vfn = used for fixed routing

System Release 5.1 for Linux Release Guide

vfn3 = used for flexible routing

Model	Protocol	PCD File
DM/VF240-T1-PCI	Robbed bit	vfn_t1 vfn3_t1
	4ESS	vfn_isdn_4ess vfn3_isdn_4ess
	5ESS	vfn_isdn_5ess vfn3_isdn_5ess
	DMS	vfn_isdn_dms vfn3_isdn_dms
	NTT	vfn_isdn_ntt vfn3_isdn_ntt
	NI2	vfn_isdn_ni2 vfn3_isdn_ni2
	QSIG (T1)	vfn_isdn_qsig1 vfn3_isdn_qsig1
DM/VF300-E1-PCI	R2MF	vfn_r2mf vfn3_r2mf
	NET5	vfn_isdn_net5 vfn3_isdn_net5
	QSIG (E1)	vfn_isdn_qsige1 vfn3_isdn_qsige1

DM3 IPLink

DM3 IPLink PCD File Naming Convention

xxxx_yyy_#zzzzK_ttv_www

xxxx:

ipt = embedded call control, both signaling and media on board

ipvs = split call control, only media control on board

yyy:

evr = Exportable Voice Resources (Flexible Routing)

#zzzz:

- number of PSTN connections on product

zzzz - PSTN protocol supported by PSTN interface

K = configuration where PSTN is disabled and an off-board PSTN is used through the CT Bus

r = resource only

ttt:

DSP type on product:

Installation and Configuration

311

v:

Default of nothing is PCI, otherwise c = cPCI

www:

Example:

ipt_evr_cas_311 indicates:

- embedded call control, both signaling and media on board
- exportable voice resources
- CAS protocol supported by PSTN interface
- 311 DSP on product
- PCI form factor

The table below shows the protocols on specific IPLink boards and the corresponding PCD file that is downloaded to the board.

Model	Protocol	PCD File
DM/IP601-cPCI-100BT	Resource only	ipt_evr_r_311c ipvs_evr_r_311c
DM/IP241-1T1-PCI-100BT	4ESS	ipt_evr_isdn_4ess_311 ipvs_evr_isdn_4ess_311
	5ESS	ipt_evr_isdn_5ess_311 ipvs_evr_isdn_5ess_311
	DMS	ipt_evr_isdn_dms_311 ipvs_evr_isdn_dms_311
	NI2	ipt_evr_isdn_ni2_311 ipvs_evr_isdn_ni2_311
	NTT	ipt_evr_isdn_ntt_311 ipvs_evr_isdn_ntt_311
	QSIG (T1)	ipt_evr_isdn_qsig1_311 ipvs_evr_isdn_qsig1_311
	CAS	ipt_evr_cas_311 ipvs_evr_cas_311
	none	iptk_t1_311 ipvsk_t1_311
DM/IP301-1E1-PCI-100BT	NET5	ipt_evr_isdn_net5_311 ipvs_evr_isdn_net5_311
	QSIG (E1)	ipt_evr_isdn_qsig1_311 ipvs_evr_isdn_qsig1_311

System Release 5.1 for Linux Release Guide

Model	Protocol	PCD File
	R2MF	ipt_evr_r2mf_311 ipvs_evr_r2mf_311
	none	iptk_e1_311 ipvsk_e1_311
DM/IP481-2T1-PCI-100BT	4ESS	ipt_evr_2isdn_4ess_311 ipvs_evr_2isdn_4ess_311
	5ESS	ipt_evr_2isdn_5ess_311 ipvs_evr_2isdn_5ess_311
	DMS	ipt_evr_2isdn_dms_311 ipvs_evr_2isdn_dms_311
	NI2	ipt_evr_2isdn_ni2_311 ipvs_evr_2isdn_ni2_311
	NTT	ipt_evr_2isdn_ntt_311 ipvs_evr_2isdn_ntt_311
	QSIG (T1)	ipt_evr_2isdn_qsigt1_311 ipvs_evr_2isdn_qsigt1_311
	CAS	ipt_evr_2cas_311 ipvs_evr_2cas_311
DM/IP481-2T1-cPCI-100BT	4ESS	ipt_evr_2isdn_4ess_311c ipvs_evr_2isdn_4ess_311c
	5ESS	ipt_evr_2isdn_5ess_311c ipvs_evr_2isdn_5ess_311c
	DMS	ipt_evr_2isdn_dms_311c ipvs_evr_2isdn_dms_311c
	NI2	ipt_evr_2isdn_ni2_311c ipvs_evr_2isdn_ni2_311c
	NTT	ipt_evr_2isdn_ntt_311c ipvs_evr_2isdn_ntt_311c
	QSIG (T1)	ipt_evr_2isdn_qsigt1_311c ipvs_evr_2isdn_qsigt1_311c
	CAS	ipt_evr_2cas_311c ipvs_evr_2cas_311c
DM/IP601-2E1-PCI-100BT	NET5	ipt_evr_2isdn_net5_311 ipvs_evr_2isdn_net5_311
	QSIG (E1)	ipt_evr_2isdn_qsige1_311 ipvs_evr_2isdn_qsige1_311
	R2MF	ipt_evr_2r2mf_311 ipvs_evr_2r2mf_311
DM/IP601-2E1-cPCI-100BT	NET5	ipt_evr_2isdn_net5_311c ipvs_evr_2isdn_net5_311c
	QSIG (E1)	ipt_evr_2isdn_qsige1_311c ipvs_evr_2isdn_qsige1_311c

Installation and Configuration

Model	Protocol	PCD File
	R2MF	ipt_evr_2r2mf_311c ipvs_evr_2r2mf_311c

DM3 MediaSpan

The table below shows the protocols available to specific DualSpan and QuadSpan boards and the corresponding PCD files that should be downloaded to the board.

NOTE: See the section on DM3 Media Loads for what features are supported by each Media Load. Also, only those beginning with *mlx* support flexible routing, the others (e.g., *qs2*) use fixed routing.

QuadSpan Series A Voice Boards

Model	Protocol	PCD File
DM/V960A-4T1-PCI	4ESS	ml2_qsa_4ess ml6_qsa_4ess ml1b_qsa_4ess
	5ESS	ml2_qsa_5ess ml6_qsa_5ess ml1b_qsa_5ess
	DMS	ml2_qsa_dms ml6_qsa_dms ml1b_qsa_dms
	QSIG (T1)	ml2_qsa_qsigt1 ml6_qsa_qsigt1 ml1b_qsa_qsigt1
	NTT	ml2_qsa_ntt ml6_qsa_ntt ml1b_qsa_ntt
	NI2	ml2_qsa_ni2 ml6_qsa_ni2 ml1b_qsa_ni2
	CAS	ml2_qsa_t1 ml6_qsa_t1 ml1b_qsa_t1
	Conference resource load	ml9b_qsa_t1
DM/V1200A-4E1-PCI	R2MF	ml2_qsa_r2mf ml6_qsa_r2mf ml1b_qsa_r2mf
	QSIG (E1)	ml2_qsa_qsige1 ml6_qsa_qsige1 ml1b_qsa_qsige1

System Release 5.1 for Linux Release Guide

Model	Protocol	PCD File
	NET5	ml2_qsa_net5 ml6_qsa_net5 ml1b_qsa_net5
	Conference resource load	ml9b_qsa_e1
	Clear Channel	ml2_qsa_ts16
DM/V960A-4T1-cPCI	4ESS	ml2_qs2_4ess qs2_isdn_4ess ml1b_qs2_4ess
	5ESS	ml2_qs2_5ess qs2_isdn_5ess ml1b_qs2_5ess
	DMS	ml2_qs2_dms qs2_isdn_dms ml1b_qs2_dms
	QSIG (T1)	ml2_qs2_qsig1 qs2_isdn_qsig1 ml1b_qs2_qsig1
	NTT	ml2_qs2_ntt qs2_isdn_ntt ml1b_qs2_ntt
	NI2	ml2_qs2_ni2 qs2_isdn_ni2 ml1b_qs2_ni2
	CAS	ml2_qs2_t1 qs2_t1 ml1b_qs2_t1
	Conference resource load	ml9b_qs2_t1
DM/V1200A-4E1-cPCI	R2MF	ml2_qs2_r2mf qs2_r2mf ml1b_qs2_r2mf
	QSIG (E1)	ml2_qs2_qsige1 qs2_isdn_qsige1 ml1b_qs2_qsige1
	NET5	ml2_qs2_net5 qs2_isdn_net5 ml1b_qs2_net5
	Conference resource load	ml9b_qs2_e1
	Clear Channel	ml2_qs2_ts16

Installation and Configuration

DualSpan Series A Voice Boards

Model	Protocol	PCD File
DM/V480A-2T1-PCI	4ESS	ml2_dsa_4ess ml6_dsa_4ess ml10_dsa_4ess
	5ESS	ml2_dsa_5ess ml6_dsa_5ess ml10_dsa_5ess
	DMS	ml2_dsa_dms ml6_dsa_dms ml10_dsa_dms
	QSIG (T1)	ml2_dsa_qsigt1 ml6_dsa_qsigt1 ml10_dsa_qsigt1
	NTT	ml2_dsa_ntt ml6_dsa_ntt ml10_dsa_ntt
	NI2	ml2_dsa_ni2 ml6_dsa_ni2 ml10_dsa_ni2
	CAS	ml2_dsa_t1 ml6_dsa_t1 ml10_dsa_t1
DM/V600A-2E1-PCI	R2MF	ml2_dsa_r2mf ml6_dsa_r2mf ml10_dsa_r2mf
	QSIG (E1)	ml2_dsa_qsige1 ml6_dsa_qsige1 ml10_dsa_qsige1
	NET5	ml2_dsa_net5 ml6_dsa_net5 ml10_dsa_net5
	Clear Channel	ml2_dsa_ts16
DMV/V480A-2T1-cPCI	4ESS	ml2_ds2_4ess ml10_ds2_4ess
	5ESS	ml2_ds2_5ess ml10_ds2_5ess
	DMS	ml2_ds2_dms ml10_ds2_dms
	QSIG (T1)	ml2_ds2_qsigt1 ml10_ds2_qsigt1
	NTT	ml2_ds2_ntt ml10_ds2_ntt

System Release 5.1 for Linux Release Guide

Model	Protocol	PCD File
	NI2	ml2_ds2_ni2 ml10_ds2_ni2
	CAS	ml2_ds2_t1 ml10_ds2_t1
DM/V600A-2E1-cPCI	R2MF	ml2_ds2_r2mf ml10_ds2_r2mf
	QSIG (E1)	ml2_ds2_qsige1 ml10_ds2_qsige1
	NET5	ml2_ds2_net5 ml10_ds2_net5
	Clear Channel	ml2_ds2_ts16

QuadSpan Voice Boards

Model	Protocol	PCD File
DM/V480-4T1-PCI DM/V480-4T1-cPCI	4ESS	4x2_isdn_4ess ml1_4x2_4ess
	5ESS	4x2_isdn_5ess ml1_4x2_5ess
	DMS	4x2_isdn_dms ml1_4x2_dms
	QSIG (T1)	4x2_isdn_qsigt1 ml1_4x2_qsigt1
	NTT	4x2_isdn_ntt ml1_4x2_ntt
	NI2	4x2_isdn_ni2 ml1_4x2_ni2
	CAS	4x2_t1 ml1_4x2_t1
DM/V600-4E1-PCI DM/V600-4E1-cPCI	R2MF	4x2_r2mf ml1_4x2_r2mf
	QSIG (E1)	4x2_isdn_qsige1 ml1_4x2_qsige1
	NET5	4x2_isdn_net5 ml1_4x2_net5
DM/V960-4T1-PCI DM/V960-4T1-cPCI	4ESS	qs_isdn_4ess ml1_qs_4ess
	5ESS	qs_isdn_5ess ml1_qs_5ess
	DMS	qs_isdn_dms ml1_qs_dms
	QSIG (T1)	qs_isdn_qsigt1 ml1_qs_qsigt1

Installation and Configuration

Model	Protocol	PCD File
	NTT	qs_isdn_ntt ml1_qs_ntt
	NI2	qs_isdn_ni2 ml1_qs_ni2
	CAS	qs_t1 ml1_qs_t1
DM/V1200-4E1-PCI DM/V1200-4E1-cPCI	R2MF	qs_r2mf ml1_qs_4ess
	QSIG (E1)	qs_isdn_qsige1 ml1_qs_qsige1
	NET5	qs_isdn_net5 ml1_qs_net5
	Clear Channel	ml1_qs_ts16

QuadSpan DTI Boards (with Tone Processing)

Model	Protocol	PCD File
DM/T960-4T1-PCI DM/T960-4T1-cPCI	4ESS	4xt_isdn_4ess mn_4xt_4ess
	5ESS	4xt_isdn_5ess mn_4xt_5ess
	DMS	4xt_isdn_dms mn_4xt_dms
	QSIG (T1)	4xt_isdn_qsigt1 mn_4xt_qsigt1
	NTT	4xt_isdn_ntt mn_4xt_ntt
	NI2	4xt_isdn_ni2 mn_4xt_ni2
	CAS	4xt_t1 mn_4xt_t1
DM/T1200-4E1-PCI DM/T1200-4E1-cPCI	R2MF	4xt_r2mf mn_4xt_r2mf
	QSIG (E1)	4xt_isdn_qsige1 mn_4xt_qsige1
	NET5	4xt_isdn_net5 mn_4xt_net5

QuadSpan DTI Boards (without Tone Processing)

Model	Protocol	PCD File
DM/N960-4T1-PCI DM/N960-4T1-cPCI	4ESS	4x0_isdn_4ess
	5ESS	4x0_isdn_5ess
	DMS	4x0_isdn_dms

System Release 5.1 for Linux Release Guide

Model	Protocol	PCD File
	QSIG (T1)	4x0_isdn_qsig1
	NTT	4x0_isdn_ntt
	NI2	4x0_isdn_ni2
DM/N1200-4E1-PCI DM/N1200-4E1-cPCI	QSIG (E1)	4x0_isdn_qsig1
	NET5	4x0_isdn_net5

QuadSpan Resource Only Boards

Model	Protocol	PCD File
DM/V2400A-PCI	N/A	ml1_pcires ml9b_pcires ml10_pcires
DM/V2400A-cPCI	N/A	ml1_cpcires ml9b_cpcires ml10_cpcires

NOTE: Limitations exist with the DM/V2400 product that application developers need to be aware of. For complete information, refer to the support website:
<http://support.dialogic.com/releases/unix51/linux51>

High Density Station Interface (HDSI)

Since HDSI does not have a PSTN interface, there are no protocols such as T1 CAS. The table is for the hardware characteristics of telephones from different countries. Refer to the MSI Boards Country Specific Parameter File table below for the country codes.

Model	Protocol	PCD File
DM/V1200-4E1	T1(CAS)	(country)_hdsi
DM/V1200-4E1	T1(CAS)	(country)_hdsi_96_play_rec

DSP-Based Fax

In order to enable DSP-based Fax boards that are not pre-enabled, you must download special firmware files. Please look at the following sections found in the Master Features section for the following information:

- The Firmware Load Support for SpringWare Table for specific instructions regarding firmware files.
- The SpringWare Support Table for details on what boards support DSP-based Fax.
- R4 Fax Features/DSP-Based Fax section for information about channel support.

MSI Boards Country Specific Parameter Files

Dialogic System Software allows you to configure MSI/SC-Global and MSI/PCI-Global boards to comply with country-specific settings for telephone line impedance and gain control.

MSI-Global country-specific parameter files follow an xx_msg.prm naming convention, where xx is the two-letter ISO country code.

***NOTE:** Although the ISO Codes below are listed in upper case, please keep in mind that Linux is case sensitive. Therefore, be sure to enter these codes in lower case when specifying a parameter file..*

Below are the ISO country codes. Those marked with an “*” are supported in this release:

Country	ISO Code
Afghanistan	AF
Albania	AL
Algeria	DZ
American Samoa	AS
Andorra	AD
Angola	AO
Anguilla	AI
Antarctica	AQ
Antigua and Barbuda	AG
Argentina	AR
Armenia	AM
Aruba	AW
Australia*	AU
Austria*	AT
Azerbaijan	AZ
Bahamas	BS
Bahrain	BH
Bangladesh	BD
Barbados	BB
Belarus	BY
Belgium*	BE
Belize	BZ

System Release 5.1 for Linux Release Guide

Benin	BJ
Bermuda	BM
Bhutan	BT
Bolivia	BO
Bosnia and Herzegovina	BA
Botswana	BW
Bouvet Island	BV
Brazil	BR
British Indian Ocean Territory	IO
Brunei darussalam	BN
Bulgaria	BG
Burkina Faso	BF
Burundi	BI
Cambodia	KH
Cameroon	CM
Canada	CA
Cape Verde	CV
Cayman Islands	KY
Central African Republic	CF
Chad	TD
Chile	CL
China	CN
Christmas Islands	CX
Cocos (Keeling) Islands	CC
Colombia	CO
Comoros	KM
Congo	CG
Cook Islands	CK
Costa Rica	CR
Croatia	HR
Cuba	CU
Cyprus	CY
Czech Republic	CZ
Denmark*	DK
Djibouti	DJ

Installation and Configuration

Dominica	DM
Dominican Republic	DO
East Timor	TP
Ecuador	EC
Egypt	EG
El Salvador	SV
Equatorial Guinea	GQ
Eritrea	ER
Estonia	EE
Ethiopia	ET
Falkland Islands (Malvinas)	FK
Faroe Islands	FO
Fiji	FJ
Finland	FI
France*	FR
France, Metropolitan	FX
French Guiana	GF
French Polynesia	PF
French Southern Territories	TF
Gabon	GA
Gambia	GM
Georgia	GE
Germany*	DE
Ghana	GH
Gibraltar	GI
Greece	GR
Greenland	GL
Grenada	GD
Guadeloupe	GP
Guam	GU
Guatemala	GT
Guinea	GN
Guinea-Bissau	GW
Guyana	GY
Haiti	HT

System Release 5.1 for Linux Release Guide

Heard Island and Mc Donald Islands	HM
Honduras	HN
Hong Kong*	HK
Hungary	HU
Iceland	IS
India	IN
Indonesia	ID
Iran (Islamic republic of)	IR
Iraq	IQ
Ireland*	IE
Israel	IL
Italy*	IT
Ivory Coast	CI
Jamaica	JM
Japan*	JP
Jordan	JO
Kazakhstan	KZ
Kenya	KE
Kiribati	KI
Korea, Democratic people's Republic of	KP
Korea, Republic of	KR
Kuwait	KW
Kyrgyzstan	KG
Lao people's democratic republic	LA
Latvia	LV
Lebanon	LB
Lesotho	LS
Liberia	LR
Libyan Arab Jamahiriya	LY
Liechtenstein	LI
Lithuania	LT
Luxembourg*	LU
Macau	MO
Madagascar	MG
Malawi	MW

Installation and Configuration

Malaysia*	MY
Maldives	MV
Mali	ML
Malta	MT
Marshall islands	MH
Martinique	MQ
Mauritania	MR
Mauritius	MU
Mayotte	YT
Mexico*	MX
Micronesia (Federated States of)	FM
Moldava, Republic of	MD
Monaco	MC
Mongolia	MN
Montserrat	MS
Morocco	MA
Mozambique	MZ
Myanmar	MM
Namibia	NA
Nauru	NR
Nepal	NP
Netherlands*	NL
Netherlands Antilles	AN
New Caledonia	NC
New Zealand*	NZ
Nicaragua	NI
Niger	NE
Nigeria	NG
Niue	NU
Norfolk Islands	NF
Northern Mariana Islands	MP
Norway*	NO
Oman	OM
Pakistan	PK
Palau	PW

System Release 5.1 for Linux Release Guide

Panama	PA
Papua New Guinea	PG
Paraguay	PY
Peru	PE
Philippines	PH
Pitcairn	PN
Poland	PL
Portugal*	PT
Puerto Rico	PR
Qatar	QA
Reunion	RE
Romania	RO
Russia Federation	RU
Rwanda	RW
Saint Helena	SH
Saint Kitts and Nevis	KN
Saint Lucia	LC
Saint Pierre et Miquelon	PM
Saint Vincent and the Grenadines	VC
Samoa	WS
San Marino	SM
Sao Tome and Principe	ST
Saudi Arabia	SA
Senegal	SN
Seychelles	SC
Sierra Leone	SL
Singapore*	SG
Slovakia	SK
Slovenia	SI
Solomon Islands	SB
Somalia	SO
South Africa*	ZA
South Georgia and the South Sandwich Islands	GS
Spain*	ES

Installation and Configuration

Sri Lanka	LK
Sudan	SD
Suriname	SR
Svalbard and Jan Mayen	SJ
Swaziland	SZ
Sweden	SE
Switzerland*	CH
Syria Arab Republic	SY
Taiwan, Province of China	TW
Tajikistan	TJ
Tanzania, United Republic Of	TZ
Thailand	TH
Togo	TG
Tokelau	TK
Tonga	TO
Trinidad and Tobago	TT
Tunisia	TN
Turkey	TR
Turkmenistan	TM
Turks and Caicos Islands	TC
Tuvalu	TV
Uganda	UG
Ukraine	UA
United Arab Emirates	AE
United Kingdom*	GB
United States*	US
United States Minor Outlying Islands	UM
Uruguay	UY
Uzbekistan	UZ
Vanuatu	VU
Vatican City State (Holy See)	VA
Venezuela	VE
Viet nam	VN
Virgin Islands (British)	VG
Virgin Islands (U.S.)	VI

System Release 5.1 for Linux Release Guide

Wallis and Futuna Islands	WF
Western Sahara	EH
Yemen	YE
Yugoslavia	YU
Zaire	ZR
Zambia	ZM
Zimbabwe	ZW

DM3 ISDN NFAS

Non-Facility-Associated Signaling (NFAS) uses a single ISDN PRI D channel to provide signaling and control for up to 10 ISDN PRI lines. Normally, on an ISDN PRI line, one D channel is used for signaling and 23 B channels (bearer channels) are used for transferring information. In an NFAS configuration, therefore, one D channel can support the signaling and control for up to 239 B channels. The trunk that provides the signaling is called the primary D channel. The trunks that use all 24 channels as B channels are called NFAS trunks.

See the *DM3 Configuration File Reference* for detailed configuration information.

Release Documentation

All the documentation referenced in this Release Guide can be ordered through Dialogic Software Distribution. You can also view or print from the Adobe ® PDF files or view the HTML versions supplied with this system release.

System Release 5.1 for Linux provides documentation in the following categories:

- System Release Software Documentation
- Administrative Software Documentation
- Development Software Documentation
- Diagnostic and Utilities Software Documentation

NOTE 1: An asterisk (*) next to a document title indicates that the document has been updated since the last release.

NOTE 2: We are moving our documentation to a new Intel format. During this transition period, some documents will be in the new format, while others will remain in the old format. For example, in this release, the Continuous Speech Processing (CSP) documents are in the new Intel format. When the transition period is completed in subsequent releases, all documents will be in the new Intel format.

System Release Software Documentation

The following system release documentation is provided with this release:

- *Fixed PTR History List (05-1741-001)* - available online only.*
- *System Release 5.1 for Linux Release Guide (05-1672-001)**
- *System Release 5.1 for Linux Release Update (05-1673-001)* - available online only.*
- *System Release 5.1 for Linux Software Installation Guide (05-1420-002)**

Administrative Software Documentation

The following administrative software documentation is provided with this release:

- *Using BoardWatch for Linux (05-1740-001)**
- *DM3 Configuration File Reference (05-1272-003)**

Development Software Documentation

The following development software documentation is provided with this release:

Digital Network Interface (R4)

- *Digital Network Interface Software Reference (05-1313-003)**

DM3 IPLink

- *DM3 IPLink User's Guide for Linux (05-1179-003)**
- *IPT Media Gateway Demo User's Guide (05-1662-001)**
- *IP Media Software Reference (05-1594-001)**

GlobalCall

- *GlobalCall Analog Technology User's Guide (05-1041-005)**
- *GlobalCall API Software Reference Guide (05-0387-008)**
- *GlobalCall Application Developer's Guide (05-1526-002)**
- *GlobalCall DPNSS ISDN Protocol Reference (05-1317-003)*
- *GlobalCall E-1/T-1 Technology User's Guide (05-0615-008)**
- *GlobalCall IP Technology User's Guide (05-1512-001)**
- *GlobalCall ISDN Technology User's Guide (05-0653-006)**

PBX Integration

- *PBX Integration Software Reference (05-1278-005)**
- *PBX Integration User's Guide (05-1277-004)**

R4 Conferencing

- *MSI/SC Software Reference (05-1218-004)**
- *Dialogic Audio Conferencing Software Reference for Linux (05-0512-004)**

R4 Fax

- *Fax Software Reference for Linux (05-0036-011)**

R4 ISDN

- *ISDN Software Reference (05-0867-005)**

R4 on DM3

- *Compatibility Guide for the Dialogic R4 API on DM3 Products for Linux (05-1237-010)**

Routing

- *SCbus Routing Software Reference for Linux (05-0313-004)**
- *SCbus Routing Guide (05-0289-007)**

Speech

- *CSP API for Linux and Windows Programming Guide (05-1699-001)**
- *CSP API for Linux and Windows Library Reference (05-1700-001)**
- *CSP for Linux and Windows Demo Guide (05-1701-001)**

Voice

- *Voice Software Reference: Features Guide for Linux (05-1454-003)**
- *Voice Software Reference: Programmer's Guide for Linux (05-1453-002)**
- *Voice Software Reference: Standard Runtime Library for Linux (05-1455-002)**

Diagnostic and Utilities Software Documentation

The following diagnostics and utilities software is provided in System Release 5.1 for *Linux*:

- *Dialogic Universal Hardware Diagnostics Guide (05-1089-003)*
- *DM3 Diagnostic Utilities Reference Guide (05-1484-004)**

Master Feature List

The features previously enabled for the Linux operating system and still supported in this release, are organized into the following categories:

- Administrative Software Features
- Hardware Product Features
- Development Software Features
- Diagnostic Utilities, Remote Administration and Sample Program Features

Administrative Software Features

Licensing for SpringWare Products

Although many of our SpringWare products were pre-enabled (e.g., DSP-based Fax and Continuous Speech Processing), some of the older boards may need to be enabled through our licensing facility. In those cases, please refer to the Dialogic Technical Support website at <http://support.dialogic.com> for specific information.

Hardware Product Features

The previous release of Linux software only supported SpringWare boards. The following tables show how these SpringWare boards support various software features and firmware loads.

SpringWare Support Table

Board(s)	Network Interface (1)	CSP	Basic DSP Fax (2)	Enhanced DSP Fax (3)
VFX/41JCT-LS	LS-4	CSP-4	(4)	SFE-4
	LS-4	CSP-4	SF-4	N/A
D/41JCT-LS	LS-4	CSP-4	SF-0	N/A
	LS-4	CSP-0	SF-4	N/A
D/42JCT-U	PBX-4	CSP-0	SF-2	N/A

Master Feature List

Board(s)	Network Interface (1)	CSP	Basic DSP Fax (2)	Enhanced DSP Fax (3)
	PBX-4	CSP-2	SF-0	N/A
D/82JCT-U	PBX-8	CSP-8	SF-0	N/A
	PBX-8	CSP-0	SF-2	N/A
D/120JCT-LS	LS-12	CSP-12	SF-0	N/A
	LS-12	CSP-0	SF-4	N/A
D/240JCT-T1	ISDN-24	CSP-0	SF-0	N/A
	CAS-24 (ISDN-0)	CSP-24	SF-0	N/A
	CAS-24 (ISDN-0)	CSP-0	SF-4	N/A
D/300JCT-E1	ISDN-30	CSP-0	SF-0	N/A
	CAS-30 (ISDN-0)	CSP-0	SF-0	N/A
	CAS-30 (ISDN-0)	CSP-0	SF-4	N/A
D/480JCT-2T1	ISDN-48	CSP-0	SF-0	N/A
D/480JCT-2T1	CAS-48 (ISDN-0)	CSP-48	SF-0	N/A
D/480JCT-2T1 D/480JCT-T1	ISDN-24	CSP-0	SF-4	N/A
D/480JCT-2T1 D/480JCT-T1	ISDN-24	CSP-24	SF-0	N/A
D/480JCT-2T1 D/480JCT-T1	CAS-48 (ISDN-0)	CSP-0	SF-8	N/A
D/600JCT-2E1	ISDN-60	CSP-0	SF-0	N/A
D/600JCT-2E1	CAS-60 (ISDN-0)	CSP-0	SF-8	N/A
D/600JCT-2E1 D/600JCT-E1	ISDN-30	CSP-0	SF-4	N/A
D/600JCT-2E1 D/600JCT-E1	ISDN-30	CSP-30	SF-0	N/A

System Release 5.1 for Linux Release Guide

Board(s)	Network Interface (1)	CSP	Basic DSP Fax (2)	Enhanced DSP Fax (3)
D/600JCT-E1	CAS-30 (ISDN-0)	CSP-0	SF-8	N/A
<p>1. The following acronyms are used in this column:</p> <p>LS – analog loop start interface (this includes –EURO and JP models)</p> <p>PBX – PBX proprietary digital interface</p> <p>ISDN – primary rate ISDN interface protocols (see SpringWare PRI Protocol Support found later in this section)</p> <p>CAS – CAS protocols (requiring DSP resources for signaling)</p> <p>2. DSP Fax and CSP can be mixed and matched on the VFX/41JCT-LS and D/41JCT-LS boards. They are not mutually exclusive as they are on all other SpringWare boards.</p> <p>3. Enhanced DSP Fax includes 14.4 kbps send/receive, ECM and MMR support.</p> <p>4. Basic DSP Fax is included with Enhanced DSP Fax.</p>				

NOTE: The D/480JCT-T1 and D/600JCT-E1 are intended to support an ISDN firmware load on one span and a CSP firmware load on the other span. This gives the user a full span of ISDN interface with a full compliment of CSP.

Firmware Load Support for SpringWare

Analog and PBX Integration JCT Boards

FIRMWARE LOAD (.FWL)	D/41JCT-LS	VFX/41JCT-LS	D/120JCT-LS	D/42JCT-U	D/82JCT-U
Default	4 channels of voice or DSP-based fax	4 channels of voice or Enhanced DSP-based fax	12 channels of voice	4 digital interfaces to a PBX; 2 of these channels may be used for DSP-based fax	8 digital interfaces to a PBX; 2 of these channels may be used for DSP-based fax
d41jcsp	4 channels of voice or DSP-based fax; Board-wide CSP	4 channels of voice or DSP-based fax; Board-wide CSP	N/A	N/A	N/A

Master Feature List

FIRMWARE LOAD (.FWL)	D/41JCT-LS	VFX/41JCT-LS	D/120JCT-LS	D/42JCT-U	D/82JCT-U
	functionality	functionality			
d42ucsp	N/A	N/A	N/A	4 digital interfaces to a PBX; Board-wide CSP functionality	N/A
d82ucsp	N/A	N/A	12 channels of voice and CSP	N/A	8 digital interfaces to a PBX; Board-wide CSP functionality
d120csp	N/A	N/A	4 channels of DSP-based fax; Voice functionality can be used on the remaining channels	N/A	N/A

Analog and PBX Integration JCT Boards (Continued)

FIRMWARE LOAD (.FWL)	D/240JCT-T1	D/300JCT-E1
Default	24 channels of voice and CAS signaling	30 channels of voice and CAS signaling
spcsp	24 channels of voice and CAS signaling with CSP functionality	N/A
spfax	4 channels of DSP-based fax; Voice functionality can be used on the remaining channels	4 channels of DSP-based fax; Voice functionality can be used on the remaining channels

DualSpan JCT Boards

	Firmware Load (.FWL) for Span #1	
Firmware Load (.FWL) for Span #2	spcsp	ISDN Firmware
spcsp	48 channels of voice and CAS signaling with CSP functionality	23B+D ISDN channels with voice processing 24 channels of CSP functionality
spe1csp	N/A	30B+D ISDN channels with voice processing 30 channels of CSP functionality
ISDN Firmware	23B+D ISDN channels with voice processing 24 channels of CSP functionality	2 spans of ISDN functionality (channel numbers vary depending on protocol)

NOTE 1: The *spcsp.fwl* file can only be used with T1 boards; the *spe1csp.fwl* can only be used with E1 boards.

NOTE 2: The *spfax.fwl* is also supported on the DualSpan boards. As with the single span boards, loading this firmware file will yield 4 fax channels per span.

SpringWare Support for Major Voice Features and Network Interfaces

The table below shows the SpringWare products that support major voice features and include onboard network interfaces:

Product	Voice	Call Progress	Tone	Network Interface
D/80SC	Y	Y	Y	-
D/120JCT-LS	Y	Y	Y	Y
D/160SC	Y	Y	Y	-
D/240SC	Y	Y	Y	-
D/320SC	Y	Y	Y	-
D/160SC-LS	Y	Y	Y	Y

Master Feature List

Product	Voice	Call Progress	Tone	Network Interface
D/240SC-T1	Y	Y	Y	Y
D/240PCI-T1	Y	Y	Y	Y
D/240JCT-T1	Y	Y	Y	Y
D/300SC-E1	Y	Y	Y	Y
D/300PCI-E1	Y	Y	Y	Y
D/300JCT-E1	Y	Y	Y	Y
DTI/240SC	-	-	-	Y
DTI/300SC	-	-	-	Y
LSI/81SC	-	Y	Y	Y
LSI/161SC	-	Y	Y	Y
DTI/241SC	-	Y	Y	Y
DTI/301SC	-	Y	Y	Y
D/240SC-2T1	Y	Y	Y	Y
D/480SC-2T1	Y	Y	Y	Y
D/480JCT-2T1	Y	Y	Y	Y
D/300SC-2E1	Y	Y	Y	Y
D/600SC-2E1	Y	Y	Y	Y
D/600JCT-2E1	Y	Y	Y	Y
DTI/480SC	-	-	-	Y
DTI/600SC	-	-	-	Y
D/320SC-IDPD	Y	Y	Y	-
D/240SC-T1-IDPD	Y	Y	Y	Y
D/300SC-E1-IDPD	Y	Y	Y	Y
D/160SC-LS-IDPD	Y	Y	Y	Y

Global DPD boards have an -IDPD suffix. Throughout the documentation in this release, these boards are generally referred to by their generic designation without the -IDPD suffix

DM3 Support for Major Voice Features and Network Interfaces

The table below shows the DM3 products that support major voice features and include onboard network interfaces:

System Release 5.1 for Linux Release Guide

Board	Voice	Call Progress	Tone	Network Interface
DM/F240-PCI				
DM/F240-cPCI				
DM/F240-1T1-PCI		Y	Y	Y
DM/F300-PCI				
DM/F300-cPCI				
DM/F300-1E1-PCI		Y	Y	Y
DM/VF240-1T1-PCI	Y	Y	Y	Y
DM/VF300-1E1-PCI	Y	Y	Y	Y
DM/IP241-1T1-PCI-100BT	Y	Y	Y	
DM/IP301-1E1-PCI-100BT	Y	Y	Y	
DM/IP481-2T1-PCI-100BT	Y	Y	Y	
DM/IP601-2E1-PCI-100BT	Y	Y	Y	
DM/IP481-2T1-cPCI-100BT	Y	Y	Y	
DM/IP601-2E1-cPCI-100BT	Y	Y	Y	
DM/IP601-cPCI-100BT	Y		Y	
DM/N960-4T1-PCI				Y
DM/N960-4T1-cPCI				Y
DM/N1200-4E1-PCI				Y
DM/N1200-4E1-cPCI				Y
DM/T960-4T1-PCI		Y	Y	Y
DM/T960-4T1-cPCI		Y	Y	Y
DM/T1200-4E1-PCI		Y	Y	Y
DM/T1200-4E1-cPCI		Y	Y	Y
DM/V480-4T1-PCI	Y	Y	Y	Y
DM/V480-4T1-cPCI	Y	Y	Y	Y
DM/V600-4E1-cPCI	Y	Y	Y	Y
DM/V600-4E1-PCI	Y	Y	Y	Y
DM/V960-4T1-PCI	Y	Y	Y	Y
DM/V960-4T1-cPCI	Y	Y	Y	Y
DM/V1200-4E1-PCI	Y	Y	Y	Y

Master Feature List

DM/V1200-4E1-cPCI	Y	Y	Y	Y
DM/V480A-2T1-PCI	Y	Y	Y	Y
DM/V480A-2T1-cPCI	Y	Y	Y	Y
DM/V600A-2E-PCI	Y	Y	Y	Y
DM/V600A-2E1-cPCI	Y	Y	Y	Y
DM/V960A-4T1-PCI	Y	Y	Y	Y
DM/V960A-4T1-cPCI	Y	Y	Y	Y
DM/V1200A-4E1-PCI	Y	Y	Y	Y
DM/V1200A-4E1-cPCI	Y	Y	Y	Y
DM/V2400A-PCI	Y	Y	Y	Y
DM/V2400A-cPCI	Y	Y	Y	Y

SpringWare and DM3 Hardware Interoperability

The table below shows which SpringWare products have been tested and are known to work with a DM3 product family.

Board	DM3 IPLink	DM3 MediaSpan	DM3 Fax
D/4-PCI			
D/80SC	YES	YES	
D/80PCI	YES	YES	YES
D/160SC	YES		
D/160SC-HS	YES		
D/240SC	YES	YES	YES
D/320SC	YES	YES	YES
D/320PCI	YES	YES	YES
D/320SC-IDPD			
D/640SC	YES		YES
D/21E			
D/41ESC	YES	YES	YES
D/41EPCI	YES		
D/41H			
D/41JCT-LS			
DCB/320SC	YES	YES	YES

System Release 5.1 for Linux Release Guide

Board	DM3 IPLink	DM3 MediaSpan	DM3 Fax
DCB/640SC	YES		YES
DCB/960SC	YES		
MSI/80SC-Global			
MSI/160SC-Global			YES
MSI/240SC-Global			YES
MSI/80PCI-Global			
MSI/160PCI-Global			
HDSI/PCI			
HDSI/cPCI			
PC-CS6			
VFX/40ESC plus	YES	YES	
VFX/40PCI	YES		
VFX/41JCT-LS			
DTI/240SC			
DTI/241SC	YES		YES
DTI/480SC	YES	YES	YES
DTI/481SC	YES	YES	YES
DTI/300SC	YES	YES	YES
DTI/301SC	YES	YES	YES
DTI/600SC	YES	YES	YES
DTI/601SC	YES	YES	YES
LSI/81SC	YES		
LSI/161SC	YES		
D/240SC-T1	YES		YES
D/240SC-T1-IDPD			
D/240SC-2T1			
D/480SC-2T1	YES	YES	
D/240PCI-T1	YES	YES	
D/240JCT-T1			YES
D/300SC-E1	YES	YES	
D/300SC-E1-IDPD			

Master Feature List

Board	DM3 IPLink	DM3 MediaSpan	DM3 Fax
D/300SC-2E1	YES		
D/600SC-2E1	YES		YES
D/300PCI-E1	YES		
D/300JCT-E1	YES	YES	YES
D/480JCT-2T1			
D/600JCT-2E1			
D/80SC-4LS			
D/160SC-8LS			
D/160SC-LS	YES	YES	YES
D/160SC-LS-IDPD			
D/120JCT-LS	YES	YES	YES
BRI/80SC			
BRI/160SC			
BRI/80PCI	YES	YES	YES
BRI/160PCI		YES	
D/42JCT-U			
D/82JCT-U			
SCX160			
Antares 3000/60-PCI	YES	YES	YES

DM3 Hardware Interoperability

Since testing was still going on at the time this guide was finalized, please look in the *Release Update* accompanying this release for this information..

Development Software Features

The following categories of software features were provided previously and are still supported in this release:

- GlobalCall features
- PBX Integration features
- Routing features
- R4 Conferencing features

System Release 5.1 for Linux Release Guide

- R4 Fax features
- R4 ISDN features
- R4 Network Interface support
- Signaling features
- Speech features
- System features
- Voice features

GlobalCall Features

NOTE: Refer to the *GlobalCall API Software Reference* for additional information.

- Detected Call State (supported in PDKRT only) provides first notification of incoming call while digits are still being collected.
- Call Analysis, Call Progress for PDKRT and ANAPI
- The GlobalCall API supports the following signaling systems:
 - E-1 CAS
 - T-1 Robbed Bit
 - E-1 and T-1 ISDN
 - Analog

GlobalCall Protocols

- ICAPI (E-1 CAS and T-1 robbed bit protocols)
- ANAPI
- Call Analysis, Call Progress for ANAPI, ICAPI, and PDKRT

NOTE: ICAPI, Analog and PDKRT protocols are separately orderable. The *GlobalCall CDP Reference for PDK Protocols* is also found on the *GlobalCall Protocols CD-ROM*.

- ISDN

All ANAPI, ICAPI, and PDKRT protocols are configurable using GlobalCall CDP (Country-Dependent Parameters) files. In addition, PDKRT protocol site-specific configuration can be set using SDP (Site-Dependent Parameters) files.

Shared Library Support for GlobalCall

In the previous release for Linux, GlobalCall, its associated call control libraries, and supported protocols were available only as static libraries or objects. In this release, support for shared libraries is provided to simplify the building of applications in a Linux environment.

The benefits of shared libraries include:

Master Feature List

1. Removal of the *ancountry.c* and *country.c* files. You no longer need to manually configure the *ancountry.c* or *country.c* files for each protocol to be linked into the application. The ANAPI or ICAPI protocol is automatically located when the **gc_Open()** function is called.
2. The application is not required to link against any of the call control libraries. When the **gc_Start()** function is called, the libraries are automatically loaded.
3. Stub libraries are not used. While the **gc_Start()** function is executing, if a call control library file is not found, it is considered a stub library. There are no separate stub libraries.

Call Control Libraries

The table below shows the library files that are to be linked against a GlobalCall application.

Filenames for Call Control Libraries

Call Control Library	Shared Library Filenames
ANAPI	<i>libanapi.so</i>
GC ISDN	<i>libgcis.so</i>
ICAPI	<i>libicapi.so</i>
PDKRT	<i>libpdkrt.so</i>

The order in which the files should be included is as follows:

1. *libgc.so* - Linking this file is mandatory. Use the **-lgc** argument to the system linker.
2. *libdxxx.so* - Required only if your application uses R4 voice library functions directly, for example, **dx_play()**.
3. *libdti.so* - Required only if your application uses R4 network library functions directly, for example, **dt_getparm()**. Using network functions directly in a GlobalCall application is **not** recommended.
4. *libsrl.so* - Required only if your application uses R4 SRL library functions directly, for example, **sr_enbhdr()**.

Caution: For System Release 5.1 for Linux, you must use protocols from the GlobalCall Protocol Package CDROM, which contains shared library versions of all protocols for each operating system that GlobalCall supports. Previously released static protocol modules are not supported.

GlobalCall SpringWare Board Support

Below are the SpringWare boards supported in this release and what protocols may be used:

System Release 5.1 for Linux Release Guide

Product	Bus	Analog	E-1 CAS	T-1 Robbed Bit	E-1 ISDN	T-1 ISDN
D/41EPCI	PCI	Yes	----	----	----	----
D/41ESC	ISA	Yes	----	----	----	----
D/160SC-LS	ISA	Yes	----	----	----	----
D/120JCT-LS	PCI	Yes	----	----	----	----
D/240SC	ISA	----	----	Yes	----	----
D/300PCI-E1	PCI	----	Yes	----	Yes	----
D/300JCT-E1	PCI	----	Yes	----	Yes	----
D/300SC-E1	ISA	----	Yes	----	Yes	----
D/300SC-2E1	ISA	----	Yes	----	Yes	----
D/600SC-2E1	ISA	----	Yes	----	Yes	----
D/320SC	ISA	----	Yes	----	----	----
D/640SC	ISA	----	Yes	----	Yes	----
DTI/300SC	ISA	----	Yes**	----	Yes	----
DTI/301SC	ISA	----	Yes	----	Yes	----
D/240PCI-T1	PCI	----	----	Yes	----	Yes
D/240JCT-T1	PCI	----	----	Yes	----	Yes
D/240SC-T1	ISA	----	----	Yes	----	Yes
D/240SC-2T1	ISA	----	----	Yes	----	Yes
D/480SC-2T1	ISA	----	----	Yes	----	Yes
D/480JCT-2T1	PCI	----	----	Yes	----	Yes
DTI/240SC	ISA	----	----	Yes**	----	Yes
DTI/241SC	ISA	----	----	Yes	----	Yes
DTI/480SC	ISA	----	----	Yes**	----	Yes
DTI/481SC	ISA	----	----	Yes	----	Yes
DTI/600SC	ISA	----	Yes**	----	Yes	----
DTI/601SC	ISA	----	Yes	----	Yes**	----
D/600JCT-2E1	PCI	----	Yes	----	Yes	----
D/41JCT-LS	PCI	Yes				
VFX/41JCT-LS	PCI	Yes				

Master Feature List

Note 1: ** A voice resource is required for this interface.

Note 2: Not all boards are compatible with all protocols. For additional information, please consult your sales representative.

PBX Integration Features

The PBX Integration products (D/82JCT-U and D/42JCT-U) provide the following PBX integration features:

- Nortel Norstar, Nortel Meridian 1, Mitel SX-50, SX-200, SX-2000 (with Superset 430 support), Lucent Definity, Siemens ROLM, and Siemens Hicom 150E/300E switch support
- D/42 R4 API
- Software-controlled configuration
- Universal digital interface with downloadable firmware for different phone emulations
- Support for PBX functions
 - Calling/Called party ID
 - Message Waiting lamp control
 - Loop current detection
 - Disconnect supervision
 - Ring detection
 - Link status detection
 - Read display
- WAVE, A-law and Mu-law PCM, ADPCM, GSM 610 or G.726 audio encoding

Routing Features

Refer to the SCbus Routing Software Reference for Linux for additional information.

This release supports the SCbus routing that has the following features:

- SCbus routing
- SCxbus multi-node adapter

R4 Conferencing Features

Dialogic Audio Conferencing Features

NOTE: *Refer to the Dialogic Audio Conferencing Software Reference for Linux for additional information.*

The features provided by Dialogic Audio Conferencing are:

- Flexible conferencing

System Release 5.1 for Linux Release Guide

- Hidden training
- Individual volume control
- Active Talker status
- On-board digit detection with tone clamping
- Monitoring
- Coach/Pupil monitoring
- Full duplex
- High channel density

Modular Station Interface Features

NOTE: Refer to the MSI Software Reference for additional information.

This modular station interface for analog equipment enables conferencing and:

- Up to 24 analog telephone device connections for PC-based telemarketing systems and call centers
- Optional power ringing with automatic ring trip for standard 2500-type telephones
- Battery feed to power station sets
- Programmable ring cadence options
- Splash ring to prevent glare
- Station status event detection for collecting call traffic statistics
- Programmable channel gain for channel volume control and matching line levels from different devices
- Programmable notification tones for metering time expired
- Unobtrusive monitoring of connections
- Call conferencing support for up to 32 conferees
- Downloadable front-end impedance
- Jumperable dry audio input for music on hold
- Ringing with automatic ring trip
- MSI demonstration program

R4 Fax Features

NOTE: Refer to the Fax Software Reference for additional information.

DSP-Based Group 3 Fax (DSP Fax)

The features supported by DSP Fax are:

Master Feature List

- International standards support: ITU-T Group 3 fax (T.4 and T.30) and ETSI NET/30.
- Software-based modem: Fax modem capability implemented in software rather than in hardware.
- Maximum channels in a system: Up to 8 DualSpan boards can be put in a system. Therefore, you can have up to 64 (8x8) DSP-Based Fax resources or 480 (8x60) voice resources.
- Data transmission rate: Up to 14.4 Kbps.
- Data reception rate: Up to 9.6 Kbps.

***NOTE:** 14.4 Kbps receive and enhanced error correcting schemes are available when enhanced DSP-Based Fax is being used. Currently, only the VFX/41JCT-LS has this capability.*

- Data transmission encoding scheme: Modified Huffman (MH) and Modified Read (MR).
- Data reception encoding scheme: Modified Huffman (MH) and Modified Read (MR).
- File data format: TIFF/F (Tagged Image File Format) for transmit/receive MH and ASCII text transmit.
- ASCII to fax conversion: Performed on the host CPU rather than in the Dialogic firmware. Supports multiple fonts and language character sets.
- File transfer: T.434 Binary File Transfer (BFT)

Channel Utilization

The following table shows information regarding the boards and channels that support DSP-Based Fax.

System Release 5.1 for Linux Release Guide

Board	Chan	Chan	Chan	Chan	Chan	Chan	Chan	Chan	Fax Resource Channels Enabled
D/41JCT-LS	1-4	-	-						4
VFX/41JCT-LS*	1-4	-	-						4
D/120JCT-LS	1-8	9-12	-						2+2
D/42JCT-U	1-4								2
D/82JCT-U	1-8								2
D/240JCT	1-8	9-16	17-24						2+2
D/300JCT	1-8	9-14	15-22	23-30					2+2
D/320-JCT	1-8	9-16	17-24	25-32					2+2+2+2
D/160-JCT	1-8	9-16							2+2
D/480JCT-2T1	1-8	9-16	17-24	25-32	33-40	41-48			2+2+2+2
D/600JCT-2E1	1-8	9-14	15-22	23-30	31-38	39-44	45-52	53-60	2+2+2+2

* Only the VFX/41JCT-LS supports enhanced fax.

All Channels that support DSP-based Fax enablement are highlighted in gray.

The 2+2 mapping indicates that each channel in gray can support 2 fax resources except D/41JCT-LS and VFX/41JCT-LS boards.

D/41JCT-LS and VFX/41JCT-LS support 4 fax resources (i.e., 1 resource for each channel).

D/120JCT-LS supports 2 fax resources on channels 1-8 and 2 fax resources on channels 9-12.

The following table shows the data transmission and reception encoding schemes that can be used with the basic and enhanced fax feature:

Basic Fax	Enhanced Fax
MH	MH
MR	MR
	MMR
	ECM

VFX Features

VFX features for transmit and receive are as follows:

- Raw
- ASCII-to-FAX (transmit only)
- Fax Error Correction Mode (ECM) Switch
- Scan Line Error Correction

Master Feature List

- MR and MMR Advanced Compression
- Subaddress Fax Routing
- Downloadable font file for VFX/40ESC+
- Single TIFF/F file
- Multi page TIFF
- Fine Resolution
- Zero fill ASCII-to-Fax conversion on the fly

R4 ISDN Features

NOTE: Refer to the *ISDN Software Reference* for additional information.

Supported ISDN Functions

The following table lists all of the ISDN functions that are currently documented in the *ISDN Software Reference*. The table indicates which functions are supported for BRI/SC Version 3.00, BRI/PCI and PRI ISDN Package5.

ISDN API Functions	BRI/SC	BRI/PCI	PRI ISDN
cc_AcceptCall()	YES	YES	YES
cc_AnswerCall()	YES	YES	YES
cc_CallAck()	YES	YES	YES
cc_CallProgress()	YES	YES	YES
cc_CallState()	YES	YES	YES
cc_CauseValue()	YES	YES	YES
cc_Close()	YES	YES	YES
cc_CRN2LineDev()	YES	YES	YES
cc_DropCall()	YES	YES	YES
cc_GetANI()	YES	YES	YES
cc_GetBChanState()	YES	YES	YES
cc_GetBilling()			YES
cc_GetCallInfo()	YES	YES	YES
cc_GetCES()	YES	YES	
cc_GetCRN()	YES	YES	YES
cc_GetDChanState()			YES

System Release 5.1 for Linux Release Guide

ISDN API Functions	BRI/SC	BRI/PCI	PRI ISDN
cc_GetDLinkCfg()		YES	
cc_GetDLinkState()		YES	YES
cc_GetDNIS()	YES	YES	YES
cc_GetEvtMsk()	YES	YES	YES
cc_GetFrame()	YES	YES	YES
cc_GetInfoElem()	YES	YES	YES
cc_GetLineDev()	YES	YES	YES
cc_GetMoreDigits()	YES	YES	YES
cc_GetNetCRV()	YES		YES
cc_GetNonCallMsg()	YES	YES	YES
cc_GetParm()	YES	YES	YES
cc_GetParmEx()	YES		YES
cc_GetSAPI()	YES	YES	
cc_GetSigInfo()	YES	YES	YES
cc_GetUsrAttr()			YES
cc_GetVer()	YES	YES	YES
cc_HoldAck()	YES		YES (1)
cc_HoldCall()	YES		YES (1)
cc_HoldRej()	YES		YES (2)
cc_MakeCall()	YES	YES	YES
cc_Open()	YES	YES	YES
cc_PlayTone()	YES	YES	
cc_ReleaseCall()	YES	YES	YES
cc_ReleaseCallEx()	YES	YES	YES
cc_ReqANI()			YES
cc_Restart()	YES	YES	YES
cc_ResultMsg()	YES	YES	YES
cc_ResultValue()	YES	YES	YES
cc_RetrieveAck()	YES		YES (1)
cc_RetrieveCall()	YES		YES (1)

Master Feature List

ISDN API Functions	BRI/SC	BRI/PCI	PRI ISDN
cc_RetrieveRej()	YES		YES (2)
cc_SetBilling()			YES
cc_SetCallingNum()	YES	YES	YES
cc_SetChanState()			YES
cc_SetDChanCfg()	YES	YES	
cc_SetDLinkCfg()		YES	
cc_SetDLinkState()		YES	
cc_SetEvtMask()	YES	YES	YES
cc_SetInfoElem()	YES	YES	YES
cc_SetMinDigits()	YES	YES	YES
cc_SetParm()	YES	YES	YES
cc_SetParmEx()	YES	YES	YES
cc_SetUsrAttr()	YES	YES	YES
cc_SndFrame()	YES	YES	YES(3)
cc_SndMsg	YES	YES	YES
cc_SndNonCallMsg()	YES	YES	YES
cc_StartTrace()	YES	YES	YES
cc_StopTone()	YES	YES	
cc_StopTrace()	YES	YES	YES
cc_TermRegister Response()	YES	YES	
cc_ToneRedfine()	YES	YES	
cc_WaitCall()	YES	YES	YES

NOTE 1: Supported only for the DPNSS and Q.SIG PRI protocols.

NOTE 2: Supported only for the Q.SIG PRI protocol.

NOTE 3: Not supported for the Q.SIG PRI protocol.

PRI Support

The following PRI features are supported:

- Generic support for supplementary services

System Release 5.1 for Linux Release Guide

- Support for all specified PRI messages
- Two B Channel Transfer (TBCT)
- Non-Call-Associated Signaling (NCAS)
- Vari-A-Bill
- ANI-on-demand
- User-to-user information
- Dialed Number Identification (DNIS)
- Non-Facility Associated Signaling (NFAS)
- Supported under GlobalCall for R4 Products
- B channel negotiation
- Multinational approvals with all popular protocols
- Automatic Number Identification (ANI)
- LAP-D Layer 2 access
- DialView Suite:
 - ISDN Diagnostic Program (isdiag)
 - ISDN Trace Utility (isdtrace)
 - ISDN Network Protocol Firmware (NT1, NE1, ETN, VNNT, TPHNT, QNT, QTE)

SpringWare PRI Protocol Support

The following PRI protocols are supported:

Protocol (for SpringWare Products)	Firmware	Equipment Type
AT&T 4ESS custom switch TR41449/TR41459	4ESS	TE
T-1 Network Emulation TR41449/TR41459	NT1	NT
AT&T 5ESS custom switch 505-900-322	5ESS	TE
National ISDN-2 Bellcore Special Report SR-NWT-002343	NI2	TE
Northern Telecom custom switch A211-1 and A211-4	DMS/100 and DMS/250	TE
Japanese National ISDN INS-Net 1500	NTT	TE
French National ISDN VN3	VN	TE
French National ISDN VN3	VNNT	NT
Euro-ISDN ETSI300-102	CTR4	TE

Master Feature List

Protocol (for SpringWare Products)	Firmware	Equipment Type
Euro-ISDN ETSI300-102	NE1	NT
British National BTNR-190-1985	DASS2	TE
Australian National ISDN TS-0141 1990	TPH	TE
Australian National ISDN TS-0141 1990	TPHNT	NT
Q.SIG ISO 11572, ISO 11574	QTE	TE
Q.SIG ISO 11572, ISO 11574	QNT	NT
German National ISDN	1TR6	TE
British Private Branch Exchange DASS2 extension	DPNSS (separately orderable)	A and B side
Euro-ISDN ETSI300-102 for T-1	ETU	TE
Euro-ISDN ETSI300-102 for T-1	ETN	NT
Q.SIG ECMA-142/143 for T-1	QTU	TE
Q.SIG ECMA-142/143 for T-1	QTN	NT
TE = Terminal Equipment NT = Network Termination		

R4 Network Interface Support

R4 Network Interface support is provided by the Digital Network Interface (DTI) Library which provides the following features:

- T-1 digital telephony signaling
- E-1 digital telephony signaling
- Network API (dt_ functions) including alarm, diagnostic, extended attribute, parameter request and setting, resource management, SCbus routing, and time slot audio and signaling functions.
- CAS DTI signal pattern transmission and detection functions:
The CAS DTI extensions permit higher density systems to perform the signaling operations needed for CAS protocols within strict protocol time specifications

Signaling Features

Automated Call Attendant

- Caller ID
- Japan Caller ID

Call Analysis

- Basic Call Analysis
- PerfectCall Call Analysis
- Positive Voice Detection (PVD)
- Positive Answering Machine Detection (PAMD)
- Cadence Detection
- Frequency Detection
- Loop Current Detection
- Dial Tone Detection
- Special Information Tones (SIT) Frequency Detection
- Ringback Detection
- Busy Tone Detection
- FAX or Modem Tone Detection
- Silence Detection

Tone Detection/Generation

- Tone Set File (TSF)
- Change length of built-in beep tone
- Distinctive ring cadence
- Adjustable board level cadence
- Cadenced Tone Generation (CTG) (for example: busy, dialtone, ringback, etc.)
- Dual Tone Multi Frequency (DTMF)
- Multi Frequency (MF)
- Global Tone Detection (GTD)
- Global Tone Generation (GTG)
- Global Dial Pulse Detection (GDPD)

Speech Features

Antares products provide the following features:

Master Feature List

- Antares software is an open platform that supports text-to-speech (TTS) and automatic speech recognition (ASR).
- Download, configuration and runtime support.
- Installation, configuration and download required to support the Antares boards is provided; however, Antares technologies must be purchased separately. A Dialogic play/record technology is provided for demonstration purposes and is accompanied by demo programs.

System Features

- Open system architecture
- CT Bus support
- SCbus support
- Board Locator Technology (BLT)
- Online documentation provided in HTML and PDF format on the CD-ROM
- Demos and sample programs
- Compiler support for GCC and g++

Voice Features

***NOTE:** Refer to the Voice Software Reference for additional information.*

Dictation Support

The dictation support features include:

- Echo Cancellation
- Silence Compress Record (SCR)

Play

The play features include:

- Support for the playing of data from any combination of data files, memory or custom devices using the following voice coder types at the following bit rates:
 - G.711 PCM at 48 Kbps and 64 Kbps with selectable A-law/Mu-law coding
 - WAVE GSM 6.10 full-rate coder at 13 Kbps using Microsoft format
 - WAV Format PCM at 48, 64, and 88 Kbps with selectable linear, Mu-law and A-law coding
 - WAV Format PCM at 24 and 32 Kbps OKI ADPCM
 - OKI 24 Kbps and 32 Kbps ADPCM
 - G.726 bit-exact voice coder at 32 Kbps

System Release 5.1 for Linux Release Guide

NOTE: the following restrictions apply:

- GSM and G.726 do not support Silence Compressed Record
- GSM and G.726 do not support Speed Control - When you play a voice file recorded in GSM or G.726, you must specify the format (this is necessary even for the WAVE GSM files, although WAVE files can normally be played without specifying the format because the format is stored in the file header)

- Analog Display Services Interface (ADSI)
- Two-Way ADSI
 - Transmit to ADSI phones: Messages can be sent to an ADSI phone when the phone is either On-Hook or Off-Hook
 - Two-Way Frequency Shift Keying (FSK): Send and receive character or binary data at 1200 BPS between the server and ADSI-compatible devices
 - Supports BellCore and ETSI standards
- Speed and Volume Control
- PerfectPitch Voice Playback Speed Control
- PerfectLevel Voice Playback Volume Control
 - ITU-T G.726 (bit exact) play and record mode;
 - WAVE file support at 11kHz linear PCM

Record

This release supports the recording of data to any combination of data files, memory or custom devices with selectable Automatic Gain Control (AGC) (on/off) and/or preceding tone (on/off) at the following bit rates and voice coder types:

- WAVE Format PCM at 48, 64 and 88Kbps with selectable linear, Mu-law and A-law coding
- WAVE Format PCM at 24 and 32 Kbps OKI ADPCM
- Pre-recorded beep
- OKI 24Kbps and 32Kbps with selectable A-law/Mu-law coding
- Transaction Record
- Bulk data buffer sizing
- G.711 PCM at 48Kbps and 64Kbps with selectable linear, Mu-law and A-law coding
- Silence Compress Record (SCR)
- Echo Cancellation

NOTE: See <http://support.dialogic.com/appnotes/ecr.htm> for additional information about SCR and Echo Cancellation.

- PerfectLevel Voice Playback Volume Control

Master Feature List

- ITU-T G.726 (bit exact) play and record mode;
- WAVE file support at 11kHz linear PCM
- Offset playback of WAVE files

SpringWare Voice Coder Support

The following table shows which voice coders and encoding formats are supported with each SpringWare board.

Product	Mu-Law PCM 6K, 8K	A-Law PCM 6K, 8K	Mu-Law PCM 11K	A-Law/ PCM 11K	Linear (Raw) PCM 6K, 8K	ADPCM (OKI) 6K, 8K	ADSI	MS GSM	G.726
D/4-PCI	YES	YES	YES	YES	YES	YES	YES		
D/41H	YES		YES		YES	YES	YES		
D/80SC	YES	YES	YES	YES	YES	YES	YES		
D/80-PCI	YES	YES	YES	YES	YES	YES	YES		
D/160SC	YES	YES	YES	YES	YES	YES	YES		
D/240SC	YES	YES	YES	YES	YES	YES	YES		
D/320SC	YES	YES	YES	YES	YES	YES	YES		
D/320-PCI	YES	YES	YES	YES	YES	YES	YES		
D/640SC	YES	YES	YES	YES	YES	YES	YES		
D/21E	YES	YES	YES	YES	YES	YES	YES		
D/41EPCI	YES	YES	YES	YES	YES	YES	YES		
D/41ESC	YES	YES	YES	YES	YES	YES	YES		
D/41JCT-LS	YES	YES	YES	YES	YES	YES	YES	YES	YES
VFX/40ESCplus	YES	YES	YES	YES	YES	YES	YES		
VFX/40PCI	YES	YES				YES	YES		
VFX/41JCT-LS	YES	YES	YES	YES	YES	YES	YES	YES	YES
D/160SC-LS	YES	YES	YES	YES	YES	YES	YES		
D/120JCT-LS	YES	YES	YES	YES	YES	YES	YES*	YES	YES
D/240JCT-T1	YES	YES	YES	YES	YES	YES	YES*	YES	YES
D/300JCT-E1	YES	YES	YES	YES	YES	YES	YES*	YES	YES
D/480JCT-2T1	YES	YES	YES	YES	YES	YES	YES*	YES	YES
D/600JCT-2E1	YES	YES	YES	YES	YES	YES	YES*	YES	YES
D/42JCT-U	YES	YES	YES	YES	YES	YES	YES*	YES	YES
D/82JCT-U	YES	YES	YES	YES	YES	YES	YES*	YES	YES
D/300PCI-E1	YES	YES	YES	YES	YES	YES	YES		
D/300SC-E1	YES	YES	YES	YES	YES	YES	YES		
D/300SC-2E1	YES	YES	YES	YES	YES	YES	YES		
D/600SC-2E1	YES	YES	YES	YES	YES	YES	YES		
D/240PCI-T1	YES	YES	YES	YES	YES	YES	YES		

Product	Mu-Law PCM 6K, 8K	A-Law PCM 6K, 8K	Mu-Law PCM 11K	A-Law/ PCM 11K	Linear (Raw) PCM 6K, 8K	ADPCM (OKI) 6K, 8K	ADSI	MS GSM	G.726
D/240SC-T1	YES	YES	YES	YES	YES	YES	YES		
D/240SC-2T1	YES	YES	YES	YES	YES	YES	YES		
D/480SC-2T1	YES	YES	YES	YES	YES	YES	YES		
BRI/2VFD	YES	YES				YES	YES		
D/80SC-4LS	YES	YES				YES	YES		
D/160SC-8LS	YES	YES				YES	YES		

**NOTE: Two-way FSK for ADSI (both transmit and receive) is not supported currently on the JCT products.*

Diagnostic Utilities, Remote Administration, and Sample Programs

DPNSS for SpringWare

The Digital Private Network Signaling System (DPNSS) is an ISDN protocol that is commonly used in a network of Private Branch eXchanges (PBXs). DPNSS provides the following features:

- Hold/Retrieve Calls
- Set DPNSS supplementary services (Intrusion, Local Diversion, Remote Diversion, Virtual Call)
- Virtual Calls for Inbound/Outbound
- On-line Help menu which describes the main menu options

ISDIAG Features

ISDIAG is a diagnostics package that can be used with BRI and PRI applications. It is part of the DialView Suite (see R4 ISDN Features). ISDIAG provides the following features:

- Set outbound call parameters
- Request calling party number (ANI)
- Send maintenance request
- Display information (called party subaddress, user-user info, B channel status, D channel status)
- Drop ISDN calls
- Make ISDN outbound calls

Master Feature List

- Play and record 24K voice file capability
- Set ISDN information elements
- Send ISDN messages
- Start/stop/browse ISDN trace files
- Restart ISDN line devices and set to WaitCall state for receiving inbound ISDN calls
- Shell to DOS environment from the ISDIAG application
- Change the current ISDN line device number

Remote Administration (SNMP Support) - BoardWatch 5.1.1

- Detection and monitoring of Dialogic boards, including model, type, firmware name and version, memory address, IRQ, BLT ID, PCI slot ID, and current operational status
- Detection and monitoring of Dialogic devices, including voice channels, DTI time slots, ISDN B channels, and MSI station sets
- Tracking of information common to all devices, such as name, type, open count, TDM bus transmit and receive time slot, and physical device table
- Automatic pinging to detect failed hardware or firmware
- Remote resetting of the Dialogic System Service
- Tracking of lost messages and errors
- Maintenance of statistics over a user-specified interval
- Tracking of software modules, including version and date

NOTE 1: Refer to the *Using BoardWatch Guide* for additional information.

NOTE 2: BoardWatch 5.1.1 does not support single board start/stop for SpringWare boards but it does for DM3 boards.

Sample Demonstration Programs

Sample demo programs are provided in the `<install drive>.\<install directory>\Dialogi\samples` folder for the following technologies:

- Antares
- CSP*
 - /CSPCONDEMO/cspdemo - SpringWare Console Demo
 - /CSPdemoDM3/cspdemo - DM3 Console Demo (there is no DM3 GUI Demo)
 - /CSPGUIDEMO/cspgui - SpringWare GUI Demo

System Release 5.1 for Linux Release Guide

- DPD
- Fax (R4 Fax on SpringWare)
- GlobalCall
- ISDN
- IPLink
 - IPT
 - GCdemos
 - GatewayR4
- MSI
- QuadSpan
 - QuadSpan R4 multi-threaded synchronous
- SCX
- Voice

** indicates the demo programs may require special enablement .
See your Dialogic Sales representative for additional
information.*