

Dialogic[®] Diva[®] System Release 8.5WIN Service Update 3

Reference Guide

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Contents

Copyright and Legal Notice	2
Dialogic Corporation License Agreement For Use of Software	3
About This Publication	9
How to use this online guide	9
Structure of this guide	9
About The Dialogic® Diva® System Release WIN Software	10
Features	10
Supported Dialogic® Diva® Media Boards	15
Supported Switch Types	16
Requirements for Dialogic® Diva® System Release software installation	18
Information on installing downloaded software	18
Software Installation	19
To download the installation files	19
General installation information	19
To install the software	21
License Activation	26
Device Unique ID (DUID)	26
Proof of Purchase Code (PPC)	27
To register your PPC and DUID	27
To activate the license file	28
Software Configuration	29
Configuration with installed hardware	29
Creating configuration files	30
Activating 256 ms Echo Cancellation on Dialogic® Diva® V-2PRI and V-4PRI Media Boards	31
Dial-Up Networking and RAS Administration.....	32
RAS client setup	32
RAS server setup	38
RAS status	40
SNMP Support For A Dialogic® Diva® Media Board	42
To activate SNMP support for a Dialogic® Diva® Media Board	42
Supported MIBs, OIDs, and traps	46
Uninstalling.....	49
Dialogic® Diva® Media Board uninstallation with Uninstall	49
Dialogic® Diva® Media Boards uninstallation with Device Manager	50
Maintenance Tools	51
Dialogic® Diva® Line Test	51
Dialogic® Diva® Diagnostics	51

Management Tools	52
Dialogic® Diva® Management	52
Dialogic® Diva® Media Board Features	53
Features of Dialogic® Diva® BRI and PRI/T1/E1 Media Boards	54
Features of Dialogic® Diva® Analog Media Boards	59
About Customer Services	61

About This Publication

How to use this online guide

- To view a section, click the corresponding blue underlined phrase in the table below.
- To view a topic that contains further information, click the corresponding blue underlined phrases in this guide.
- You may wish to print out the pages required for installing the drivers.

Structure of this guide

This guide provides a detailed description of how to install and configure the Dialogic® Diva® System Release software, and how to troubleshoot your ISDN or channelized T1 connection should that become necessary.

This guide is structured as follows:

Section	Contents
About The Dialogic® Diva® System Release WIN Software	Dialogic® Diva® System Release software features, supported hardware, and requirements for software installation
Software Installation	Installation of the basic drivers, updating drivers or changing configuration using the Dialogic® Diva® Setup
License Activation	Registration of the PPC and DUID on the Dialogic web site and activation of the license in the Dialogic® Diva® Configuration Manager
Software Configuration	Start a configuration with installed hardware or performing a manual configuration
Dial-Up Networking and RAS Administration	RAS client and RAS setup
SNMP Support For A Dialogic® Diva® Media Board	Installation of the SNMP service and description of supported OIDs
Uninstalling	Uninstallation of the Dialogic® Diva® Media Boards in the Device Manager or with Dialogic® Diva® Uninstall
Management Tools	Tools available for monitoring active connections and getting statistic information on all connections
Maintenance Tools	Debugging tools available for locating installation errors or connection issues
Dialogic® Diva® Media Board Features	Overview of the functions provided by the various interfaces
About Customer Services	Information on how to get technical support for Dialogic® Diva® products

CHAPTER 1

About The Dialogic® Diva® System Release WIN Software

The Dialogic® Diva® System Release 8.5WIN Service Update 3 (Diva System Release 8.5.3) software enables you to use your Dialogic® Diva® Media Boards with Windows® XP, Windows Server® 2003, Windows Vista®, or Windows Server® 2008. The Diva System Release software provides modem emulation, connectivity over ISDN or channelized T1 lines via the Remote Access Service (RAS) of Windows®, a CAPI, and the Dialogic® Diva® API interface for ISDN-based applications, and a TAPI interface for telephony-based applications. The Diva System Release software also provides an SNMP agent to support the Windows® implementation of the Simple Network Management Protocol (SNMP).

Features

The list below provides an overview of the features supported by the Dialogic® Diva® System Release software. For information on further supported features of Diva Media Boards, refer to [Dialogic® Diva® Media Board Features](#) at the end of this reference guide.

Licensable features for all Dialogic® Diva® Media Boards, except the Dialogic® Diva® BRI-2FX Media Board

Support for G.729 incl. Annex A and Annex B voice codec

Licensable features for Dialogic® Diva® V-2PRI and Dialogic® Diva® V-4PRI Media Boards

- Support for RTAudio voice codec with default bit rates: 24 kbps for 16 kHz and 8.8 kbps for 8 kHz
- Support for AMR-NB voice codec
- Support for G.729 incl. Annex A and Annex B voice codec
- Support for the following fax and modem features. These licensable features are divided into three groups:

High-end TDM fax support, up to V.34 (33.600 bps and lower bit rates)

- Support for Fax G3, T.30, V.34 HDX, V.17, V.29, V.27ter, V.21, V.34
- Fax Compression MH, MR, MMR
- Error Correction Mode ECM
- Fax Polling
- Reversal Fax Direction
- Fax Password, Sub Addressing, "new header line"
- Page Formats A4, B4, A3
- Resolutions fine, super fine, ultra fine
- Color Fax JPEG format
- T.38 FoIP (PSTN - IP Gateway mode)

TDM fax support, e.g., for typical Unified Messaging (UM) applications, up to V.17 (14.400 bps and lower bit rates)

Note: At most, half of the available channels can be licensed for these fax features.

- Support for Fax G3, T.30, V.17, V.29, V.27ter, V.21
- Fax Compression MH, MR, MMR
- Error Correction Mode ECM
- Fax Polling
- Reversal Fax Direction
- Fax Password, Sub Addressing, 'new header line'
- Page Formats A4, B4, A3
- Resolutions fine, super fine, ultra fine
- Color Fax JPEG format
- T.38 FoIP (PSTN - IP Gateway mode)

Data modem support, up to V.90

- All modem modulations POS up to V.90 (client and server side)
- V.21, V.23, V.22, V.22bis, Bell 103, Bell 212A, V.32, V.32bis, V.34, V.90, including error correction MNP, V.42, SDLC and compressions V.42bis, MNP 5
- POS modulations V.22 FC, V.22bis FC, V.29 FC
- Text telephone modem: V.18, V.21, Bell 103, V.23, EDT, Baudot 45, Baudot 47, Baudot 50, DTMF
- Extended modulations V.23 half duplex, V.23 on hook (SMSC mode), V.23 off hook, Bell 202 (POS), Telenot
- With V.90, up to 20 channels per E1 or T1 line are possible. All other modem emulations offer the full amount of channels.

Non-licensable features

General features

- Interoperability with the Dialogic® Brooktrout® Bfv API SDK: The Dialogic® Brooktrout® SR140 Fax Software version 5.2.1 has been tested to be V.34/T.38 interoperable with the Dialogic® Diva® SIPcontrol™ Software. The Brooktrout SR140 Fax Software is high-performance, host-based T.38 fax software for IP networks.
- Support for 64-bit version of all supported operating systems

Notes:

- The 64-bit version of the Diva System Release software supports RAS, CAPI, TAPI (without Dialogic® Wave driver), Port driver, and SNMP service.
- The Dialogic® Diva® softIP for SIP software is only supported on 32-bit operating systems.
- Support for the ISDN basic rate interface (BRI), the ISDN primary rate interface (PRI), the channelized E1 interface, and the channelized T1 interface
- Support for fractional PRI, E1, and T1 lines
- Support for multiple PRI, E1, and T1 lines
- Support for analog lines
- Support for multiple CPU operating systems
- Automatic Diva Media Board detection
- Support for ISDN lines with a transfer rate of 64 kbps or 56 kbps (for example some regions in the USA)
- Support for channelized T1 lines with a transfer rate of 56 kbps (see [Channelized T1 \(robbed bit signaling\)](#) on page 14)
- Support for unchannelized lines with a transfer rate of 64 kbps or 56 kbps
- Support for R2 signaling E1 lines with a transfer rate of 64 kbps
- Support for up to 240 B-channels for Dialogic® Diva® BRI, 4BRI, T1/PRI, and 2PRI Media Boards

- Support for up to 480 B-channels for Dialogic® Diva® 4PRI Media Boards (the total amount of channels that can be used depends on the application)
- Modem connections up to 56 kbps (V.90)
- COM port (modem emulation)
- Support for CAPI-based applications through CAPI 2032.DLL and CAPI 20.DLL (32-bit and 16-bit versions) for Windows®
- Support for ISDN-based applications through the Dialogic® Diva® API
- Support for TAPI-based applications through the Dialogic® Diva® Telephony Service Provider (TSP)
- Support for all known switch types (ISDN protocols)
- Support for Q.SIG protocol (see [Q.SIG features](#) on page 14)
- Additional security through support of RSA
- Interfaces: RAS WMP, modem emulation, CAPI, Dialogic® Diva® TSP
- Compatible to V.22 Fast Connect terminals with V.22 Dialogic® Diva® Fast Setup via Port driver.
- M-Board:
 - Middleware between Dialogic® Diva® Media Boards and interfaces (CAPI, COM port)
 - Can group several Diva Media Boards and specific lines of any Dialogic® Diva® 4BRI Media Board and abstract them as one board to the application (see "Combined Board" in the Dialogic® Diva® Configuration Manager Online Help file (DSMain.chm)). Separate configuration of each individual line of any Dialogic® Diva® 4BRI, V-2PRI, V-4PRI, and Analog Media Board
- Selectable call direction for each port of a Diva Analog or V-Analog Media Board.
- Dialogic® Diva® V-2PRI/E1/T1 and V-4PRI/E1/T1 Media Board: Creation of a trace message in the trace file if maximum operation temperature is exceeded.
- Support for IP and TDM hybrid installations by using the Dialogic® Diva® softIP software (v2.1 or higher enables fast data transfer using DMA (Direct Memory Access) procedures).
- Support for collecting phone ranges or a specific number on incoming calls by the software.
- Support for a wide range of Windows® event logs. Driver and connection errors and informative messages are listed in the MOM (Microsoft® Operation Manager). For a detailed description of the errors and messages, see the Dialogic® Diva® Configuration Manager Online Help file (DSMain.chm).
- Support for call deflection or call rerouting
- Support for Explicit Call Transfer (ETSI) including Link ID Request
- Support for redirecting number emulation (for incoming calls). In this case, the called party number is delivered as redirecting number to the application.
- ECT Link Balance: To avoid confusion with call transfer and multiple incoming calls, each incoming call is delivered to a separate TEI. This feature is only valid for Dialogic® Diva® BRI Media Boards and Point-to-Multipoint interfaces.
- Call Rate Limiter: Limitation of the amount of outgoing calls per second. Some switches may require limitation of calls in order to grant stability of the PSTN network.

RAS (Remote Access Service) features

- Connection to ISDN routers, enabling access to a remote LAN or the Internet
- Network access for PPP-compatible clients
- Connection to a Windows® server from digital, analog, and mobile networks with only one telephone number
- Automatic detection of ISDN service, synchronous/asynchronous framing, and B-channel protocol of incoming calls
- Synchronous/asynchronous conversion
- Support for LAN protocols: TCP/IP, IPX/SPX, NetBIOS, NetBEUI, LAN Manager API

- Support for ISDN B-channel protocols: HDLC, X.75, V.120, V.110, PIAFS 1.0 and 2.1, modem V.34+ and V.90, fax connections, V.42/LAPM (error correction), and V.42bis compression
- Encryption, data compression, number checking, shorthold mode, callback function

Modem emulation

- COM port for 16-bit Windows® applications
- TAPI-compliant pre-initialized Dialogic® Diva® modems:
 - Diva Analog Modem
 - Diva Fax Modem (Fax Class 1/ Fax Class 2)
 - Diva V.120 Modem (64K)
 - Diva V.120 Modem (56K)
 - Diva V.110 Modem
 - Diva X.75 Modem (64K)
 - Diva X.75 Modem (56K)
 - Diva PPP-Modem (64K)
 - Diva PPP-Modem (56K)
 - Diva X.25 Modem
 - Diva Generic Modem:
 - Network access for PPP-compatible clients
 - Automatic detection of ISDN service, synchronous/asynchronous framing and B-channel protocol
 - Synchronous/asynchronous conversion
 - Encryption, data compression, number checking, shorthold mode, callback function

CAPI features

Supplementary services

- Number identification services: MSN, DDI, SUB, CLIP, CLIR, COLP, COLR, KEY, RDN
- Call offering services: TP, CFU, CFB, CFNR, CD
- Call completion services: CW, HOLD, ECT, CCBS, CCNR
- Charging services: AoC
- Three-party conference
- Others: User-to-user signaling

Fax and voice features

- Fax compression (MH, MR 2D coding, MMR T.6 coding) and error-correction mode (ECM)
- Fax connections up to 33,6 kbps
- Class 1 and class 2 fax interface
- Fax polling
- Extended fax
- Fax tone detection
- Reversal of fax direction
- Dynamic switching of B-channel protocols
- DTMF transmission, DTMF detection
- DTMF clamping

- Cross-board switching via interline connect (DSP-based monitor, bridge, and mixer for voice connections; supports multiline conference calls)
 - Page formats: ISO A4, ISO B4, ISO A3
 - Standard, fine, super-fine, and ultra-fine resolution
 - Echo cancellation - 128 ms
 - Echo cancellation - 256 ms on Dialogic® Diva® V-2PRI and V-4PRI Media Boards (For more information, see [Activating 256 ms Echo Cancellation on Dialogic® Diva® V-2PRI and V-4PRI Media Boards](#) on page 31.)
 - Real time protocol (RTP)
 - DSP-based secure RTP (sRTP)
 - Dynamic anti-jitter buffering
 - Comfort noise generation (CNG)
 - Voice activity detection (VAD)
 - Support for color fax via CAPI
 - Support for JPEG format
 - Support for sending and receiving single or multi-page documents
 - Support for fallback to gray scale if remote side does not support color fax
 - Support for GSM-FR for Dialogic® Diva® V-2PRI and V-4PRI Media Boards
 - Support for DSP-based iLBC voice codec for Diva V-2PRI and V-4PRI Media Boards
- Note:** For the GIPS iLBC public license, refer to the gips_iLBClicense.pdf stored in the Dialogic® Diva® program directory.

Diva TSP features

- Supplementary services based on CAPI: CLIP, CLIR, COLP, COLR, HOLD, CFU, CFB, CFNR, ECT, AoC, CCBS, CCNR
- Media mode (unknown, interactive voice, automated voice)
- Wave audio format (8-bit 8 kHz a-law, 8-bit 8 kHz μ -law, 8-bit 8 kHz PCM)
- DTMF tone generation and detection based on CAPI

Q.SIG features

- Support for generic Q.SIG according to ECMA and ISO (for more information see [Supplementary services](#))
- Tests have been conducted for the various switch types (for a complete list of all supported types see [Supplementary services](#))

Channelized T1 (robbed bit signaling)

- Trunk modes (loop, ground, and wink start)
- Tone dialing (DTMF and MF)
- Pulse dialing
- Ringer and busy tone detection
- 56 kbps transfer rate
- Call transfer

Supported Dialogic® Diva® Media Boards

The Dialogic® Diva® System Release software supports the following Dialogic® Diva® Media Boards (maximum eight Diva Analog, BRI, 4BRI, PRI, V-2PRI or four Diva V-4PRI Media Boards in one computer):

Dialogic® Diva® BRI Media Boards

- Diva BRI-CTI PCI
- Diva BRI-2FX PCI
- Diva UM-BRI-2 PCI and PCIe
- Diva BRI-2 PCI and PCIe
- Diva UM-4BRI-8 PCI and PCIe
- Diva 4BRI-8 PCI and PCIe

Dialogic® Diva® PRI Media Boards

- Diva PRI/E1/T1-CTI PCI and PCIe
- Diva V-PRI/T1-24 PCI and PCIe
- Diva V-PRI/E1-30 PCI and PCIe
- Diva UM-PRI/T1-24 PCI and PCIe
- Diva UM-PRI/E1-30 PCI and PCIe
- Diva PRI/E1/T1-8 PCI
- Diva PRI/T1-24 PCI and PCIe
- Diva PRI/E1-30 PCI and PCIe

Dialogic® Diva® V-PRI Media Boards with multiple ports

- Diva V-2PRI/T1-48 PCI
- Diva V-2PRI/E1-60 PCI
- Diva V-4PRI/T1-96 PCI
- Diva V-4PRI/E1-120 PCI
- Diva V-1PRI/T1-24 PCIe HS
- Diva V-1PRI/E1-30 PCIe HS
- Diva V-2PRI/T1-48 PCIe HS
- Diva V-2PRI/E1-60 PCIe HS
- Diva V-4PRI/T1-96 PCIe HS
- Diva V-4PRI/E1-120 PCIe HS

Note: "HS" stands for half size boards.

Dialogic® Diva® Analog Media Boards

- Diva UM-Analog-2 PCI and PCIe
- Diva UM-Analog-4 PCI and PCIe
- Diva UM-Analog-8 PCI and PCIe
- Diva Analog-2 PCI and PCIe
- Diva Analog-4 PCI and PCIe
- Diva Analog-8 PCI and PCIe

Dialogic® Diva® softIP board

- virtual Diva softIP v2.2 board

Supported Switch Types

Dialogic® Diva® Media Boards currently support the following switch types:

Public line ISDN protocols

USA PRI and BRI

- 5ESS Custom (AT&T)
- 5ESS Ni Avaya (Lucent)
- DMS 100 (Nortel)
- EWSD (Siemens)

USA T.1/PRI

- 4ESS
- T.1 RBS

EMEA PRI and BRI

- ETSI (Europe, Africa)
- VN4 (legacy France, old PBXs)
- VN6 (current France)
- 1TR6 (legacy Germany and old PBXs)
- ETSI New Zealand variant
- ETSI Australia variant (On Ramp ETSI)
- ETSI Hong Kong variant
- INS-Net 64 / 1500 (Japan)
- ETSI Taiwan variant

R2 CAS (E.1 only)

- Indonesia
- Philippines
- Thailand
- Brazil
- Mexico
- India
- China
- Korea

PBX protocols

- Generic Q.SIG T.1 and E.1
Note: The Generic Q.SIG switch type can be used for the majority of PBXs
- ETSI
Note: Many European PBXs use the regular ETSI protocol (PRI and BRI).

Specific major PBX types

- Nortel opt11 Rev23
- Nortel Meridian
- Ericsson MD110/BP250
- Siemens Hicom 300
- Siemens Hicom 150
- Siemens Hipath 3000
- Siemens Hipath 4000
- Lucent Definity
- Alcatel 4200
- Alcatel 4400
- Alcatel 4410
- Matracom 6500
- DeTeWe OpenCOM 1000
- ASCOM Ascotel 2020
- ASCOM Ascotel 2030
- ASCOM Ascotel 2050
- ASCOM Ascotel 2060
- Tenovis QSig
- GPT Realitis iSDX

Carrier Grade

ITU-T ISUP SS7

POTS

Worldwide POTS

Requirements for Dialogic® Diva® System Release software installation

For the installation of the Dialogic® Diva® System Release software, the following requirements have to be met:

- PC/AT-compatible computer (at least 500 MHz or higher processor with at least 500 MB RAM)
- Windows® XP, Windows Server® 2003, Windows Vista®, or Windows Server® 2008 operating system
- At least 15 MB free space on the drive on which the operating system is installed
- An installed Dialogic® Diva® Media Board

Dialogic® Diva® V-PRI Media Boards with multiple ports

- At least 1.5 GHz or higher processor
- At least 512 MB RAM (if more than one board is installed the capacity needs to be at least 1 GB)
- Power supply with 450 W (6 A with 3.3 V per Diva multiport PRI Media Board)

Note: Depending on the computer, a stronger power supply may need to be used.

To install your Dialogic® Diva® Media Board in your computer, refer to the printed installation guide that came with your Diva Media Board or that you downloaded from the Dialogic web site.

Information on installing downloaded software

If you downloaded the Dialogic® Diva® System Release software from the Dialogic web site, please note the following:

- Extract the files to your hard disk drive. Do not change the directory structure of the extracted files.
- This manual assumes that the installation files have been copied into the directory "C:\Temp\DIVA". If necessary, change the drive letter or path according to your system configuration.

CHAPTER 2

Software Installation

You should not attempt to install the software for your Dialogic® Diva® Media Board at the same time as the operating system.

Before you start to install the Dialogic® Diva® System Release WIN software as described in [To install the software](#) on page 21, you need to download the latest installation files, see [To download the installation files](#) below.

To download the installation files

1. Open the following web site
http://www.dialogic.com/products/tdm_boards/system_release_software/default.htm.
2. In the **Diva Software Drivers** table, select **Diva SR Software for Windows**.
3. Under **Product Links**, select **Download Diva SR software for Windows**.
4. Follow the instructions on the web and copy the installation files to your hard disk.

General installation information

Basic driver support for most Dialogic® Diva® Media Boards is provided by the Windows® operating systems. These Diva Media Boards are fully detected, and a basic set of drivers is installed automatically. Diva Media Boards without basic driver support are detected as new hardware.

The installation procedure is the same for all Diva Media Boards.

- If the Diva Media Board is fully detected, you can directly install the Dialogic® Diva® drivers as described in [To install the software](#) on page 21.
- If the Diva Media Board is detected as "New Hardware", first abort the Windows® installation and then install the Diva drivers as described in [To install the software](#) on page 21.

Note for Dialogic® Diva® UM-Media Boards: During installation, Diva UM-Media Boards might be displayed with the name prefix "V-". After the installation of the Dialogic® Diva® System Release 8.5, Service Update 3 software, the name will be displayed as Diva "UM-" Media Board.

Note for the Dialogic® Diva® softIP software: The drivers of the Diva softIP software are installed together with the drivers of the Dialogic® Diva® Media Boards. To use the Diva softIP software, you need to purchase a license and activate it in the Dialogic® Diva® Configuration Manager. Only after having activated the license and having activated the configuration, you can add the Dialogic® Diva® softIP software as virtual board to the boards pane in the Diva Configuration Manager and configure it.

Windows® XP and Windows Server® 2003

- The following Dialogic® Diva® Media Boards are fully detected:
 - Diva BRI-CTI
 - Diva BRI-2FX
 - Diva BRI-2
 - Diva 4BRI-8
- The following Diva Media Boards are detected as "New Hardware":

Diva PRI	Diva UM-BRI-2
Diva Analog-2	Diva UM-4BRI-8
Diva Analog-4	Diva V-PRI
Diva Analog-8	Diva UM-PRI
	Diva V-2PRI
	Diva V-4PRI
	Diva V-1PRI HS
	Diva V-2PRI HS
	Diva V-4PRI HS

Diva UM-Analog-2
Diva UM-Analog-4
Diva UM-Analog-8

Windows Vista®

- The following Dialogic® Diva® Media Boards are fully detected:
Diva BRI-CTI
Diva BRI-2FX
Diva BRI-2
Diva 4BRI-8
Diva PRI
Diva Analog-4
Diva Analog-8
Diva V-PRI
- The following Diva Media Boards are detected as "New Hardware":
Diva Analog-2
Diva UM-BRI-2
Diva UM-4BRI-8
Diva UM-PRI
Diva V-2PRI
Diva V-4PRI
Diva V-1PRI HS
Diva V-2PRI HS
Diva V-4PRI HS
Diva UM-Analog-2
Diva UM-Analog-4
Diva UM-Analog-8

Windows Server® 2008

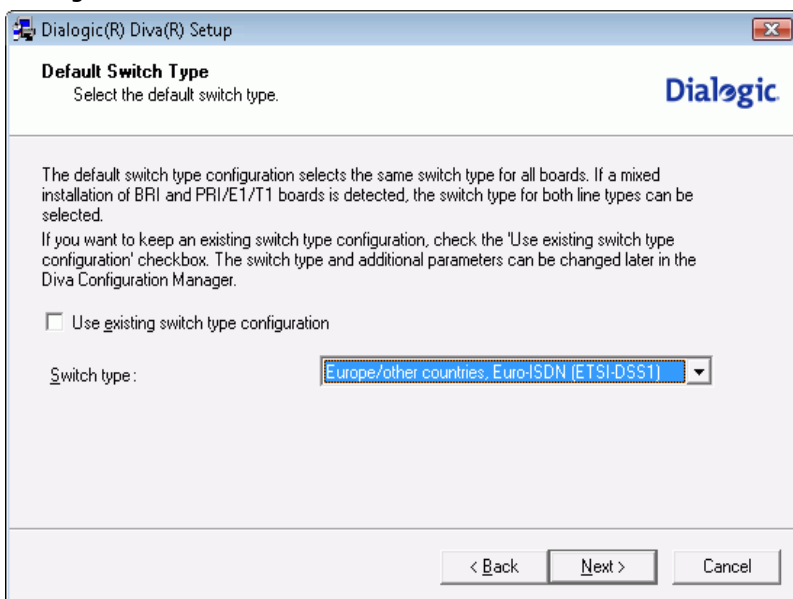
- The following Dialogic® Diva® Media Boards are fully detected:
Diva BRI-2FX
Diva BRI-CTI
Diva BRI-2
Diva 4BRI-8
Diva PRI
Diva Analog-4
Diva Analog-8
Diva V-PRI
- The following Dialogic® Diva® Media Boards are detected as "New Hardware":
Diva Analog-2
Diva UM-BRI-2
Diva UM-4BRI-8
Diva UM-PRI
Diva V-2PRI
Diva V-4PRI
Diva V-1PRI HS
Diva V-2PRI HS
Diva V-4PRI HS
Diva UM-Analog-2
Diva UM-Analog-4
Diva UM-Analog-8

Note: "HS" stands for "half size".

To install the software

Note: If multiple Dialogic® Diva® Media Boards are installed, the wizard will be visible only once for each update or configuration of the software. The configured parameters correspond to all Diva Media Boards.

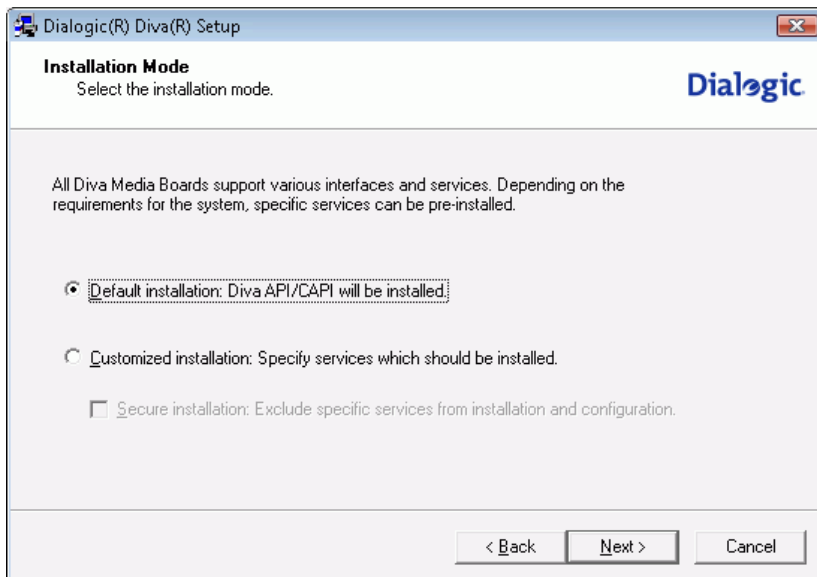
1. From the Windows® task bar, click **Start > Run**.
2. Enter the path to the update file on the hard disk, e.g.
C:\Temp\DIVA
(where C: is the hard disk drive letter)
3. In the welcome dialog box, click **Next** to start updating the drivers for all installed Diva Media Boards.
Note: If you installed a Diva Media Board that is not supported with this software version, the **Unsupported Board** box appears. For supported Diva Media Boards, see [Supported Dialogic® Diva® Media Boards](#) on page 15. This software version currently supports only the boards listed there.
4. The **License Agreement** box appears. Read the license agreement carefully. If you understand it and accept its terms, select **I accept the above license agreement** and click **Next**. If you do not understand and/or accept its terms, click **Cancel** to exit the process. You need to accept the license agreement to be able to update the drivers.
5. Select the switch type for your configuration in the **Default Switch Type** box if you have a Dialogic® Diva® ISDN Media Board installed, or in the **Default Analog Switch Type** box if you have a Dialogic® Diva® Analog Media Board installed.



Note: If you are changing the configuration and you want to use the same switch type as you selected during the update, select **Use existing switch type configuration**.

Click **Next**.

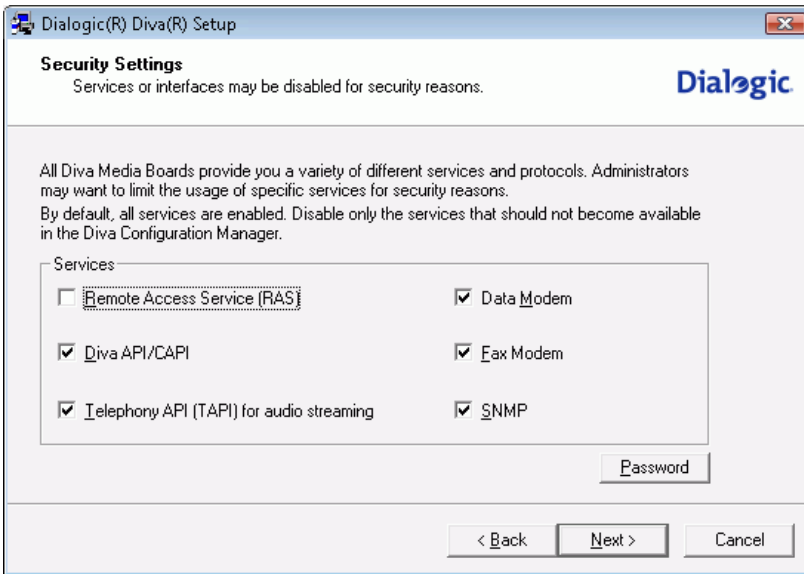
6. In the **Installation Mode** box, select if you want to install the board in default mode, customized mode, or secure mode.



- If you select **Default installation**, the Remote Access Service and Dialogic® Diva® API/CAPI are installed. Click **Next** and go to [step 11 on page 25](#) to continue with the installation.
- If you select **Customized installation**, you can specify the services that are to be supported. Click **Next** and go to [step 8 on page 23](#) to continue with the installation.
- If you select **Secure installation**, you can set security settings for the various services and interfaces. Additionally, you can set a password to prevent that unauthorized users change the settings. Click **Next** and proceed with the following step.

Note: The services that you deactivate during the installation are not available in the Dialogic® Diva® Configuration Manager. You have the opportunity to use these services if you activate them in the Dialogic® Diva® Configuration Assistant. See [Changing the configuration:](#) on page 25.

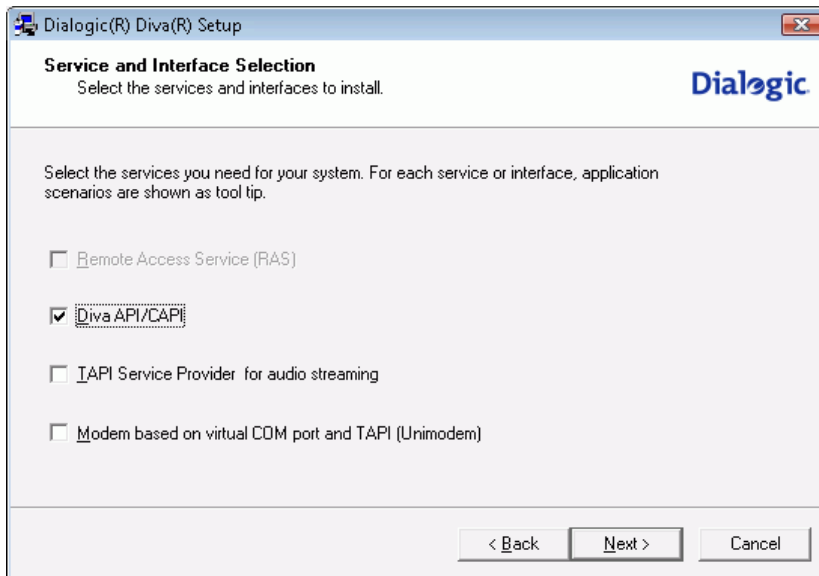
- In the **Security Settings** box, all possible services and interfaces are selected. Disable the services or interfaces you do not want to use for security reasons. You can set a password to prevent unauthorized users from changing the settings.



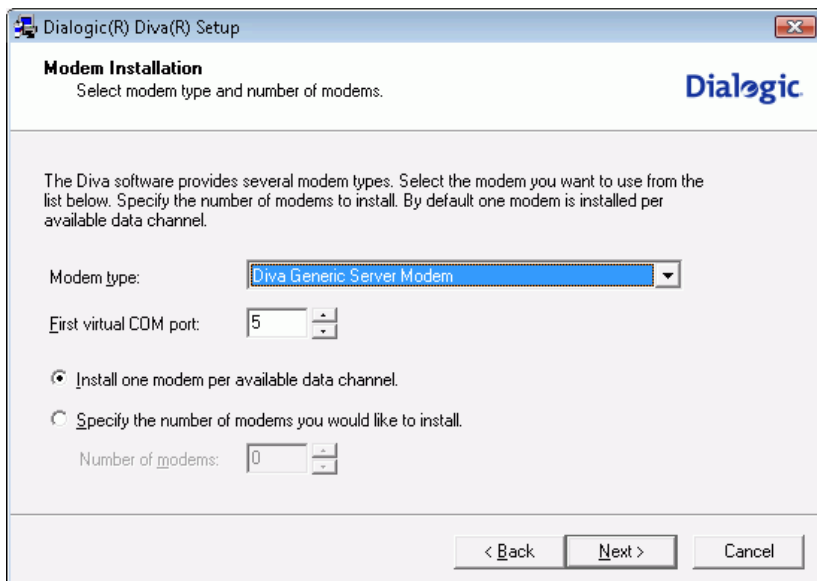
You need to deactivate at least one service. If all services need to be available, you have to configure them, see [step 8 on page 23](#).

Click **Next**.

- In the **Services and Interface Selection** box, select the services and interfaces you need for your system. If you selected **Secure Installation**, the services and interfaces you disabled in [step 7 on page 23](#) cannot be selected anymore. Click **Next**.

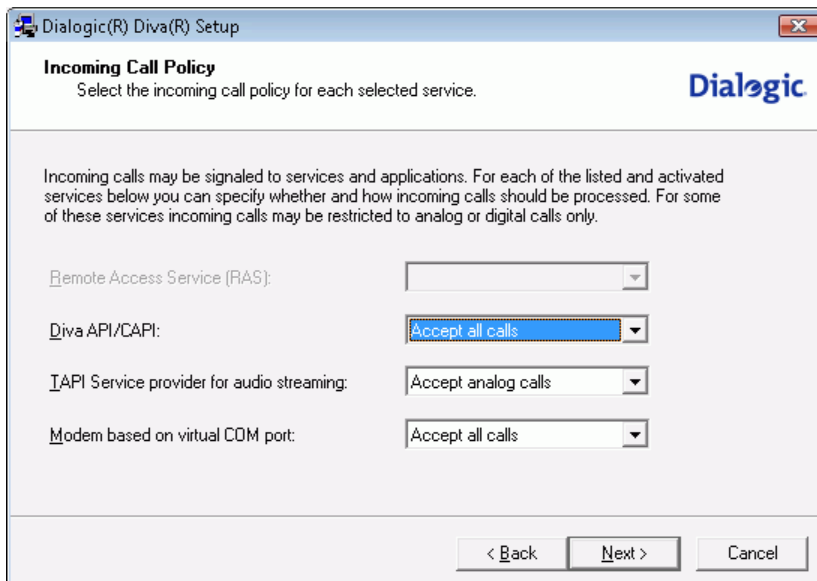


9. If you selected the service **Modem based on virtual COM port and TAPI (Unimodem)**, the **Modem Installation** box appears.



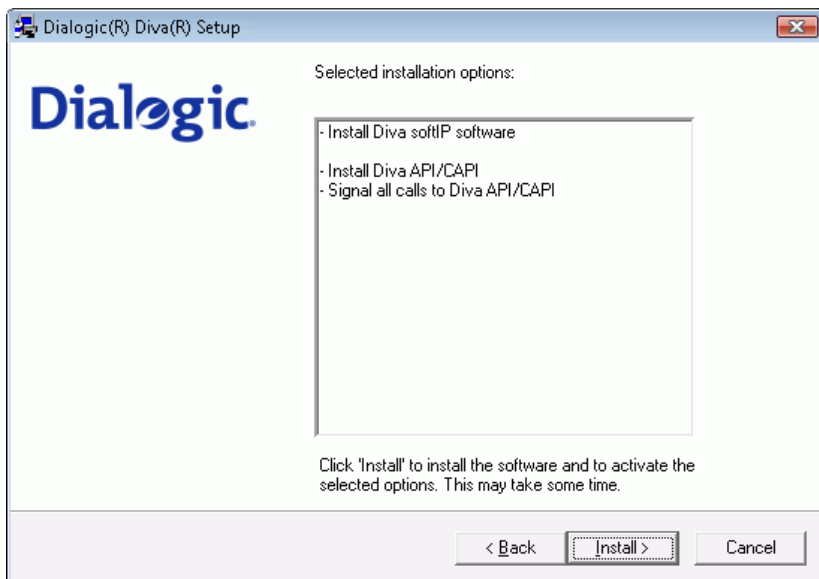
Select the virtual modem you want to use. If you do not want to use one modem per B-channel, select **Specify the number of modems you would like to install** and enter the number of modems. Click **Next**.

10. In the **Incoming Call Policy** box, select how to handle incoming calls.



Click **Next**.

11. In the displayed dialog box, the selected options are listed.



Click **Back** if you need to change the settings. Click **Next** to copy the appropriate files to your system.

Note: If you are installing a Beta version of the Dialogic® Diva® System Release software, a message might appear, warning you that the software has not been tested with Windows®. Continue with the installation. This message indicates only that the Diva System Release software does not yet have Microsoft certification; it does not prevent a correct installation of the software.

Official final releases of the Diva System Release software are certified by Microsoft® and this message does not appear.

12. When the copy process is complete, click **Finish** to complete the update.

Note: Depending on your system configuration, you may be prompted to restart your computer. Make sure that the **Restart your computer** option is selected to restart it after the update is complete.

You can now open the Diva Configuration Manager to add components and configure them.

See [Configuration with installed hardware](#) on page 29.

Changing the configuration:

If you have already updated the drivers and you need to change the configuration:

1. Click **Start > Programs > Dialogic Diva > Configuration Wizard**. The **Configuration Wizard** box appears. If you did not set a password during the update, click **Next**. If you set a password, enter it, and then click **Next**.

Note: If you change the configuration, existing settings will be overwritten.

2. Proceed as described in [step 5 on page 21](#).

CHAPTER 3

License Activation

You need to generate a license if you have installed one of the following products and purchased a license for one of the following functionalities. Upon request, all licenses are available as free 30-day test licenses:

Note: You can purchase the license with your Dialogic® Diva® Media Board vendor..

Product	Functionality
Dialogic® Diva® System Release WIN software	<ul style="list-style-type: none"> • Dialogic® Diva® softIP for SIP software v2.2 • Dialogic® Diva® SIPcontrol™ v1.8 Software (See the Dialogic® Diva® SIPcontrol™ Software Reference Guide for information about activating the license.) • Dialogic® Diva® softSS7 v1.5.2 software (See the Dialogic® Diva® softSS7 software Reference Guide for information about activating the license.)
All Dialogic® Diva® Media Boards, except Dialogic® Diva® BRI-CTI, BRI-2FX, PRI/E1/T1-CTI, and PRI/E1/T1-8 Media Boards	G.729 speech compression
Dialogic® Diva® V-2PRI or V-4PRI* Media Board	<ul style="list-style-type: none"> • Data modem support up to V.90 Note: V.90 modem is supported only on up to 20 channels per port. • VoIP Codec (G.729, AM-NB, RT Audio) • UM/Fax support up to V.34 (on 50% of the available channels) Note: If you have purchased a UM/Fax V.34 license, the number of simultaneous fax calls is limited to half the number of channels the Dialogic® Diva® Media Board offers. The Diva V-4PRI/E1/T1 Media Board offers 120/96 channels, but enables only 60/48 simultaneous fax calls. The Diva V-2PRI/E1/T1 Media Board offers 60/48 channels, but only 30/24 simultaneous fax calls. • TDM fax support up to V.34 (on all available channels) Note: V.34 fax is only available if you have purchased 60/48 fax channels for a Diva V-2PRI/E1/T1 Media Board or 120/96 fax channels for a Diva V-4PRI/E1/T1 Media Board and bound the licenses to the Diva Media Board.

* With the Dialogic® Diva® V-4PRI PCIe HS Media Board, data modem support and fax support are available via licenses but not on all channels.

To activate your license, you need the following information:

- [Device Unique ID \(DUID\)](#)
- [Proof of Purchase Code \(PPC\)](#)

As soon as you have both, the DUID and the PPC, visit the Dialogic® Diva® Activation site to register your PPC together with the DUID and you will receive your license file. Activate this license file in the License Manager of the Dialogic® Diva® Configuration Manager. For more information, see [To activate the license file](#).

Device Unique ID (DUID)

The DUID binds the license to the installed Dialogic® Diva® Media Board.

To get the DUID:

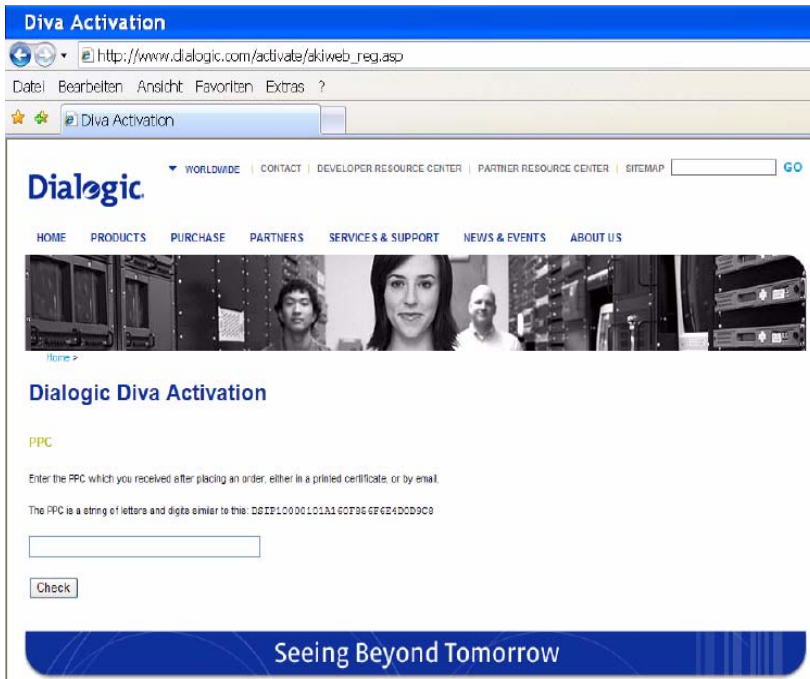
1. Click **Start > Programs > Dialogic Diva > Configuration Manager**.
2. In the menu bar, click **Tools > License Manager** and click **Available DUIDs on this system**.
3. In the right pane of the dialog, select the Diva Media Board for which you want to activate a feature license and click **Copy DUID to the clipboard**.
4. If you need to do web activation using another computer, open an editor, paste the DUID, and save the file.

Proof of Purchase Code (PPC)

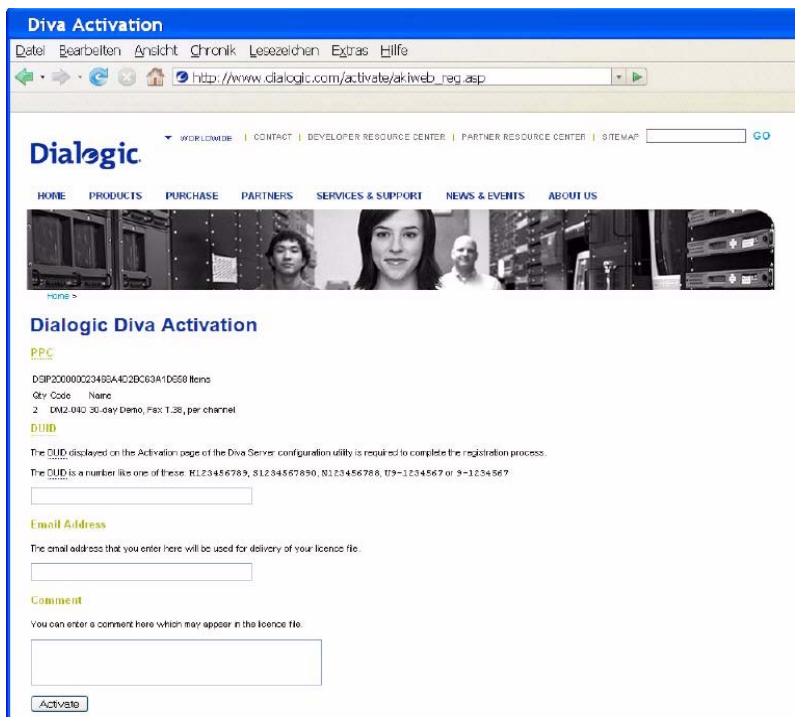
When you purchase the license, you will receive a PPC either in printed form or via email. By registering this PPC, you represent and warrant that you lawfully purchased the license.

To register your PPC and DUID

1. Open the following web site: <http://www.dialogic.com/activate>.
2. Enter your PPC and click **Check**.



3. If your PPC is valid, the following web site will open:



Paste your Device Unique ID (DUID) that you saved earlier, and enter your email address to which the license file should be sent.

4. Click **Activate** to generate the license file that will be sent to the email address you have entered.
5. Save the license file and activate it. For more information, see [To activate the license file](#) below.

To activate the license file

Note: The date set in the system settings of your computer must be correct. Otherwise, you cannot add your license file.

1. Click **Tools > License Manager** in the menu bar of the Dialogic® Diva® Configuration Manager.
2. Click **Add License** and go to the directory where you saved the license key file.
3. Select the license file and click **Open**.
4. Your license file is now added to the License Manager.
5. Click **Close** to close the License Manager.
6. In the Configuration Manager, click **File > Activate** to activate the configuration.
7. Now, the functionality is unlocked for the feature set you acquired with your license.

CHAPTER 4

Software Configuration

Configuration with installed hardware

After you have installed your Dialogic® Diva® Media Board and the board drivers as described in [Software Installation](#) on page 19, you can start the Dialogic® Diva® Configuration Manager:

1. Click **Start > Programs > Dialogic Diva > Configuration Manager**.
2. The Diva Configuration Manager displays the configuration you chose during the software installation:
 - The detected Dialogic® Diva® Media Board is installed.
 - The Diva Media Board is assumed to be connected to a corresponding ISDN BRI, PRI, or analog line.
 - Line properties are either set by default or to the parameters you set in the Dialogic® Diva® Installation Wizard.

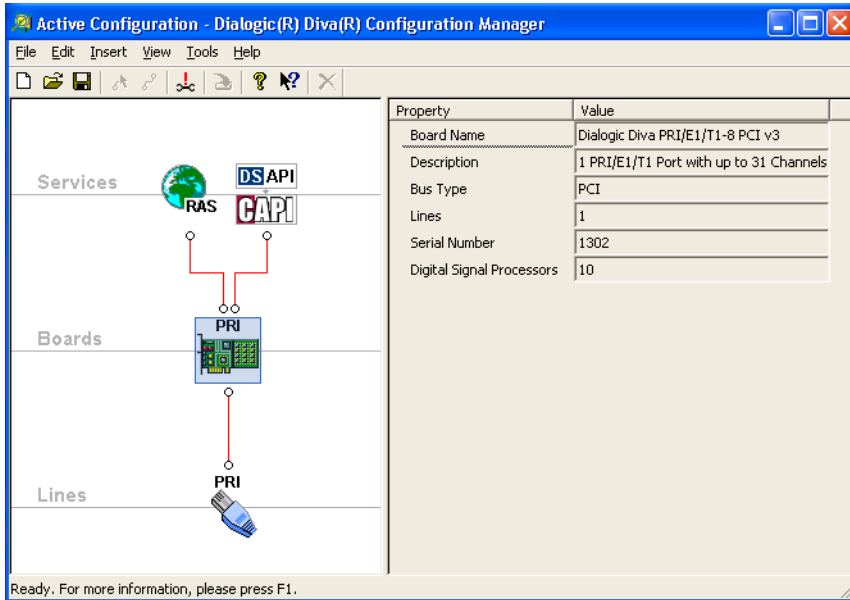
Notes:

- If you plan to use Channelized T1 Robbed Bit Signaling, then change the switch type in the line properties to "T1 Robbed Bit Signaling (RBS)" and your PRI line will change automatically into a T1 line (see "Line Properties" in the Diva Configuration Manager Online Help file (DSMain.chm)).
- If you plan to use "Direct Access Mode" or "R2 Signaling E1", then change the switch type in the line properties accordingly and your PRI line will change automatically into an E1 line (see "Line Properties" in the Dialogic® Diva® Configuration Manager Online Help file (DSMain.chm)).
- If you installed a fully detected Diva Media Board and chose **Default installation** during the driver update, then RAS and Dialogic® Diva® API/CAPI are installed and connected to the Diva Media Board.
- If you installed a fully detected Diva Media Board and chose **Customized installation** or **Secure installation** during the driver update, then the services you selected are installed and connected to the Diva Media Board.

RAS and Diva API/CAPI are configured to accept all incoming calls. This can cause conflicts between the two services, since both services are then listening to the same phone numbers. To avoid these conflicts, you should assign different MSNs, phone numbers, or extensions to the services in the binding properties for each service (see "Binding Properties" in the Diva Configuration Manager Online Help file (DSMain.chm)).

When you are using a North-American D-channel protocol with a Dialogic® Diva® BRI Media Board, you must always assign ISDN numbers because otherwise incoming calls cannot be accepted (see "Binding Properties" in the Diva Configuration Manager Online Help file (DSMain.chm)).

See below an example of a default installation for a Dialogic® Diva® PRI/E1/T1-8 Media Board:



3. You can now add components to your Dialogic® Diva® System Release software and configure them as described in "Configuring" in the Diva Configuration Manager Online Help file (DSMain.chm).

Creating configuration files

You can create configuration files manually, without having a Dialogic® Diva® Media Board physically installed in your computer. With a manual configuration, the system administrator can create a complete configuration and save it as a configuration file. This configuration file can be made available to the users who then only need to install the board drivers and to activate the configuration created by the system administrator. As such, users do not need to configure the software.

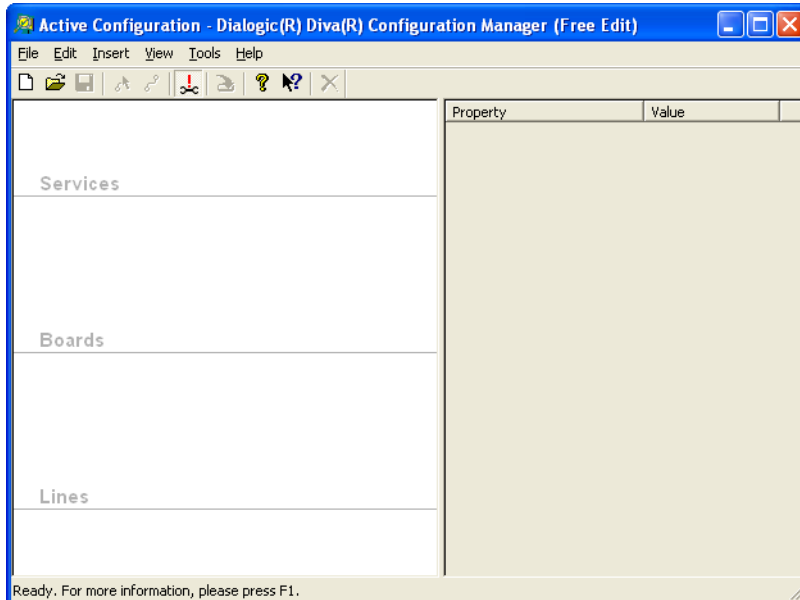
To start an empty configuration:

1. Click **Start > Run**.
2. To enter the path to the Dialogic® Diva® Configuration Manager, type, for example:

C:\Temp\DIVA\Disrvcfg.EXE
(where C: is the hard disk drive letter).

Click **OK**.


3. The Diva Configuration Manager is displayed with no components:



4. You can now do a complete manual configuration as described in "Configuring" in the Diva Configuration Manager Online Help file (DSMain.chm).

Note: If configuration files have been created before, you can start the Diva Configuration Manager and load a configuration file. The configuration file is displayed and you can modify it according to your requirements.

To activate an existing configuration

To activate a configuration file for your system, open the configuration file and click **File > Activate**; or click the activate button  in the toolbar.

Note: You can only activate a configuration file for your system if the Dialogic® Diva® Media Boards that are available in the Diva Configuration Manager correspond to the Diva Media Boards that are physically installed in your computer.

Activating 256 ms Echo Cancellation on Dialogic® Diva® V-2PRI and V-4PRI Media Boards

For typical applications, the Echo Canceller tail length is set to 128 ms. In some cases, it might be useful to use an Echo Canceller tail length of 256 ms. Note that 128 ms tail length is the default value that is already preset on the Dialogic® Diva® Media Boards.

To activate the 256 ms echo cancellation:

1. Open a text editor and write the following: `Write ="Config\Echo Canceller\Sparse Span" W 256` for an Echo Canceller of 256 ms. You can also enter any other value between 0 and 256 for a shorter tail length.
2. Press **Enter** to create a blank line.
3. Save the text file as `adapter.cfg` under `%SYSTEMROOT%\system32\drivers\disdn`.
4. Restart your PC to activate the echo cancellation.

CHAPTER 5

Dial-Up Networking and RAS Administration

In the terminology used by the Remote Access Service, the calling station is referred to as the **Client** and the called station as the **Server**. The RAS client/server architecture allows a station to be defined simultaneously as a server and as a client, and therefore enables simultaneous initiation of outgoing and incoming ISDN or channelized T1 connections. For example, this enables the peer-to-peer connection of two Windows® XP or Windows Vista® workstations.

RAS client setup

The RAS client can be used to establish connections to the following remote stations:

- all Windows® operating systems with RAS in server mode
- Internet Service Provider
- TCP/IP router

Setting up a RAS client:

- [Under Windows® XP and Windows Server® 2003](#) below.
- [Under Windows Vista® and Windows Server® 2008:](#) on page 36.

Under Windows® XP and Windows Server® 2003

1. *Under Windows® XP:*

Click **Start > Settings > Control Panel > Network Connections**.

In the **Network Connections** window, under **Network Tasks** on the left window side, double-click **Create a new connection**.

Under Windows Server® 2003:

Click **Start > Control Panel > Network Connections > New Connection Wizard**.

- 2.** If the **Location Information** box appears, enter the country/region in which you are located. Enter your area code and, if required, your prefix number to access an outside line.

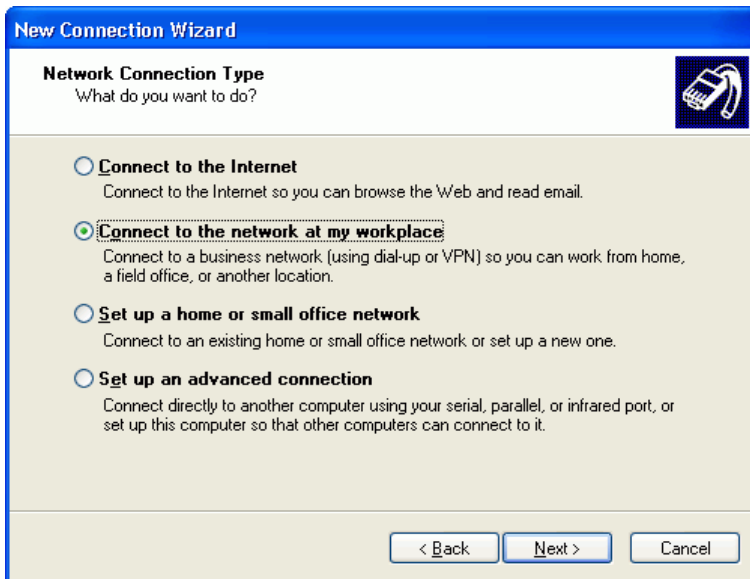
Click **OK**.

- 3.** If the **Phone and Modem Options** box appears, select your location.

Click **OK**.

- 4.** In the **New Connection Wizard**, click **Next**.

5. In the **Network Connection Type** box, select **Connect to the network at my workplace**.



Note: The screen might appear slightly different under Windows Server® 2003.

Click **Next**.

6. In the **Network Connection** box, select **Dial-up connection** and click **Next**.

7. If you have configured more than one port for outgoing calls, you must specify a port:

Select a port, for example **ISDN channel - Dialogic Diva BRI-2** to dedicate a line to this outgoing connection.

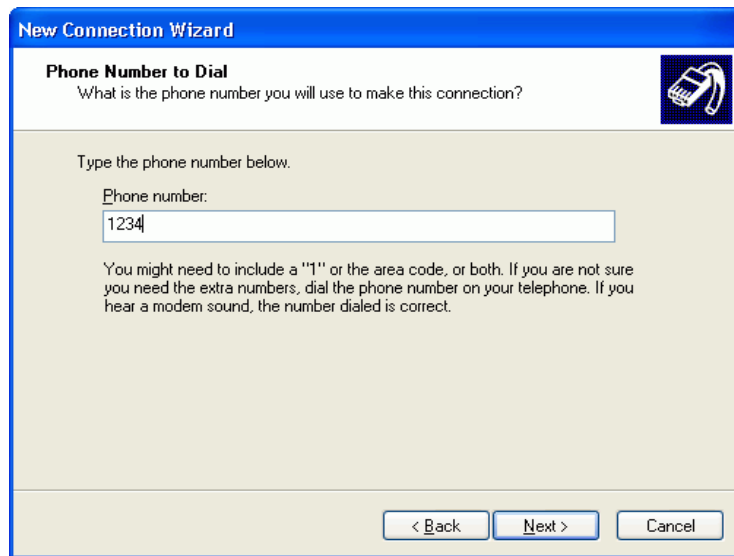
The effect of the setting **All available ISDN lines multi-linked** is that RAS will automatically establish a connection over all lines.

Note: A larger number of active lines may increase telephone charges. With a normal basic rate interface, a connection with the setting **All available ISDN lines multi-linked** would be established over both B-channels.

Click **Next**.

8. In the **Connection Name** box, enter a name for your RAS connection. Click **Next**.

9. In the **Phone Number to Dial** box, enter the phone number of the server.



The screenshot shows a Windows dialog box titled "New Connection Wizard" with a blue header. Below the header, the title "Phone Number to Dial" is displayed in bold, followed by the question "What is the phone number you will use to make this connection?". A small icon of a telephone handset is in the top right corner. The main area contains the instruction "Type the phone number below." and a text input field labeled "Phone number:" containing the text "1234". Below the input field, there is a paragraph of explanatory text: "You might need to include a '1' or the area code, or both. If you are not sure you need the extra numbers, dial the phone number on your telephone. If you hear a modem sound, the number dialed is correct." At the bottom of the dialog, there are three buttons: "< Back", "Next >", and "Cancel".

If the server is configured to use subaddresses, you must specify the appropriate subaddresses under **Phone Number:**, separated by the vertical stroke "|", (the pipe symbol, or press [Alt] and the digits [0], [1], [2] and [4] on the numeric keypad).

For example, if the phone number is 071594066 SUB 41, you must enter 071594066|41.

If your connection protocol is something other than synchronous HDLC, you must specify which protocol is used. This information can be attached to the server phone number, separated by the caret character "^".

For example, for an analog call, add "^MODEM" to the phone number of the server. For a call to GSM, add "^GSM1", "^GSM2" or "^GSM3".

If your connection uses something other than a transfer rate of 64 kbps, you must specify which transfer rate is used. This information can also be attached to the server phone number separated by the caret character "^".

For example, for a call to some regions in the United States where a line, a switch, or a device only supports a transfer rate of 56 kbps, add "^56K" to the server phone number. The "T1 RBS" switch type always uses a transfer rate of 56 kbps. Therefore, you must add "^56K" for all outgoing calls if you use this switch type. The required information can be found in the following table. The various parameters can also be entered in combination.

Designation	Description
Framing	
^HDLC	synchronous HDLC
^X.75	synchronous X.75
^ASYNC	additional information asynchronous
^SYNC	additional information synchronous
Services	
^XP	synchronous HDLC transparent (standard)
^V.120	asynchronous, default transfer rate is 64K, transfer rates given below can also be entered
^V.110	asynchronous, default transfer rate is 9600, transfer rates given below can also be entered
^GSM1	asynchronous without flow control, V.110/9600
^GSM2	asynchronous with flow control, V.110/9600
^GSM3	asynchronous with flow control, without LLC, V.110/9600
^PIAFS	PIAFS 2.1/64K (Dialogic® Diva® BRI, UM-BRI, 4BRI, UM-4BRI, any PRI, UM-PRI, and V-PRI Media Boards)
^PIAFS^32K	PIAFS 1.0/32K (Dialogic® Diva® BRI, UM-BRI, 4BRI, UM-4BRI, any PRI, UM-PRI, and V-PRI Media Boards)
^MODEM	asynchronous, entry of transfer speed is ignored, since this is handled by the modem
Speeds	
^600	asynchronous with ^V.110
^1200	asynchronous with ^V.110
^2400	asynchronous with ^V.110
^4800	asynchronous with ^V.110
^9600	asynchronous with ^V.110
^14400	asynchronous with ^V.110
^19200	asynchronous with ^V.110
^28800	asynchronous with ^V.110
^33600	asynchronous
^38400	asynchronous with ^V.110
^56K	HDLC, X.75, V.120
^64K	HDLC, X.75, V.120

Click **Next**.

10. In the **Connection Availability** box, select whether the connection should be made available to all users or only to yourself.

Click **Next**.

11. If you are connected to a network and you selected to make the connection available to all users, the **Internet Connection Sharing** box will be displayed.

12. Specify if your Internet connection can be shared by all users or if it should be available only to yourself. Click **Next**.

13. Click **Finish** to save the newly set up RAS client. If you need to make changes, click **Back** until you reach the box where the changes are to be made.

14. In the displayed dialog box, click the **Dial** button to connect.

Under Windows Vista® and Windows Server® 2008:

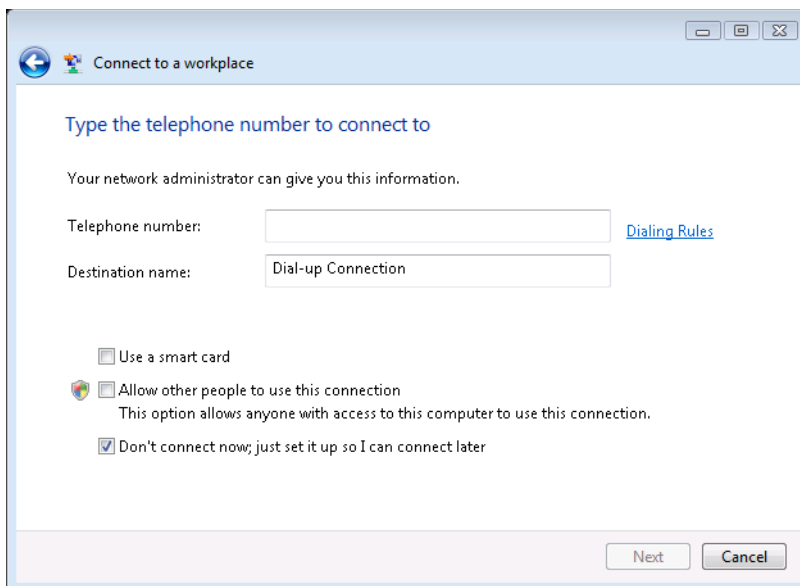
Before you can set up the RAS client, you need to enable the RAS service.

To do so:

1. Click **Start > Settings > Control Panel > Administrative Tools > Services.**
2. Double-click **Remote Access Connection Manager.**
3. On the **General** tab under **Startup type** select **Automatic.**
4. Click **OK.**

To set up the RAS client:

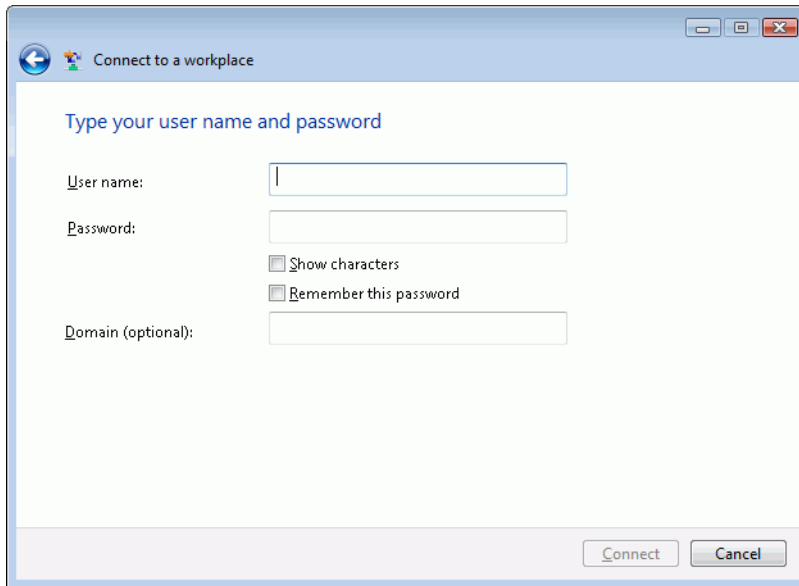
1. Click **Start > Settings > Control Panel > Network and Sharing Center.**
2. Click **Set up a connection or network** on the left.
3. In the displayed box, double-click **Connect to a workplace.**
4. In the **How do you want to connect?** box, select **Dial directly.**
5. If you have installed more than one Dialogic® Diva® Media Board, you need to select one Diva Media Board.
6. In the displayed box, type the phone number of the RAS server you want to connect to. Enter a name for the RAS connection next to **Destination name.**



If the server is configured to use subaddresses, you must specify the appropriate subaddresses in the telephone number of the RAS server. For more information, go to on page 34.

If the connection should be made available to all users, select **Allow other people to use this connection.** Click **Next.**

7. In the displayed box, enter the user name and password that you use to connect to the RAS server. Your IT administrator can give you the necessary information. Click **Connect** to establish a connection to the RAS server.



Assign multiple phone numbers to a connection

You can assign several phone numbers to a connection. These phone numbers will be used as alternative numbers if the first number fails, for example, when the line is busy.

1. *Under Windows® XP and Windows Server® 2003:*
Click **Start > Control Panel > Network Connections** and right-click the connection to which you want to assign multiple numbers.

Under Windows Vista® and Windows Server® 2008:

Click **Start > Settings > Network Connections** and right-click the connection to which you want to assign multiple numbers.

2. Select **Properties**.
3. In the properties dialog box of your connection, click the **General** tab. Click **Alternates**.
4. In the **Alternate Phone Numbers** box, check the option **If number fails, try next number**.
5. To add a new phone number to the list, click **Add**.
6. In the **Add Alternate Phone Number** box, enter the phone number. Click **OK**.
7. Click **OK** to close the **Alternate Phone Numbers** box.
8. Click **OK** again to close the properties dialog box.

To observe the progress of an active connection

1. Click **Start > Settings > Network Connections** and right-click the connection.
2. Select **Status** (see also [RAS status](#) on page 40).

To specify the network protocol(s) for every set-up connection

1. Click **Start > Settings > Network Connections** and right-click the connection.
2. Select **Properties**.
3. In the properties dialog box of your connection, click the **Networking** tab.

You can now activate the desired network protocol(s) for your connection.

For more detailed information on the RAS client, see the Windows RAS documentation.

RAS server setup

Note: Windows® XP Professional and Windows Vista® allow you to set up an incoming connection that can accept up to three (3) incoming calls.

To set up an connection under Windows® XP start the **New Connection Wizard** and select **Set up an advanced connection > Accept incoming connections**.

To set up an connection under Windows Vista® go to **Start > Settings > Control Panel > Network Connection > File > New Incoming Connection**.

Since Windows® XP Professional and Windows Vista® do not allow for setting up a RAS server for a large number of incoming connections, the following description only refers to the Windows Server® 2003 and Windows Server® 2008 operating systems.

The Remote Access application enables you to configure and control the RAS server.

To configure and enable remote access under Windows Server® 2003 and Windows Server® 2008:

1. Click **Start > Settings > Control Panel > Administrative Tools > Routing and Remote Access**.
2. In the **Routing and Remote Access** window, right-click the entry for your computer and select **Configure and Enable Routing and Remote Access**.
3. In the **Routing and Remote Access Server Setup Wizard**, click **Next**.
4. In the **Configuration** dialog box, select **Remote access (dial-up or VPN)**.



Click **Next**.

5. In the **Remote Access** box, select whether the server should receive VPN and/or dial-up connections.

Click **Next**.

6. In the **IP Address Assignment** box, specify whether IP addresses will be assigned to remote clients automatically or from a specified range.

Click **Next**.

Note: If you select to assign the IP addresses from a specified range, enter the address ranges in the following dialog boxes.

7. If your computer is part of a network, the **Managing Multiple Remote Access Servers** box is displayed. Specify if you want to set up your RAS server to use an existing RADIUS server. By default, the RADIUS server is not used.

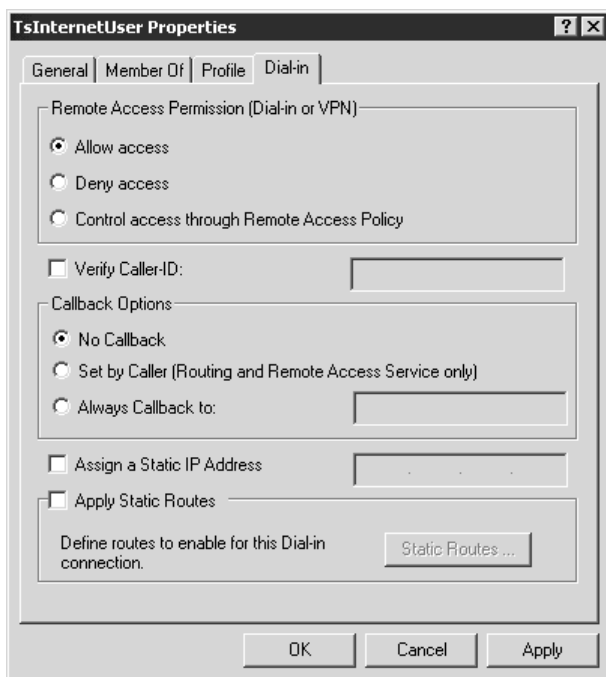
The RADIUS (Remote Authentication Dial-In User Service) protocol is used for managing remote user authentication and authorization in dial-up networks or virtual private networks. If a RADIUS server is available in your LAN, you can have your RAS connections authenticated and monitored by this server. You do not need to create your own remote access policies.

Click **Next**.

8. Click **Finish** to finish the **Routing and Remote Access Server Setup Wizard**.

To configure access authorizations for the RAS server:

- Under *Windows Server® 2003*:
Click **Start > Administrative Tools > Computer Management**.
- In the **Computer Management** window, select **System Tools > Local Users and Groups > Users**.
- In the details pane, right-click the user for whom you want to configure the access authorizations. Select **Properties**.
- In the properties dialog box, select the **Dial-in** tab and activate the desired access rights:



- **Allow access**
The user has the direct permission to dial into the RAS server. This permission overrules all remote access policies.
- **Deny access**
The user has no permission to dial into the RAS server. This denial also overrules all remote access policies.

- **Control access through Remote Access Policy**

Depending on the Remote Access Policy, dial-in permission is granted or denied to the user. For further information on Remote Access Policies, see your Windows® documentation.

The following callback options can be configured:

- **No Callback**

The client establishes the connection to the server and maintains the connection. The user of the RAS client assumes all charges.

- **Set by Caller (Routing and Remote Access Service only)**

The client establishes the connection to the server, sends its current call number and then breaks the connection. The server calls the client back at the number given and therefore assumes the charges for the call. The client's call can therefore be made from any site.

- **Always Callback to**

The client establishes the connection to the server, thereby indicating that a connection is required, and then breaks the connection. The server calls the client back at the preassigned call number. This provides that the client can call from one telephone terminal only. This provides that no other partner can call from another terminal, because this call number cannot be manipulated.

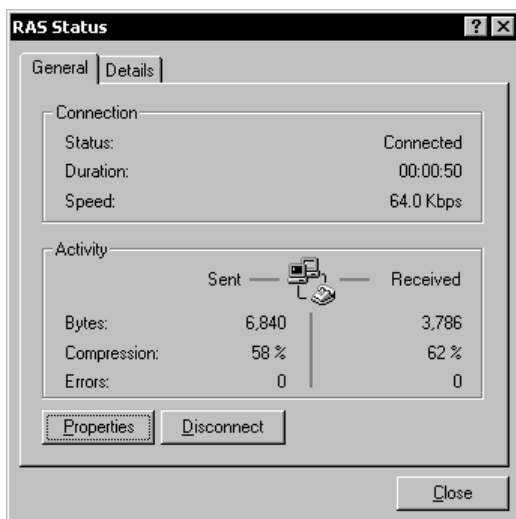
To close the dialog box, click **OK**.

Note: Only the users that are set up on the server are shown in the "Users" list. For information on how to configure authorizations for remote access for Windows Server® 2003 and Windows Server® 2008 domains, see your Windows® documentation.

RAS status

To monitor a currently active connection:

1. To monitor the status of a currently active outgoing connection, right-click the connection. Select **Status**.
2. The **RAS Status** monitor is displayed:



To monitor a connection each time it is active:

1. Click **Start > Control Panel > Network Connections** and select the desired connection.
2. In the displayed dialog box, click **Properties**.
3. In the properties dialog box, click the **General** tab:
Check the option **Show icon in taskbar when connected**. Click **OK**.
4. Each time, when the connection is active, an icon is displayed in the Windows® taskbar.

To monitor the status of RAS server ports:

- 1.** To monitor the status of a RAS server port, click **Start > Programs > Administrative Tools > Routing and Remote Access**.
- 2.** In the **Routing and Remote Access** window, click the **+** next to your RAS server to expand the tree.
- 3.** Click **Ports** to display the available ports in the right window pane.
- 4.** Double-click the port for which you want to display the **Port Status**.

CHAPTER 6

SNMP Support For A Dialogic® Diva® Media Board

The Windows® implementation of the Simple Network Management Protocol (SNMP) is used to configure remote devices or to monitor network performance, to audit network usage, and to detect network faults or inappropriate access. The SNMP support is only available if the service is installed for your operating system. The output formats are defined in the MIB specification. Messages of the SNMP cannot be seen in the Dialogic® Diva® Diagnostics tool; for this, you need specific SNMP tools, which are not part of the Dialogic® Diva® System Release software. To activate the SNMP service, use the Dialogic® Diva® Configuration Manager. See the Dialogic® Diva® Configuration Manager Online Help file (DSMain.chm) for more information.

To activate SNMP support for a Dialogic® Diva® Media Board

1. Install the Windows® SNMP service as described below.
2. Add the SNMP service in the Diva Configuration Manager as described on page 43.
3. Install an SNMP tool , e.g., Net.SNMP (optional, for testing only).
4. Restart your computer.
5. Verify the service status as described on page 44.
6. Verify the function of the SNMP service as described on page 45.

To install the Windows® SNMP service:

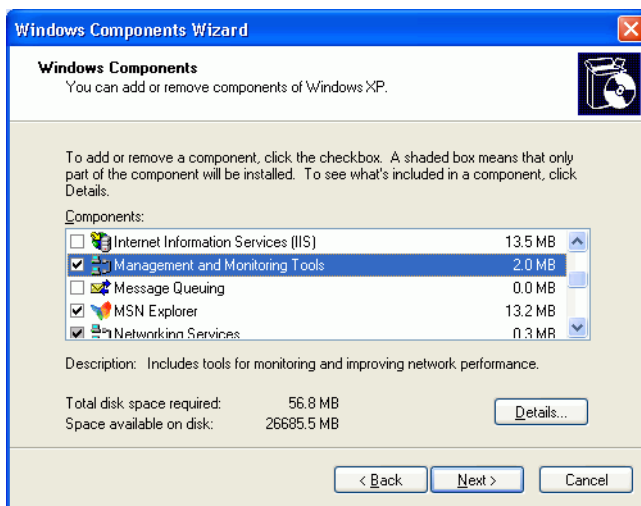
The installation of the SNMP service depends on the operating system.

For Windows® XP and Windows Server® 2003, see below.

For Windows Vista® and Windows Server® 2008, see page 43.

Under Windows® XP and Windows Server® 2003:

1. Click **Start > Control Panel > Add or Remove Programs**.
2. In the **Add or Remove Programs** box, click **Add/Remove Windows Components** on the left hand side.
3. The **Windows Components Wizard** box appears.



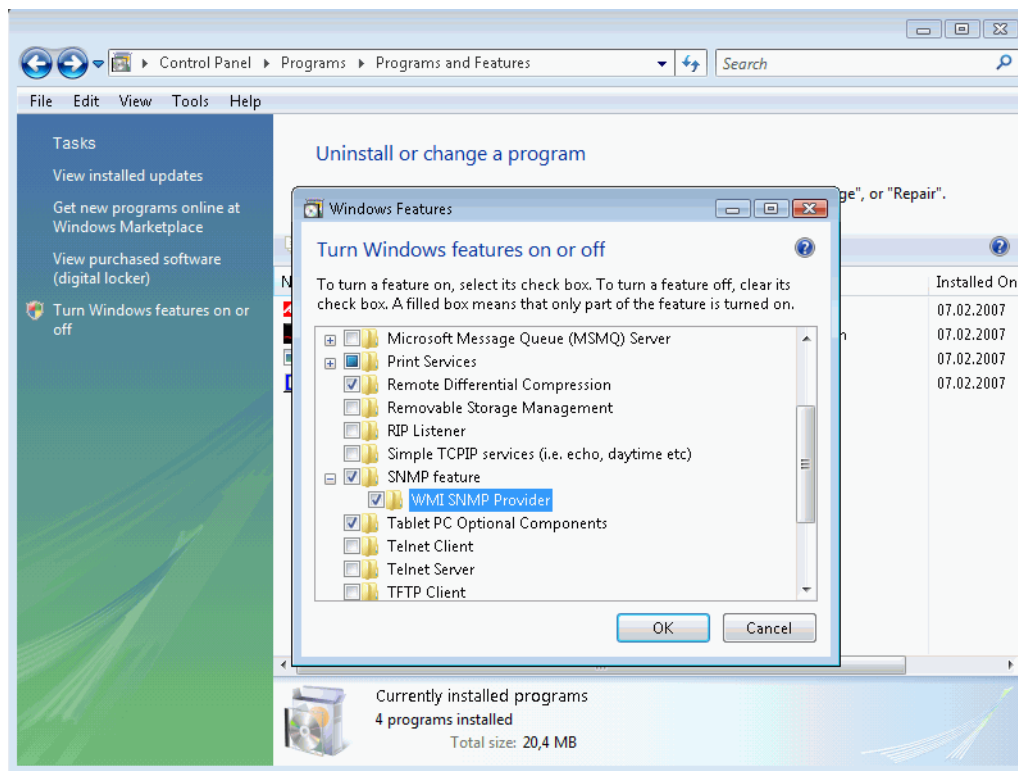
Select **Management and Monitoring Tools** and click **Next**.

4. During the installation of the components, you might be asked to insert the CD-ROM of the operating system or to enter the path to a server on which the files of your operating system are stored.
5. In the **Completing Windows Components Wizard** dialog box, click **Finish** to terminate the installation and close all open dialog boxes.

You can now add the SNMP service to the Dialogic® Diva® Configuration Manager as described below.

Under Windows Vista® and Windows Server® 2008

1. Click **Start > Control Panel > Programs > Programs and Features**.
2. Click **Turn Windows features on or off** in the left window pane. If you are asked for permission to continue, click **Continue**.
3. In the **Windows Features** dialog box, click the **+** sign next to **SNMP feature**, select this feature, and **WMI SNMP Provider**.



Click **OK**.

4. During the installation of the components, you might be asked to insert the CD-ROM of the operating system or to enter the path to a server on which the files of your operating system are stored.
5. Close all windows after the installation is finished.
6. You can now add the SNMP service to the Dialogic® Diva® Configuration Manager as described below.

To add the SNMP service in the Dialogic® Diva® Configuration Manager

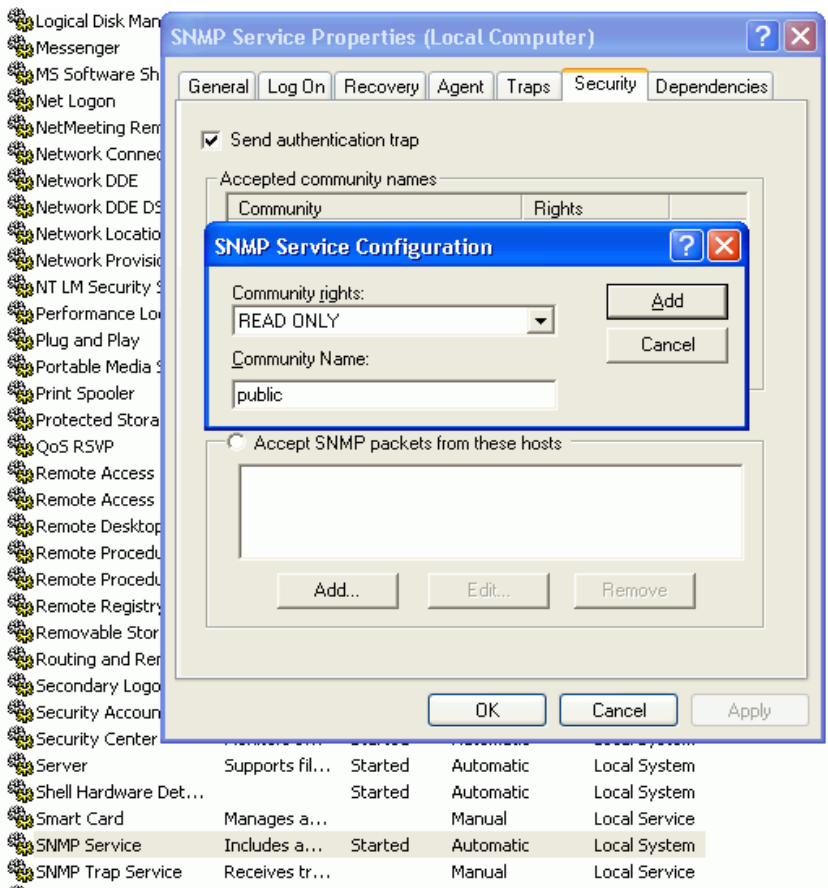
1. Click **Start > All Programs > Dialogic Diva > Configuration Manager** to open the Diva Configuration Manager.
2. In the menu bar, click **Insert > SNMP Service**. The SNMP Service is added to the Boards layer.
3. Activate the configuration. Once the configuration is activated, the Dialogic® Diva® System Release software validates if Windows® SNMP support is available. If it is not available, an error message is displayed and the SNMP icon is removed from the configuration.

Note: You do not need to connect the SNMP service to any Dialogic® Diva® Media Board. The SNMP is always available for all installed Diva Media Boards.

You can now install the SNMP tool and restart the PC. To install the SNMP tool correctly, consult the documentation of the tool.

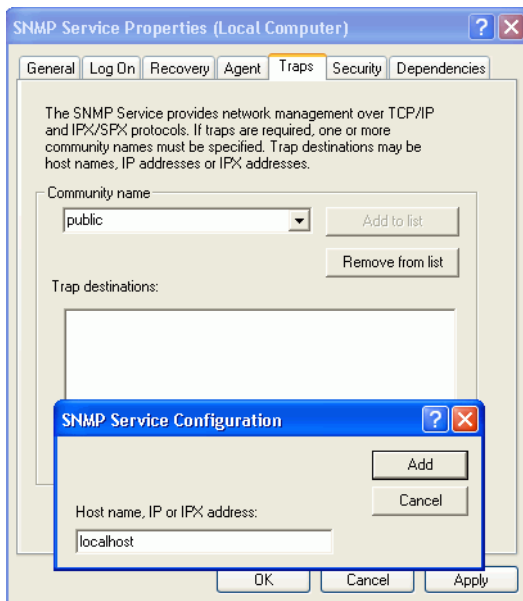
To verify the service status

1. Click **Start > Control Panel > Administrative Tools** to open the **Administrative Tools** window.
2. In the **Administrative Tools** window, double-click **Services**.
3. In the **Services** window, right-click **SNMP Service** and select **Properties** from the list.
4. In the **Properties** dialog box, click the **Security** tab and under **Accepted community names**, click **Add**. Enter a community name, for instance, public, and for **Community rights**, select **READ ONLY**.



5. Click the **Traps** tab, enter the community name you added in the **Security** tab, and click **Add to list**.

6. Under **Traps destinations**, click **Add**, enter the name or IP address of the host computer, and click **Add**.



7. The host name is added to the list of Trap destinations.
8. Click **OK** to close the dialog box.
9. Restart the SNMP service. To do so, right-click **SNMP Service** in the **Services** window and select **Restart** from the list.
10. Close the **Services** window.

To verify the function of the SNMP service

1. Click **Start > Run** and type `cmd` to open a DOS window.
2. In the DOS window, type: `snmpwalk -v 2c -c public localhost interface | find "Diva"`

The result should be similar to the following, which is for a Dialogic® Diva® V-4PRI Media Board:

```
IF-MIB::ifDescr.101 = STRING: Dialogic_Diva_V-4PRI/E1/T1_1030
IF-MIB::ifDescr.133 = STRING: Dialogic_Diva_V-4PRI/E1/T1_1030
IF-MIB::ifDescr.164 = STRING: Dialogic_Diva_V-4PRI/E1/T1_1030
IF-MIB::ifDescr.195 = STRING: Dialogic_Diva_V-4PRI/E1/T1_1030
```

3. In the DOS window, type: `snmptrapd -f -L o`

The result should be similar to the following:

```
2006-01-28 11:14:35 NET-SNMP version 5.2.1.2 Started.
```

You can create an output of traps if you change the status of the layer 1/2, for instance by disconnecting the cable from the Diva Media Board. The result after changing the status of layer 1/2 should be similar to the following:

```
2006-01-28 11:16:25 localhost [127.0.0.1] (via UDP: [127.0.0.1]:1053) TRAP, SNMP v1, community public
SNMPv2-SMI::enterprises.434.2 Link Up Trap (0) Uptime: 1:16:47.06
IF-MIB::ifIndex.101 = INTEGER: 101
SNMPv2-SMI::enterprises.434.2 Link Down Trap (0) Uptime: 1:16:48.57
IF-MIB::ifIndex.101 = INTEGER: 101
2006-01-28 11:16:26 localhost [127.0.0.1] (via UDP: [127.0.0.1]:1053) TRAP, SNMP v1, community public
SNMPv2-SMI::enterprises.434.2 Link Up Trap (0) Uptime: 1:16:48.81
IF-MIB::ifIndex.101 = INTEGER: 101
```

Supported MIBs, OIDs, and traps

This section provides information about supported MIBs, OIDs, and traps by the Dialogic® Diva® SNMP service and about the relationship between supported OIDs and Dialogic® Diva® Media Board management interface variables.

MIB-II (RFC 1213/2233)	Path	Description
MIB-II	interfaces.ifTable.ifEntry.	
	ifIndex	Unique index of Dialogic® Diva® interfaces starting with ifIndex-offset + 1 (see option -oN). First, all installed Dialogic® Diva® Media Boards are listed, followed by the available B-channels.
	ifDescr	For Dialogic® Diva® Media Boards, the board name and its serial number are returned. For B-channels, the string "BRI + ifIndex_of_board + number_of_b- channel_on_board" is returned.
	ifType	The type of the interface according to IANA: PRI, BRI, ISDN.
	ifMTU	Since the concept of MTU is not applicable on Dialogic® Diva® interfaces, they return always 0.
	ifSpeed	The maximum interface speed in bps
	ifAdminStatus	Always up
	ifOperStatus	The current operating status of the interface
	ifInBytes, ifInPackets, ifInErrors, ifOutBytes, ifOutPackets, ifOutErrors	For Dialogic® Diva® Media Boards, the added values of the D- and B-channel interface counters are returned. mantool reports these values in the following paths "Statistics\[D B]-Layer2\[R X]-[Bytes Frames Errors]". For B-channels, the following values are reported: "State\[B[n]]\L2 Stats\[R- [Bytes Frames Errors]".
	ifPhysAddr	Returns vendor-id, PnP-id, serial number of Dialogic® Diva® Media Boards formatted as hex string. Returns no information for B-channels.
	LinkUp/LinkDown Traps	For status changes of interfaces, a trap is generated that includes the appropriate ifOperStatus varbind. Trap destinations and access parameters must be configured in the underlying master agent (trapsink, etc.).
ISDN-MIB (RFC2127)	transmission.isdnMib.isdnMibObjects.isdnSignalingGroup	
	isdnSignalingGetIndex	Number of possible D-channels (equals number of installed Dialogic® Diva® Media Boards)
ISDN-MIB	transmission.isdnMib.isdnMibObjects.isdnBasicRateGroup.isdnBasicRateTable.isdnBasicRateEntry	Dialogic® Diva® BRI Media Boards
	isdnBasicRateIfType	isdns or isdnu (IANA-ifType 75, 76)
	isdnBasicRateLineTopology	pointToPoint or pointToMultipoint
	isdnBasicRateIfMode	TE mode or NT mode
	isdnBasicRateSignalMode	D-channel active or inactive

ISDN-MIB	transmission.isdnMib.isdnMibObjects.isdnBearerGroup.isdnBearerTable.isdnBearerEntry	B-channels
	isdnBearerChannelType	dialup or leased
	isdnBearerOperStatus	idle, active, unknown
	isdnBearerChannelIndex	Index of B-channel per Dialogic® Diva® Media Board
	isdnBearerPeerAddress	Remote address
	isdnBearerPeerSubAddress	Remote sub address
	isdnBearerCallOrigin	Answer or originate
	isdnBearerInfoType	Info type as per Q.931 (unrestrictedDigital)
	isdnBearerCallConnectTime	Time measured from start of divasnmpx
DIAL-CONTROL-MIB	transmission.dialControlMib.dialControlMibObjects.callActive.callActiveTable.callActiveEntry	
	callActiveSetupTime	Timeticks at start of call, measured from start of divasnmpx .
	callActiveIndex	Unique index
	callActivePeerAddress	Address of remote partner
	callActivePeerSubAddress	Subaddress of remote partner
	callActivePeerId	Always 0 (unknown)
	callActivePeerIfIndex	Always 0 (unknown)
	callActiveLogicalIfIndex	Index of entry in ifTable for the interface used by this call.
	callActiveConnectTime	0 if the call was not connected, otherwise timeticks measured from start of divasnmpx .
	callActiveCallState	State of call
	callActiveCallOrigin	Direction of call: Answer or originate
DIAL-CONTROL-MIB (RFC2128)	transmission.dialControlMib.dialControlMibObjects.callHistory	
	callHistoryTableMaxLength	The maximum number of entries in the callHistoryTable (read/write).
	callHistoryRetainTimer	The minimum amount of time in minutes that a callHistoryEntry will be maintained before being deleted.
DIAL-CONTROL-MIB	transmission.dialControlMib.dialControlMibObjects.callHistory.callHistoryTable.callHistoryEntry	
	callHistoryPeerAddress	Address of remote partner
	callHistoryPeerSubAddress	Subaddress of remote partner
	callHistoryPeerId	Always 0
	callHistoryPeerIfIndex	Always 0
	callHistoryLogicalIfIndex	Index of entry in ifTable for the interface used by this call.
	callHistoryDisconnectCause	Reason for disconnecting this call
	callHistoryDisconnectText	empty
	callHistoryConnectTime	Timeticks measured from start of divasnmpx .

	callHistoryDisconnectTime	Timeticks measured from start of divasnmpx .
	callHistoryCallOrigin	Direction of call: Answer or originate.

The definition for the ISDN-, DIAL-CONTROL-, and DS1-MIB can be imported into any management application to decode the OIDs reported by **divasnmpx**. For net-snmp, simply copy these files to the standard MIB path (usually <%program files%>\netsnmp\share\snmp\mibs) and tell the snmp command line tools to use them by exporting/setting the environment variable "MIBS" with the names of the appropriate MIBs (or simply the keyword ALL), e.g., **Set MIBS=ALL**.

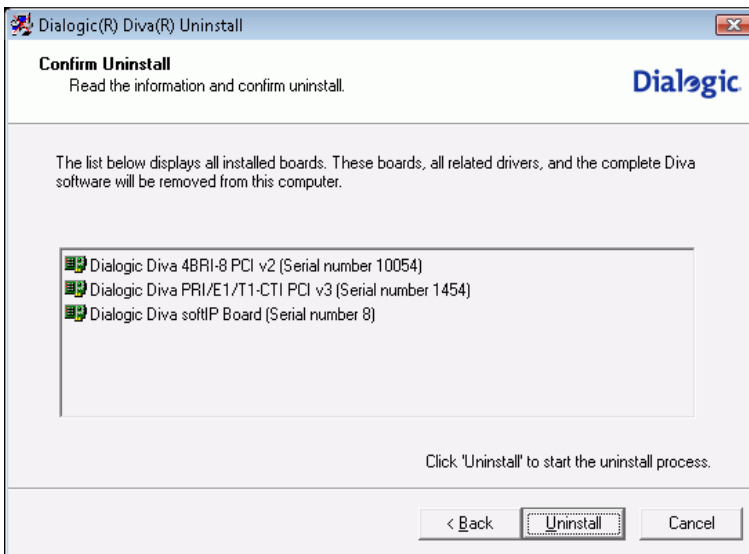
CHAPTER 7

Uninstalling

If you want to uninstall all installed Dialogic® Diva® Media Boards and related software, use the Dialogic® Diva® Uninstall tool as described below. If you do not want to uninstall all Diva Media Boards, then use the Device Manager as described on page 50.

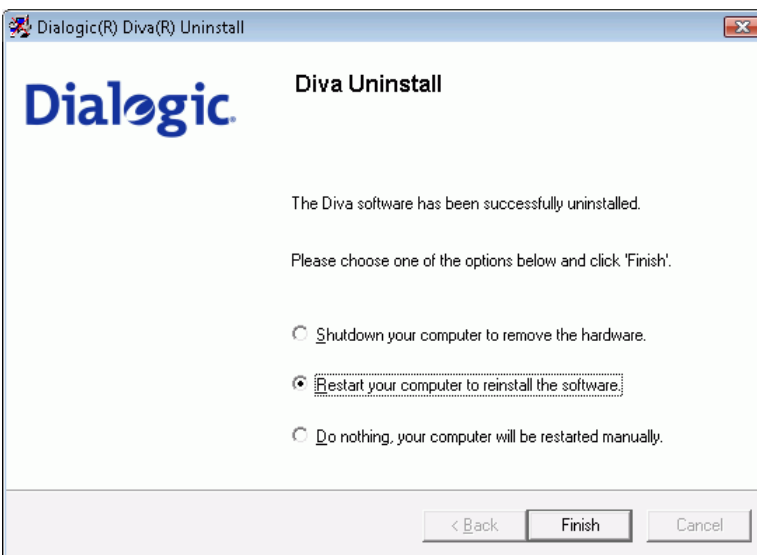
Dialogic® Diva® Media Board uninstallation with Uninstall

1. Click **Start > Programs > Dialogic Diva > Uninstall**.
2. The welcome dialog box is displayed. Follow the instructions on the screen and click **Next** to continue.
3. In the **Confirm Uninstall** box, all installed Dialogic® Diva® Media Boards are displayed:



Click **Next** to uninstall all Diva Media Boards and related drivers.

4. In the displayed dialog box, select if you want to shut down or restart your computer now or later.



Click **Finish**, to complete the process.

Dialogic® Diva® Media Boards uninstallation with Device Manager

Note: The uninstallation with the Device Manager is not recommended for Windows Vista®.

1. Click **Start > Control Panel**, and select **System** in the Control Panel window.
2. In the **System Properties** box, click the **Hardware** tab and then **Device Manager**.
3. In the **Device Manager** box, click the **+** sign next to **Network adapters**.
4. Right-click the entry of the Diva Media Board that you want to uninstall and select **Uninstall** from the list.
5. In the **Confirm Device Removal** box, click **OK** to start the uninstallation.
6. Shut down your computer and physically remove the Diva Media Board from your system. Otherwise, your Windows® operating system will detect and install the Board again when you restart your computer.

CHAPTER 8

Maintenance Tools

The Dialogic® Diva® System Release software offers the following tools for testing your connection and controller on your board, and for diagnosing and helping solve issues that might occur with your Dialogic® Diva® Media Board or the connection:

- [Dialogic® Diva® Line Test](#) below
- [Dialogic® Diva® Diagnostics](#) below

Dialogic® Diva® Line Test

To use the Dialogic® Diva® Line Test utility, you must have installed your Dialogic® Diva® Media Boards and Dialogic® Diva® System Release software, and you must have connected your ISDN, channelized E1, channelized T1, or analog line to the Diva Media Board.

1. To open Diva Line Test, click **Start > Programs > Dialogic Diva > Line Test**.
2. The **Line Test** box opens.

Diva Line Test offers the following tests:

- **Line Check:**
Performs a quick check of your software installation and the physical connection.
- **Hardware Test:**
Performs a test only of the controller.
- **Phone/Loop Test:**
Performs basic bidirectional phone tests, to test the connection to other telephones or to itself.
- **Call Transfer Test:**
Performs different call transfer tests, with the option to choose the transfer type.
- **Fax Test:**
Performs basic bidirectional fax tests.

For more information about the tests, see the Dialogic® Diva® Line Test Online Help file (DSLineTest.chm).

If Diva Line Test does not return an error, but you still cannot get your Diva Media Board to work properly, then there might be an issue with the configuration of the application you are using with your board (such as Dial-Up Networking or faxing software).

Dialogic® Diva® Diagnostics

The Dialogic® Diva® Diagnostics tool can help with the analysis of issues if you encounter difficulties with the Dialogic® Diva® drivers or with the connection.

Every driver sends status messages and reports any error that occurs. The messages are saved in a specific memory area of a fixed size, so that the oldest messages are overwritten when the memory is full.

Diva Diagnostics enables the messages from Dialogic® Diva® Media Boards and various drivers to be displayed and saved.

1. To open Diva Diagnostics, click **Start > Programs > Dialogic Diva > Diagnostics**.
2. The **Diagnostics** box opens.

For more information see, the Dialogic® Diva® Diagnostics Online Help file (DivaTrace.chm).

CHAPTER 9

Management Tools

Dialogic® Diva® Management

Dialogic® Diva® Management software is integrated into the Microsoft® Management Console (MMC) via a snap-in. You may create your own set of management, for instance the Device Manager combined with the Diva Management software.

Diva Management is a tool that displays the current status of the connected lines, the active connections, and the history of connections. Simply testing lines and connectivity is also part of Diva Management software.

To open Diva Management as standalone program, click **Start > Programs > Dialogic Diva > Management**.

Diva Management offers the following statistics:

- **Status:**

Displays an overview of all installed Dialogic® Diva® Media Boards in the system and the events taking place on these boards.

- **Active Connections:**

Displays the Diva Media Boards with active incoming or outgoing calls.

- **Call History:**

Displays the history for all conducted ingoing or outgoing calls.

For more information, see the Dialogic® Diva® Management Online Help file (DivaServerManagement.chm).

CHAPTER 10

Dialogic® Diva® Media Board Features

Dialogic® Diva® Media Boards provide different features and capabilities with the Dialogic® Diva® System Release software.

The interfaces supported by Diva Media Boards are as follows; however, not all features may be available on all the supported interfaces.

IDI	ISDN Direct Interface. Supports all features and capabilities of Dialogic® Diva® ISDN Media Boards.
WAN Miniport	Provides support for WAN protocols running over ISDN, channelized E1, channelized T1, or analog. Useful for connecting to Windows® Remote Access Services (RAS).
COM Port	For applications that require communications via a standard PC communications port.
CAPI 2.0 (Dialogic® Diva® API)	Common ISDN Application Programming Interface. A standard interface for applications to interact with Diva Media Boards.
TAPI	Telephony Application Programming Interface. An interface for communication programs to work with telephony and network services.

For features of Dialogic® Diva® BRI and PRI/E1/T1 Media Boards, see the tables from page 54 onward. For features of Dialogic® Diva® Analog Media Boards, see the tables from page 59 onward.

Features of Dialogic® Diva® BRI and PRI/T1/E1 Media Boards

Features via interface:	IDI	WAN MiniPort	COM Port	CAPI 2.0	TAPI
B-channel related:					
Transparent HDLC, 64/56 ⁷⁾ kbps	•	•	•	•	• ⁶⁾
Transparent (Voice)	•			•	•
X.75 64/56 ⁷⁾ kbps	•	•	•	•	• ⁶⁾
T.70/T.90 (T-Online) ⁹⁾¹⁰⁾	•		•	•	• ⁶⁾
V.110 (GSM) ¹⁾⁹⁾¹⁰⁾	•	•	•	•	• ⁶⁾
V.120 64/56 kbps (CompuServe)	•	•	•	•	• ⁶⁾
V.34+, V.90 analog modem ¹⁾⁷⁾⁹⁾¹⁰⁾	•	•	•	•	• ⁶⁾
V.42, V.42bis ¹⁾⁷⁾⁹⁾¹⁰⁾	•	•	•	•	• ⁶⁾
X.75/V.42bis	•			•	
Change of B-channel protocol during a call	•			•	
X.25 ²⁾ , X.31, ISO 8208 in the B-channel	•		•	•	• ⁶⁾
PIAFS 1.0 and 2.1 ⁷⁾	•	•			
SDLC	•			•	
Fax Group 4 (incl. T.90/ISO 8208 and module mode detection) ⁹⁾¹⁰⁾	•			•	
T.30 Fax Group 3 (analog), Class 1 and 2 ¹⁾⁹⁾¹⁰⁾	•		•	•	• ⁶⁾
Fax with Error Correction Mode (ECM) ¹⁾⁹⁾ Fax with MR (D2 coding) ¹⁾⁹⁾ Fax with MMR (T.6 coding) ¹⁾⁹⁾	•		•	•	• ⁶⁾
Fax 14.4 kbps ¹⁾⁹⁾	•		•	•	• ⁶⁾
Fax 33.6 kbps (V.34) ¹⁾⁹⁾	•			•	
Fax T.38 (up to 33.6 kbps)	•			•	
Fax tone detection ¹⁾	•			•	
Reversal of fax direction ¹⁾⁹⁾	•			•	
Fax polling / fax on demand ¹⁾⁹⁾	•		• ⁵⁾	•	
Speed and feature indication (polling and ECM) ¹⁾⁹⁾	•			•	
New fax header line ¹⁾⁹⁾	•			•	
Page formats: ISO A4, ISO B4, ISO A3 ¹⁾⁹⁾	•			•	
Resolution: standard, fine, super-fine, ultra-fine ¹⁾⁹⁾	•			•	
DTMF tone detection and transmission ³⁾	•			•	•
DTMF clamping ¹⁾	•			•	
On-board switching and conferencing (via line interconnect) ⁸⁾	•			•	
Media mode (unknown, interactive voice, automated voice) ¹⁾	•				•
Wave audio format (8-bit 8 kHz A-Law, 8-bit 8 kHz μ -Law, 8-bit 8 kHz PCM, 16-bit 8 kHz PCM) ¹⁾	•				•
Silence detection				•	
Volume control					•

Features via interface:	IDI	WAN MiniPort	COM Port	CAPI 2.0	TAPI
Echo cancellation ¹⁾⁷⁾				•	
Real time protocol (RTP) ¹⁾⁷⁾				•	
Comfort noise generation (CNG) ¹⁾⁷⁾				•	
Voice activity detection (VAD) ¹⁾⁷⁾				•	
Dynamic anti-jitter buffer ¹⁾⁷⁾				•	
Audio tap ¹⁾⁷⁾				•	
GSM and G.726 voice codecs ¹⁾⁷⁾				•	
Recording AGC				•	
Supplementary Services:⁴⁾					
MSN (multiple subscriber number)	•	•	•	•	•
DDI (direct dialing-in)	•	•	•	•	•
SUB (sub-addressing)	•			•	
CLIP (calling line identification presentation)	•		•	•	•
CLIR (calling line identification restriction)	•			•	•
COLP (connected line identification presentation)	•			•	•
COLR (connected line identification restriction)	•			•	•
CCBS (call completion to busy subscriber)	•			•	•
CCNR (call completion on no reply)	•			•	•
TP (terminal portability)	•			•	
Call forwarding unconditional	•			•	•
Call forwarding busy	•			•	•
Call forwarding no reply	•			•	•
Call deflection/ Call rerouting	•			•	
CW (call waiting)	•			•	•
HOLD (hold and retrieve a call)	•			•	•
ECT (explicit call transfer)	•			•	•
Blind transfer					•
AoC (advice of charge)	•			•	•
Three-party conference	•			•	
Large conference	•			•	
User-to-user signaling	•			•	•
Others:					
Transparent D-channel	•			•	
X.25/D-channel including AO/DI support	•			•	

1) Features are not available with the Dialogic® Diva® PRI/E1/T1-CTI Media Boards.

2) CAPI 2.0 (Dialogic® Diva® API) supports X.25 in the B- and D-channel, permanent virtual connections (PVC) and switched virtual connections (SVC), and multiple logical connections per B-channel.
The COM port supports X.25 with one PVC in the B-channel.

3) DTMF tone detection and transmission is done via soft DTMF for the Dialogic® Diva® PRI/E1/T1-CTI Media Board.

4) For an overview on supplementary services support by the various switch types, see [Supplementary services](#) on page 57.

5) The COM Port supports fax polling for Fax Class 1 only.

6) Features are available with TAPI via Unimodem support.

- 7) Features are not available with the Dialogic® Diva® BRI-2FX Media Board.
- 8) For an overview on switching and conferencing support by the various Dialogic® Diva® Media Boards, see [On-board switching and conferencing](#) on page 56.
- 9) Features are not available with Dialogic® Diva® V-PRI boards. For Dialogic® Diva® V-1PRI, V-2PRI, and V-4PRI Media Boards, features are available via licenses.
- 10) Features are not available with Dialogic® Diva® UM-BRI or UM-PRI/E1/T1 Media Boards.

On-board switching and conferencing

Some switches do not offer supplementary services such as call transfer, overlap sending, three-party conference, or large conference. For these switches, the Dialogic® Diva® Media Boards and software can provide these supplementary services by connecting or forwarding calls directly on the board (also known as "tromboning").

Support for on-board switching and conferencing depends on the installed Diva Media Board. The table below outlines the various types of switching and their support by Diva Media Boards.

Note: On-board switching and conferencing is only possible if it is supported by your application.

Switching and conferencing via board:	Switching and conferencing (within one board)	Cross-board switching
Dialogic® Diva® Analog Media Boards		
Diva Analog-2 Diva UM-Analog-2	•	•
Diva Analog-4 Diva UM-Analog-4 Diva Analog-8 Diva UM-Analog-8	•	•
Dialogic® Diva® BRI Media Boards		
Diva BRI-2FX		
Diva BRI-2 Diva UM-BRI-2	•	•
Diva 4BRI-8 Diva UM-4BRI-8	•	•
Dialogic® Diva® PRI Media Boards		
Diva PRI/E1/T1-CTI Diva PRI/E1/T1-8	• ¹⁾	•
Diva PRI/E1/T1 ²⁾ Diva V-PRI/E1/T1 Diva UM-PRI/E1/T1	•	•
Diva V-1PRI/E1/T1 Diva V-2PRI/E1/T1 Diva V-4PRI/E1/T1	•	•

1) Conference functionality is limited to eight (8) participants.
 2) Except Dialogic® Diva® PRI/E1/T1-CTI and Diva PRI/E1/T1-8 Media Boards.

Supplementary services

The Dialogic® Diva® System Release software supports basic call services for the switch types that are available in the Dialogic® Diva® Configuration Manager. Additionally, it offers supplementary services for the following switch types:

- Euro-ISDN (ETSI) BRI and PRI
- 5ESS Custom (AT&T)
- 5ESS NI (Lucent/Avaya)
- DMS 100 (Nortel)
- Q.SIG

Q.SIG support is available for the derivatives ECMA-QSIG, and ISO-QSIG. Thus, the Q.SIG switch type can be used with any PBX based on one of these derivatives.

Q.SIG has been tested with a number of various switches, for example, Alcatel 4200, Alcatel 4400, 4410, DeTeWe OpenCom 1000/1010, Ericsson MD 110, Ericsson BP250, Siemens Hicom 150, Hicom 300, Lucent Definity, Matra 65xx, Nortel Meridian, Nortel M65xx, Siemens HiPath 3000, and Siemens HiPath 4000, Tenovis.

The table below gives a detailed overview of the supplementary services supported by the switch types listed above.

Note: The availability of supplementary services also depends on your PBX. For detailed information on supplementary services supported by your PBX, contact the PBX manufacturer.

Supplementary services with switch type	Euro-ISDN (ETSI) PRI	Euro-ISDN (ETSI) BRI	Q.SIG	5ESS Custom (AT&T), 5ESS NI (Lucent/Avaya), DMS 100
MSN (multiple subscriber number)	•	•	•	• (incoming)
DDI (direct dialing-in)	•	•	•	
SUB (sub-addressing)	•	•	•	•
CLIP (calling line identification presentation)	•	•	•	•
CLIR (calling line identification restriction)	•	•	•	•
COLP (connected line identification presentation)	•	•	•	•
COLR (connected line identification restriction)	•	•	•	•
KEY (keypad protocol)	•	•	• ⁴⁾	•
AoC (advice of charge)	•	•	•	
User-to-user signaling	•	•	•	
TP (terminal portability)		•		•
Call forwarding unconditional		•		
Call forwarding busy		•		
Call forwarding no reply		•		
Call deflection		•	•	
CW (call waiting)		•		•
HOLD (hold and retrieve a call)	• ¹⁾	•	• ²⁾	•
ECT (explicit call transfer)		•	• ³⁾	•
ECT by rerouting			•	
ECT by join			• ³⁾	
Single-step call transfer (over CAPI deflection)			•	

Supplementary services with switch type	Euro-ISDN (ETSI) PRI	Euro-ISDN (ETSI) BRI	Q.SIG	5ESS Custom (AT&T), 5ESS NI (Lucent/Avaya), DMS 100
Three-party conference		•		•
Large conference		•		•
Drop conference		•		•
Name identification services			• (presented by switch)	• (presented by network)
Generic functional procedures (basis for supplementary services in Q-Sig environment)			•	
Common information			•	
Redirected number translation from Q-Sig to Q.931			•	
Escape message types				• (5ESS Custom only)
Call Appearance/Call Handling (CACH) plus configuration				•
Feature activators plus configuration				• (5ESS NI + DMS 100 only)
Network display conversion/treatment				•
Message waiting	•	•	•	•
CCBS (call completion to busy subscriber)		•	•	
CCNR (call completion on no reply)		•	•	

- 1) HOLD is not a standard supplementary service for Euro-ISDN PRI, nevertheless some PBXs support call hold and retrieve.
- 2) HOLD is not defined in Q.SIG but corresponding procedures are available.
- 3) Call transfer is only possible if path replacement works.
- 4) In a Q.SIG environment, the feature is also called "Simple Dialog".

Features of Dialogic® Diva® Analog Media Boards

Call control features

- Dial tone detection
- Dial pulse detection
- Pulse dialing
- Tone (DTMF/MF) dialing
- Busy tone detection
- Ring back tone detection
- Special Information Tone (SIT) detection
- Fax/modem detection
- Hold/Retrieve (via Hook Flash) and keypad protocol
- Analog caller identification (via FSK and DTMF signaling)
- Collection of DTMF post-dial digits
- DTMF parsing
- Call transfer
- Specify call direction
- Configurable PBX parameters
 - Disconnect active call
 - Disconnect hold call
 - Hold
 - Swap hold
 - Complete transfer
 - Hook-flash length
 - Retrieve mode

Voice and speech features

- G.711 coding (a-law, μ -law selectable)
- DTMF detection and generation
- DTMF clamping and filtering
- Generic tone detection and generation
- Pulse tone detection
- Full-duplex voice, "barge-in"
- Voice activity detection
- Silence detection
- Human talker detection
- Fax signal detection
- G.168 echo cancellation, up to 128 ms tail length
- Recording automatic gain control (AGC)
- Pitch control
- Audio tap

Voice over IP support

- G.711 voice codec (64 kbps, μ -law, A-law)
- G.726 voice codec (32 kbps)
- GSM voice codec (13 kbps)
- G.168 echo cancellation, up to 128 ms tail length, up to 256ms tail length configurable by application
- Adaptive jitter buffer
- Voice activity detection (VAD)
- Comfort noise generation (CNG)
- Real time protocol (RTP framing)
- Impedance calibration

Switching and Conferencing features

- On-board switching and conferencing
- Automatic gain control (AGC)

Fax features

- Support for fax class 1 and 2
- Support for fax group 3, T.30
 - V.17, V.29, V.27ter, V.21, V.34 modulation
 - Up to 33.600 bps with each channel (send and receive)
 - Fax compression MH, MR, MMR
 - Error Correction Mode (ECM)
 - Fax polling/ Fax on demand
 - Reversal of fax direction
 - Fax password
 - Fax sub addressing
 - New fax header line
 - Page formats: ISO A4, B4, A3
 - Standard, fine, super-fine and ultra-fine resolution
 - Color fax (JPEG-format)

Data modem features

- V.21, V.22, V.22bis, Bell 103, Bell 212A, V.32, V.32bis, V.34, V.42, V.42bis, V.90, MNP4, MNP5,
- Modem with extension: V.18, V.21, Bell 103, V.23, EDT, Baudot 45, Baudot 47, Baudot 50 incl. DTMF, V.42, V.42bis

CHAPTER 11

About Customer Services

Dialogic provides various options and arrangements for obtaining technical support for your Dialogic® product. We recommend that you use the Dialogic® Diva® Support Tools first before contacting your Dialogic supplier. Also, we suggest that you visit the Dialogic Services & Support site, as it includes detailed information about a variety of topics. In the unusual case that neither your supplier nor the information on the Services & Support site adequately addresses your support issue, you can contact Dialogic Customer Support.

For more information see:

- [Dialogic® Diva® Support Tools](#)
- [Dialogic® Services & Support web site](#)
- [Dialogic Customer Support](#)

Dialogic® Diva® Support Tools

If an issue occurs during the operation of your Dialogic® Diva® product, use the following Dialogic® Diva® Support Tools:

- Dialogic® Diva® Line Test: With the Diva Line Test tool, you can test your hardware and perform simple phone test calls, call transfers, or basic inbound and outbound calls.
- Dialogic® Diva® Diagnostics: With the Diva Diagnostics tool, you can write traces for each Dialogic® Diva® Media Board or driver into a file.
- Dialogic® Diva® Management tool: With the Diva Management tool, you can view the current status of the connected lines, the active connections, and the history of the connections.

For more information about the tools, see the respective online help files.

If you cannot address the issue through use of these tools, contact your Dialogic supplier.

Dialogic® Services & Support web site

If your supplier is unable to help you to address your issue, you can visit the Dialogic Services & Support web site. There, you can get access to:

- detailed information about the Dialogic® Pro™ Services (1 or 5 year 24/7 service contracts) at <http://www.dialogic.com/support/DialogicPro/>
- a help web section for Dialogic® products at <http://www.dialogic.com/support/helpweb>
- a download section, to install the current version of your software at <http://www.dialogic.com/support/downind.asp>
- a training section, with information about webinars as well as online and onsite trainings at <http://www.dialogic.com/training/default.htm>
- a manuals section, that includes currently available documentation, at <http://www.dialogic.com/manuals/default.htm>
- technical discussion forums about different developer-specific Q&A at <http://www.dialogic.com/forums/category-view.asp>
- the Dialogic Customer Support web site. For detailed information about how to contact Dialogic Customer Support, see [Dialogic Customer Support](#) on page 62.

Dialogic Customer Support

If the information on the Services & Support site did not help you address your issue, contact Dialogic Customer Support. See www.dialogic.com/support/contact for details on how to contact Dialogic.

Please note that when you contact Customer Support, you may need to provide or have handy one or more of the following:

- A debug trace (see Dialogic® Diva® Diagnostics Online Help file - DivaTrace.chm), and
- A copy of your active configuration (see Dialogic® Diva® Configuration Manager Online Help file - DSMain.chm).