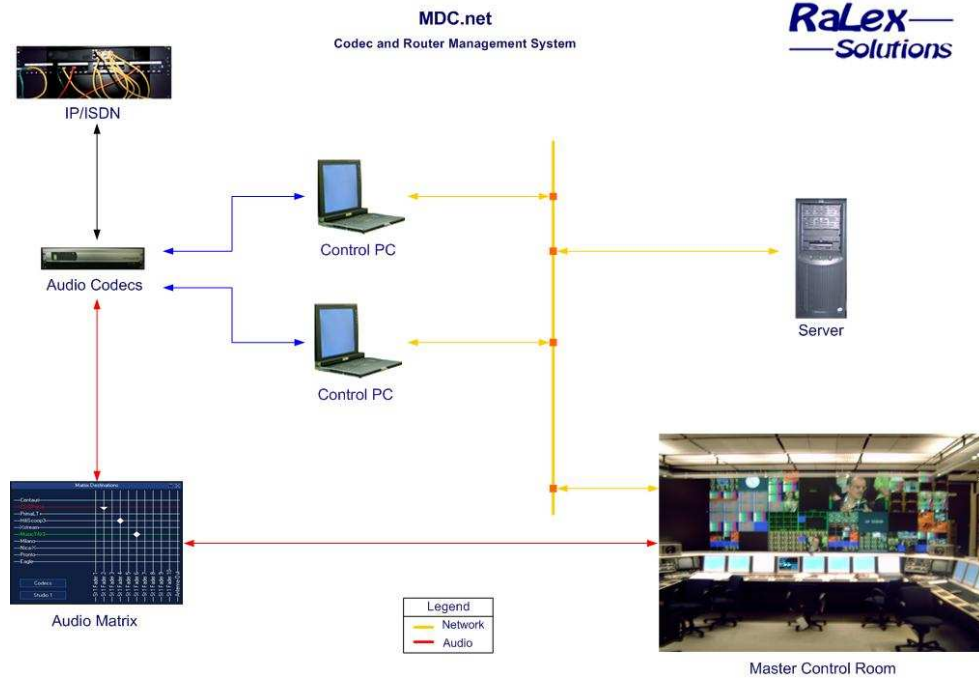# MDC.net V3 Additional information

MDC.net explained

The MDC.net system is used to control and manage IP/ISDN codecs and routers from one or more workstations within a Radio/TV station. The codecs can be situated in one dedicated control room or they can be spread over various local and remote locations. MDC.net supports a variety of codecs and routers that are available on the market. View our website for the latest information. The MDC.net system is used to establish IP/ISDN connections and manages all devices involved, such as IP/ISDN terminal adapters, audio codecs and routers. The system runs on standard PC´s. A login window of the MDC.net program is displayed to authorize the user and configure options available, depending on the status and rights of the user. If one or more options in the main window are not enabled, it means that the user has no rights to use these options or that the current installation has no license for this part. Every user has to log into the system, typing his name or initials and a password. An automatic login option is available for use in secured control rooms. Clicking the login button with the correct credentials will start the main program.

The desktop

The MDC.net main program consists of multiple windows. Each window shows specific information about the state of the system. Options of the main program are:

- Sub-window visibility configurable on a per workstation basis
- Sub-window positioning and size configurable on a per workstation basis
- All sub-window configuration parameters can be stored in user-group profiles
- Profiles can be restored on a per user-group basis
- Administrator level configurable fixed profiles
- Factory default fixed profile that restores all windows to their original (design-time) locations

User configurable desktop

The desktop is fully user-configurable, so that each user can organize the desktop to suit his personal needs. On top of this, each user can configure his desktop and save it as a profile, so that a desktop can be reconfigured to fit a certain program or program type with just a few mouse-clicks.

Line overview

The user-friendly and efficient line overview window shows the status of all IP/ISDN connections. The information provided includes:

- Codec availability
- Codec user
- Selected protocol or codec algorithm
- Clear Error indications
- IP/ISDN channel established connections
- Name of the remote IP/ISDN party
- IP/ISDN connection duration
- Clear error messages if there is a problem

From within this window all major functions are available:

- Dialling
- Redialling to last connected destination (only dialling failed channels in case of a multi-channel connection)
- Disconnecting or transferring calls (hybrids only)
- Automatic selection of a suitable codec (i.e. a codec that is able to handle the required protocols) if desired
- Accepting incoming calls
- Reserving of codecs
- Preparing connections
- Viewing of the connection specific information
- (Re-) configuring the codecs from a comfortable quick setting list
- Optionally warning messages for long-term connections

The address book

The dial program provides a comfortable way of establishing connections to remote partners. You can create your own address book with all the necessary information that an address should include. To ensure fast operation, programmable quick dialling buttons are available to store the most often dialled locations. Features include:

- User selection of the codec to use
- Full automatic selection of the codec to use depending on configured quick settings
- Quick dialling buttons configurable on a per-workstation basis
- Amount of quick dialling buttons depends on screen resolution only
- History log on a per-workstation basis
- Free manual dialling including protocol selection
- Search by name option to quickly locate a destination
- Full-Search option to search through all address book fields
- Search by date/time option to find a destination in the history log
- Information of selected destination
- Automatic storage of manually dialled locations
- Automatic storage of accepted incoming connections from unknown locations

The address book editor

The web-based address book editor gives users an easy way to edit information stored in the address book or to enter new destinations. From the standard browser window (such as Internet Explorer) every user can add, modify and remove address book entries. Access to the address book editor can be restricted to designated users only.

Available fields are:

- name
- shortname
- quickdialname
- city
- country
- assistance
- studiophone
- techinfo
- ip/isdn1
- ip/isdn2
- ip/isdn3
- ip/isdn4
- ip/isdn5
- ip/isdn6
- ip/isdn7
- ip/isdn8
- ip/isdn9
- ip/isdn10
- settingsnr
- costaccount
- dtmconnect
- dtmdisconnect
- memo
- user1
- user2
- user3
- user4
- user5
- user6
- user7
- user8
- picfile
- category

Address groups

The new address group concept allows the users to dial multiple addresses with one click and treat them as a single connection. Within the group there is distinction between required parties ("main") and optional parties. The connection is considered Ok, if all required connections are Ok. The source for the audio matrix can be chosen from any of the required parties; the return signal typically goes to all connected parties.

Audio matrix control (optional)

The multilevel router program can be used to handle the cross points in the audio matrix.
It has been designed to handle routers that are capable of routing up to 6 levels. Default levels can be configured on a per codec basis and a select level window allows users to make adjustments. Due to the interoperability with the Line Status window, the source is automatically selected and the routing information for this source is updated when the router program is started. Thanks to all these built-in features, routing can be as simple as selecting the destination and pressing the Route icon.

Destinations can be stored in destination groups in order to provide a quicker way to select a destination.
Each workstation can be configured to show only one group. In the occasion that there is only one destination available within a group, automatic routing can be enabled and no user actions are needed to set or clear the cross points.

Digital Audio matrices

MDC.net has an extremely powerful interface to digital audio matrix systems. Currently supported matrix systems are Klotz, DHD and Studer.
Not only provides this interface a very easy-to-use interface for controlling and monitoring the cross points, but it also includes powerful features such as **fader inscription**, which means that the label above a fader in a studio shows the name of the remote party ("BBC Leeds") when an active connection is routed to this fader. After disconnecting the IP/ISDN line the fader inscription will fall back to its default, such as "Codec3".
The virtual GPIO communication with digital matrix systems allows the system to communicate via GPO´s and GPI´s without having to use physical Relay contacts or Opto inputs.
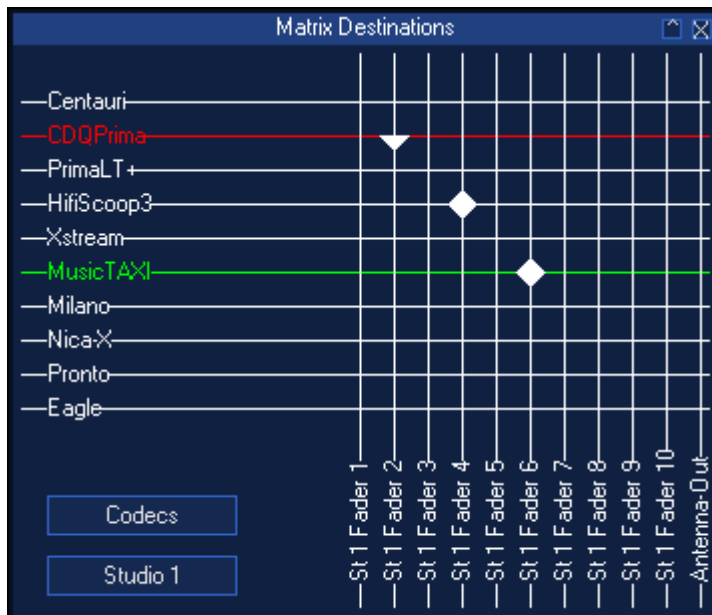
Connections window

The connections window shows the configured codec setting and the number of channels connected of the selected codec. For multi-channel connections, it shows the status of each individual channel. In case the codec is connected or prepared it also shows all address book information available.

Cost accounting

A cost account module can be configured, to store all connections made and/or received with information of the service or user that will be paying the connection.

The MDC.net cost account export module allows you to export the information in the cost accounting logs to a text-based file that can be imported in any database program.

Remote HF Control (optional)

The optional HF-station program allows the control of receivers, transmitter and is capable of handling remote audio routing. It allows you to minimize the amount of monitors needed in the studios and maximizes the comfort of the users. It includes:

- Antenna rotor control
- Antenna direction indication
- Antenna selection
- Receiver squelch control
- Receiver audio mode control
- Receiver frequency control
- Receiver signal level indication
- Transmitter PTT (Push To Talk) control
- Transmitter frequency control
- Remote audio routing selection

As soon as the system is connected to a known HF-Station it will show the status of this HF-Station, including the direction of the rotor on a map. Rotating the rotor to a certain position is as easy as clicking the desired location on the map. The system supports zoom-in and zoom-out functions.
The HF control window can be disabled to lock the current settings
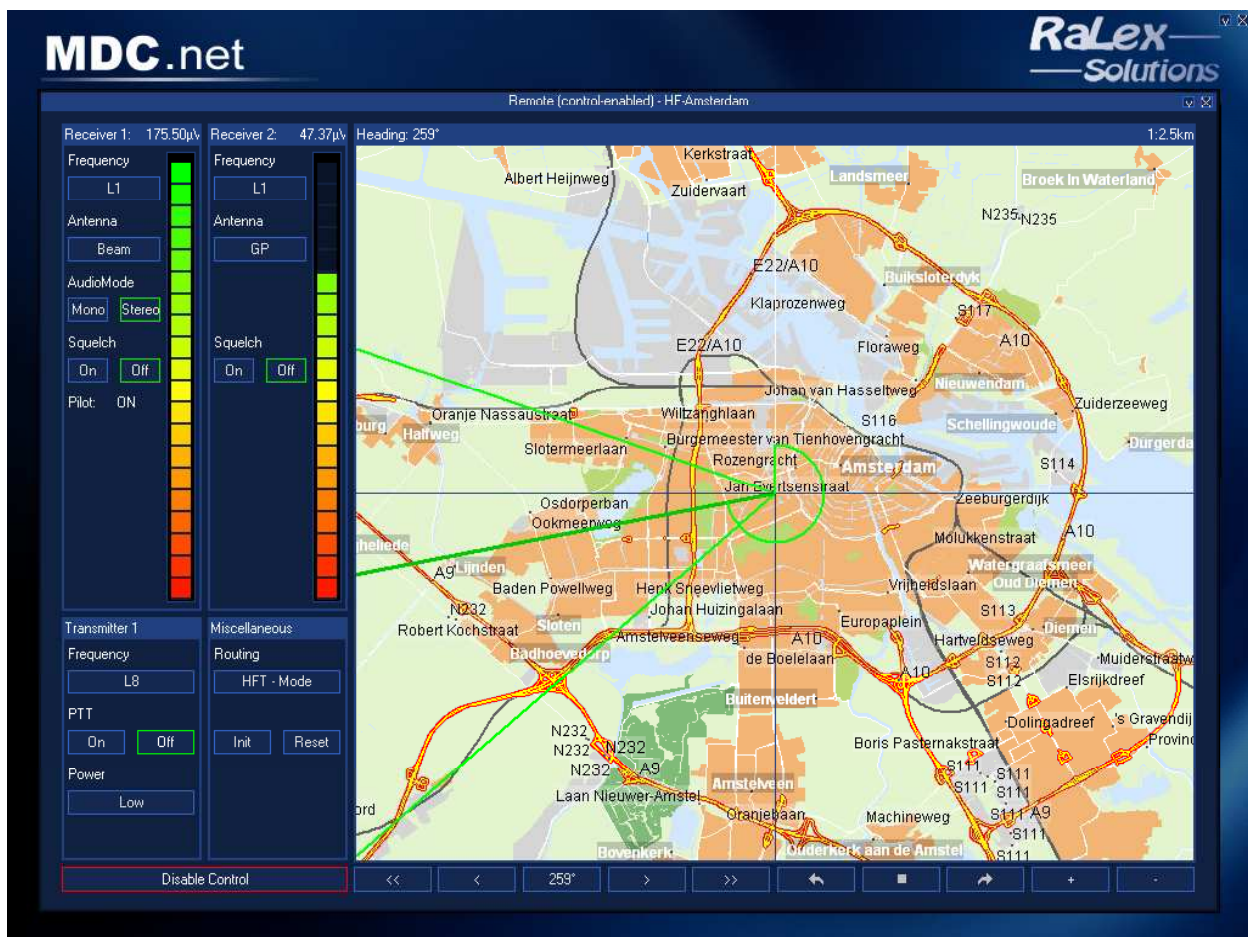
The scheduler (optional)

The optional scheduler program provides the comfort of automation in handling incoming and outgoing connections and routing. It gives an overview of connections scheduled for the coming days. The MDC.net Scheduler has configurable lock, route and dial times; so that connection establishment is ensured at the time the connection is needed.

The fully integrated scheduler editor program allows you to enter or edit your scheduled connections and its features:

- Automatic "delayed"-hangup support
- Single one time connections
- Supports Daily / Weekly / Monthly / Yearly connections
- Possibility to make exceptions to the "rule"
- Both End time or Duration programming possibilities
- Programmable action to take, prepare, connect or route
- Automatic deletion of old actions
- Selection of the user on behalf of whom the scheduler will take the action
- Selection of the codec and optional alternative codec to use to establish the connection
- Selection of the studio and optional alternative studio to route the audio to
- Selection of the address and optional alternative address to connect to
- Viewing-only of actions for which the user has insufficient access rights

Triggered connections

The scheduler is not only able to initiate connection on a specified start-time; it can also use an input trigger as the start signal. This means that a connection cycle (dialling, setting the codec parameters and routing the audio matrix) can be completed upon the activation of an external button.

In combination with the virtual GPIO communication with digital desks, this means that the user can program a button on his mixing desk, to automatically connect to the weatherman and put the signal on Fader 5.

Users and access rights

MDC.net has a sophisticated user management system, allowing the stations administrator to use the protection level he requires. Normally connections are "owned" by the user (or usergroup) who initiates them (i.e. "Studio 2"). Other users, for example Studio 1, cannot take the input signal as an additional feed to their studio, but they cannot do anything that could disturb the Studio 2 activities (they cannot reroute, hang-up, change codec settings etc..). The administrator has all privileges at any time. Scheduled connections are either owned by the scheduler (so that other users cannot operate on them) or they are scheduled for a specific user (Studio 4), in which case this user has all privileges, as if he had made the connection himself.

Codec Settings

The MDC.net Codec Settings Configuration interface allows easy codec quick setting list configuration. Each setting has a free to choose descriptive reference name so that users can easily find the proper quick setting. The reference name can be changed and the validity for a certain codec can be specified using the Name window. The full automatic codec selection depends on this validity. Quick settings not valid for a certain codec are hidden from the user when the codec is selected in the line overview program.

The MDC.net system allows automatic reconfiguration to a predefined default setting after disconnecting a codec. Specifying which quick setting is default for a specific codec can be done using the change defaults window.

MDC.net Server

The MDC.net Server service program handles all communication between Clients and Backends. It uses a relational database to store and retrieve all dynamic and static configuration information.

MDC.net Server Status			
Attached Backends:	Status:	Attached Clients:	Status:
Backend 01H at ralex-vm-003	Running	Client 40H at ralex-vm-003	Logged out
		Client 43H at ralex-vm-003	Logged out
		Client 44H at ralex-vm-003	Logged in
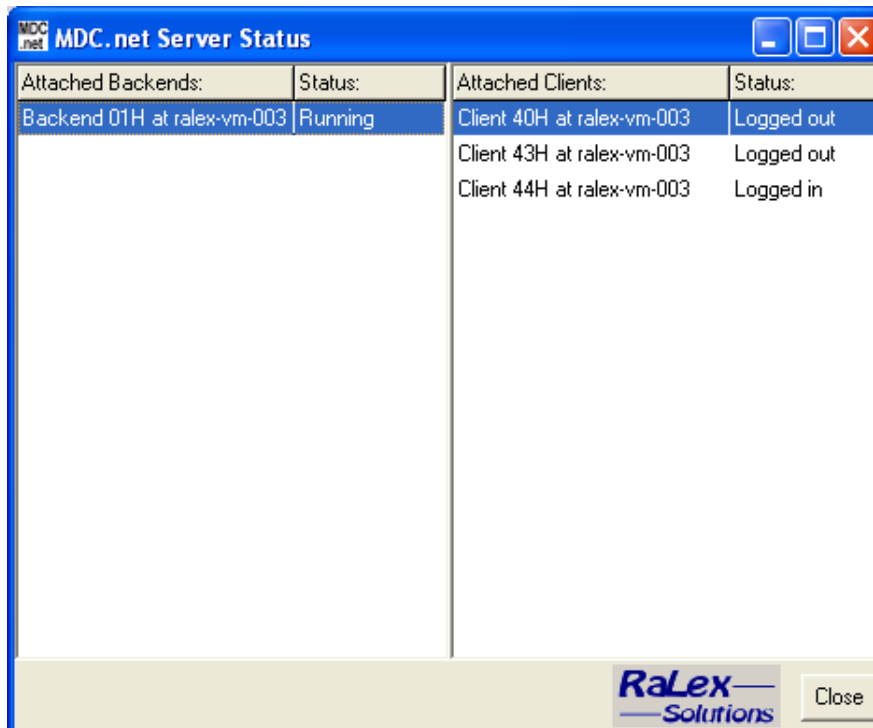
MDC.net Backend
The MDC.net Backend service program handles all communication between the MDC.net applications and the equipment. Its modularity allows fast implementation of new codec brands and types. It has a wide variety in both controlled protocols and hardware support:
- Parallel port control; includes control of relay and optocoupler cards
- USB control; includes control of external relay and optocoupler cards
- AD/DA card control for analogue control and measurement
- Serial port control; supports all common baud rates and other port settings:
  - RS-232
  - RS-422
  - RS-485
- IP Networking, includes:
  - TCP protocol
  - UDP protocol
- TAPI control for redirection of external telephone calls
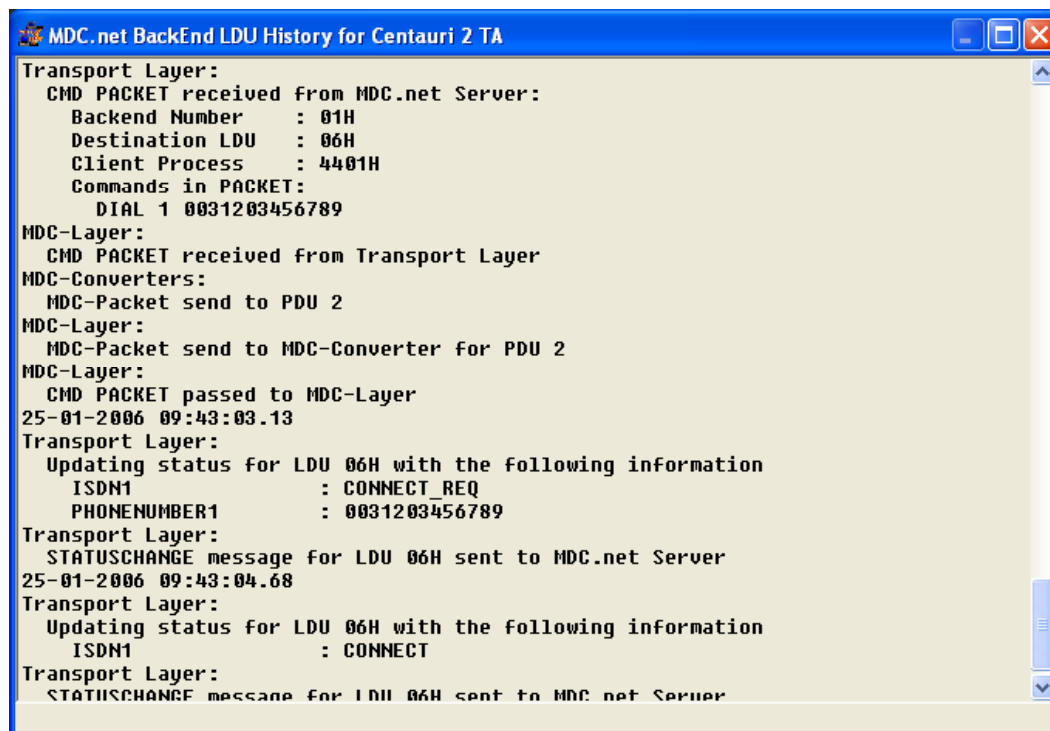
Up to 16 Backend service programs can be configured within one MDC.net system, to provide security and/or to limit controlling line lengths. Each Backend is capable of controlling 127 devices maximum, depending on hardware configuration and performance.

MDC.net Backend 01H Status

Server Time:	25/01/2006 9:33:53	Client Requests:	218	
Start Time:	25/01/2006 9:15:43	Total PDUs Connected:	12	RaLex Solutions
Backend ID:	01H	CPU Usage:	3%	
Threads:	59	Activity:	64 64	
Display Level:	5	Error Count:	0	

Physical Device Unit	Device Name	Device Protocol	Device Location
PDU 00H (000)	Internal Subsystem	Internal	Internal
PDU 01H (001)	Centauri	MDC_CODECTA	IP 127.0.0.1:2000
PDU 02H (002)	CDQPrima	MDC_CODECTA	COM1
PDU 03H (003)	PrimaLT+	MDC_CODECTA	COM1
PDU 04H (004)	HifiScoop3a	MDC_CODECTA	COM1
PDU 05H (005)	Xstream	MDC_CODECTA	IP 127.0.0.1:23
PDU 06H (006)	MusicTAXI	MDC_CODECTA	IP 127.0.0.1:23
PDU 07H (007)	ProBel	DUMMY_ROUTER	IP 192.168.0.64:7801

Logical Device Unit	Device Name	Device Type
LDU 01H (001)	Centauri 1 Encoder	ENCODER
LDU 02H (002)	Centauri 1 Decoder	DECODER
LDU 03H (003)	Centauri 1 TA	TA
LDU 04H (004)	Centauri 2 Encoder	ENCODER
LDU 05H (005)	Centauri 2 Decoder	DECODER
LDU 06H (006)	Centauri 2 TA	TA
LDU 07H (007)	Prima 1 Encoder	ENCODER
LDU 08H (008)	Prima 1 Decoder	DECODER
LDU 09H (009)	Prima 1 TA	TA
LDU 13H (019)	ProBel	ROUTER
LDU 14H (020)	HF-Amsterdam	ROTOR
LDU 15H (021)	HF-Amsterdam	RECEIVER1
LDU 16H (022)	HF-Amsterdam	RECEIVER2
LDU 17H (023)	HF-Amsterdam	TRANSMITTER1
LDU 18H (024)	HF-Amsterdam	HFROUTER
LDU 19H (025)	Prima 1 Remote Router	REMOTEROUTER
LDU 2AH (042)	HifiScoop3a TA	TA

A sophisticated debugging system is built-in to log all internal and external communication to and from any controlled device. This reduces costly time in tracing and tracking down any problems.

```
MDC.net BackEnd LDU History for Centauri 2 TA
Transport Layer:
  CMD PACKET received from MDC.net Server:
    Backend Number    : 01H
    Destination LDU   : 06H
    Client Process    : 4401H
    Commands in PACKET:
      DIAL 1 0031203456789
MDC-Layer:
  CMD PACKET received from Transport Layer
MDC-Converters:
  MDC-Packet send to PDU 2
MDC-Layer:
  MDC-Packet send to MDC-Converter for PDU 2
MDC-Layer:
  CMD PACKET passed to MDC-Layer
25-01-2006 09:43:03.13
Transport Layer:
  Updating status for LDU 06H with the following information
    ISDN1               : CONNECT_REQ
    PHONENUMBER1        : 0031203456789
Transport Layer:
  STATUSCHANGE message for LDU 06H sent to MDC.net Server
25-01-2006 09:43:04.68
Transport Layer:
  Updating status for LDU 06H with the following information
    ISDN1               : CONNECT
Transport Layer:
  STATUSCHANGE message for LDU 06H sent to MDC.net Server
```

MDC.net Key Features

- Comfortable overview of codec status

- Fully configurable desktop with user specific profiles

- Easy to use codec configuration quick settings

- Automatic redialling of failed IP/ISDN channels

- Quick redialling to last connected destination

- Prepare functionality for incoming and outgoing calls

- Comfortable address book with quick-dial list and flexible search functions

- Address groups to connect to multiple destinations with one mouseclick

- Fully featured audio routing including fader inscription possibility

- Shortcuts to automatically dial and route connections

- Optional full featured scheduler program with integrated user interface

- Optional CCMS Monitoring and Alerter module, web-based

- Cost accounting module stores all connections and allows export to any database program

- PABX and HF-Station control included to maximize ease of use

- Configuration in relational database with web-based management functions

- Sophisticated modular Backend service program controls all centralized or decentralized equipment

- Supports practically all codecs and many of the audio routers currently on the market

- MDC.net can be used as standalone system up to a large network system (with multiple backend PCs and up to 192 clients)

Supported Codecs
 - AEQ Eagle
 - AETA Hifiscoop 3 (5AS & LL)
 - AETA Scoop 3 5AS
 - AETA Scoop 4+ & Studio
 - APT Worldnet Milano & Ohio
 - APT Worldnet Tokyo & Chicago
 - APT WordCast Eclipse & Meridian
 - CCS CDQ1000
 - CCS CDQ2000
 - CCS CDQ2001
 - CCS CDQPrima
 - CCS Prima LT(+)
 - Comrex Access
 - Comrex Matrix
 - Dialog4 VP-128
 - Dialog4 VP-384
 - Dialog4 VP-Pro
 - Dialog4 MusicTAXI NET
 - Mayah Centauri (all models)
 - Mayah C11 Series
 - Musicam USA Superlink
 - Philips Baby Blue
 - Prodys Pronto (2 & 3)
 - Prodys ProntoNET
 - RE RE-66x series
 - Sonifex NicaX
 - Sonifex DHY-03
 - SystemBase C400
 - Telos Zephyr
 - Telos Xstream
 - Telos Xstream Livewire
 - Telos Two
 - Tieline Commander G3
 - You/Com StudioSet

Supported Terminal adapters
 - Ascom Ascom 110
 - ControlWare Citam
 - Datentechniek TA2124DX
 - MatraCom MatraCom
 - NewsBridge MainStreet

Supported Routers
 - 360 Systems AM16-B
 - Glennsound NewsRouter 5
 - NTP All types
 - Siemens Siemens
 - Tesi AR-48
 - Philips / Thomson BAS 3232
 - Klotz - VADIS Digital
 - DHD - RM3200
 - DHD - RM4200D
 - DHD - 52/MX
 - Digigram Ethersound ES models
 - ProBel SW-P-02
 - ProBel SW-P-08
 - Studer OnAir 3000

Supported PABX
 - Philips Sopho
 - Any PABX with 3rd party TAPI interface

Supported connection types
 - G.711
 - G.722
 - G.722/H.221
 - MPEG LayerII
 - MPEG LayerIII
 - J.52
 - CDQ1000 / 24kHz
 - CCS Inverse Multiplexing
 - RE Inverse Multiplexing
 - Dialog4 Inverse Multiplexing
 - AAC
 - AAC-LD
 - AAC-ELD
 - TDAC
 - ADPCM
 - CCS H.221
 - APT-X
 - Music
 - Voice
 - POTS
 - PCM / Linear

Since MDC.net is a management system controlling the used codecs and their available functions, it can only manage codec functions that are technically available by the codec. This may differ between codec brands or types.

European References:

- BEL-RTL (Brussels, Belgium)
- Deutschland Radio Kultur (Berlin, Germany)
- DRS Basel (Basel, Switzerland)
- NOB Verbinding Centrum (Hilversum, the Netherlands)
- NOB Master Control Room (Hilversum, the Netherlands)
- NOB Multi-Point (Hilversum, the Netherlands)
- Omroep Brabant (Eindhoven, the Netherlands)
- Omrop Fryslân (Leeuwarden, the Netherlands)
- ORF Zentrum (Vienna, Austria)
- ORF Funkhaus (Vienna, Austria)
- Polskie Radio (Warszawa, Poland)
- Radio Netherlands Worldwide (Hilversum, the Netherlands)
- Radio Suisse Romande (Lausanne, Switzerland)
- RTBF Bruxelles (Brussels, Belgium)
- RTBF Mons (Mons, Belgium)
- RTSI (Lugano, Switzerland)
- RTV Noord-Holland (Amsterdam, the Netherlands)
- RTV Noord-Holland (Alkmaar, the Netherlands)
- RTV Rijnmond (Rotterdam, the Netherlands)
- RTV West (Den Haag, the Netherlands)
- TV-2 Danmark (Copenhagen, Denmark)
- Virgin Radio (London, United Kingdom)
- VRT (Brussels, Belgium)