Direc NT

Overview

Table of contents

1   Digital voice recording system Direc NT

Direc NT (DNT) is a digital phone call recording system developed in Voicecom. The system includes advanced recording management and archiving features.

Recordings are stored as sound files on system computer hard disk. Additional call data, for example, channel ID as well as call ID, time, length and phone number info are permanently associated with recording.

Direc NT is designed with high recording security in mind.

1.1   DNT features

- Simultaneous recording of several voice channels
- Module-based design facilitates modifications in order to meet customer needs
- Both analog and digital subscribers as well as radio stations can be recorded
- Network based system design (client-server architecture)
- User groups with different access levels
- Tools for user groups and user rights management
- Password-protected access to database and recordings
- Automatic archiving of recordings
- Older recordings are automatically deleted when hard disk runs out of space
- Compatible with various PBXs

1.2   Recording models

According to hardware environment, different recording models can be applied.

- **Analog Signal Model**
  – classical method, used mostly to record analog phones and radio stations.

- **Conference Call Model**
  –   the system is integrated with PBX. Several PBX Sites or subscribers (groups) can be recorded via ISDN interface by one Direc NT system.

- **PRI/E1 Direct Recording Model**
  –   an independant solution from the PBX, for recording incoming and outgoing calls in the ISDN tract.

- **ISDN Answering Machine Model**
  – ISDN-based implementation of automatic answering machine.

According to the model(s) required, each recording system will be equipped with an appropriate combination of recording models, hardware and software.

1.3   Direc NT hardware

- **System computer**

  System computer must be a PC or rack-type computer suitable for installation of communication adapters.

- **Communication adapters**

  Type and number of communication adapters depend on recording model and number of channels to be recorded.

A system computer can record 4 (analog model) to 240 (conference call model) channels.

Direc NT can contain up to 16 system computers.

1.4 Direc NT software

Direc NT system design is based on client-server technology. Software modules:

- **Direc Server - server software, including administrative tools**
- **Direc Recorder - recording software**
- **Direc Archive - archiving software**
- **Direc Browser - user interface for listening to recordings**

Operating system:

Server and Recorder - Windows NT/2000.

Browser and Archive - Windows 98/NT/2000/XP.

Direc Server is the main module of the system. It coordinates the workflow of all modules and manages the system database.

Direc Server includes administrative tools. Administrator interface (Direc Admin) can be used to:

- **set phone numbers to be recorded**
- **create independent user groups with different access levels**
- **set user rights for listening to recordings**

Direc Recorder is directly associated with communication adapters. Direc Recorder encodes the signal and writes recordings to system computer hard disk. Depending on the recording method, the compression method can be:

- ADPCM compression 24 kbit/s
- PCM compression 64 kbit/s

Direc Archive is responsible for automatical archiving of recordings from a system computer to a storage medium.
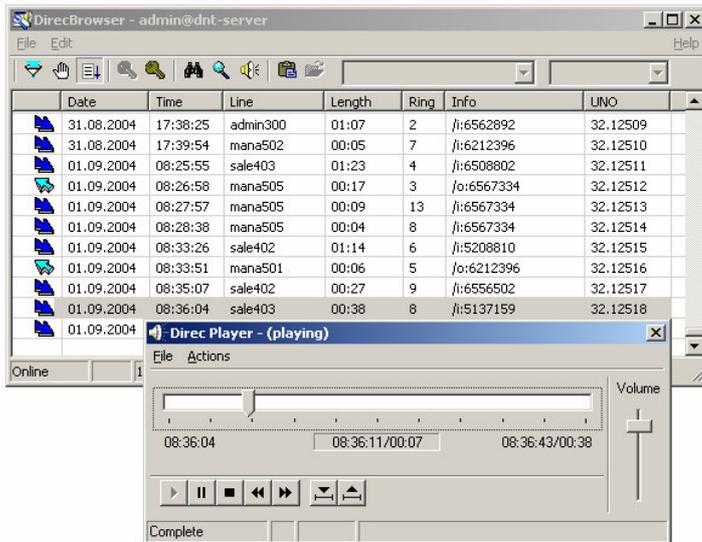
When Direc Server has created a new recording, it is immediately archived by Direc Archive.

Various types of storage media can be used (according to recording size etc). For example, another hard disk, DVD or CD.

Direc Browser is a user interface for listening to recordings.

All users are authorized by the system. A user can access data and listen to recordings only within the limits set by an administrator.

In addition to listening to recordings, users can seach for and sort recordings by phone number, call data and file ID.

	Date	Time	Line	Length	Ring	Info	UNO	
	31.08.2004	17:38:25	admin300	01:07	2	/i:6562892	32.12509	
	31.08.2004	17:39:54	mana502	00:05	7	/i:6212396	32.12510	
	01.09.2004	08:25:55	sale403	01:23	4	/i:6508802	32.12511	
	01.09.2004	08:26:58	mana505	00:17	3	/o:6567334	32.12512	
	01.09.2004	08:27:57	mana505	00:09	13	/i:6567334	32.12513	
	01.09.2004	08:28:38	mana505	00:04	8	/i:6567334	32.12514	
	01.09.2004	08:33:26	sale402	01:14	6	/i:5208810	32.12515	
	01.09.2004	08:33:51	mana501	00:06	5	/o:6212396	32.12516	
	01.09.2004	08:35:07	sale402	00:27	9	/i:6556502	32.12517	
	01.09.2004	08:36:04	sale403	00:38	8	/i:5137159	32.12518	
	01.09.2004							

1.5   DNT architecture

Direc NT was designed to be module-based. Recording model(s), hardware and software are carefully chosen for each customer.

A computer running the server software is the central part of DNT.

As the maximum number of communication adapters in one computer is limited (240 channels max), additional recording computers (Recorders) can be added to the system. Server and recording computers (system computers) are equipped with communication adapters and recording software. System computers are also used to store recorded files. Direc NT can contain up to 16 system computers.

Direc Server coordinates the workflow of all the other modules.

Server software includes an administrator interface and support for SNMP monitoring software. Administrator sets the phone numbers to be recorded and user rights.
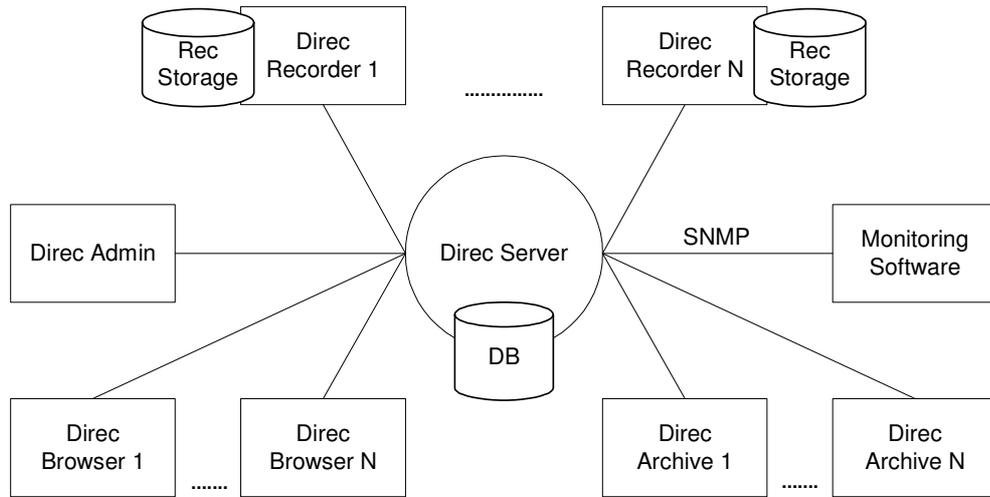
Users can listen to recordings (Direc Browser) using any network workstation equipped with a sound card and loudspeakers or headphones. The number of workstations varies with the system.

Archiving (Direc Archive) can be done using an existing or DNT internal equipment. New recordings are automatically archived. The system can contain more than one archiving module.

2   Recording system security

2.1   Conception

Requirements to the data communication network, system PC:

- The voice recording system Direc NT is placed inside a local network.
- Direc NT system PC security is based on Windows 2000 software. The administrator has to assure the installation of Windows *critical updates.*
- All unnecessary services for Direc NT (file sharing, workgroup etc) are prohibited on operation system level.
- A minimum amount of services are allowed, that are necessary for the work of the system:
    - o   TCP/IP network
    - o   DNT services (TCP/IP)

Security methods that are applied to the Direc NT system:

- DNT system PC can be turned to only via client programs (Direc Browser, Direc Archive).
- User-based authentication and rights control is used. Access will be denied in case of a failed authentication or a lack of rights.

2.2   User-based security methods

- The password is changeable by the user.
- A request set by the administrator for the user to type a new password during the next login session.
- Adjustable password lifetime. A prompt for a new password will pop up when the old one expires.
- Adjustable requirements for the password complexity:
    - o   minimum length
    - o   the limit of symbol recurrence
    - o   a requirement to use upper or lower case letters, numbers, special symbols
- A history of used passwords to make sure the new passwords differed from the old ones.
- All user actions are stored in a log file*.
- All failed login attempts will be stored in a log file with the network address of the PC where the attempt was made.
- The administrator actions stored in a log file*:
    - o   creating/deleting/modifying users
    - o   creating/deleting/modifying user groups
    - o   changing rights and relations

* Delicate info will not be stored in log files.

2.3 Security methods of the recordings

Access to recordings

- The recordings are stored on the DNT system PC hard disk, where file sharing is disabled. Therefore the opportunity to access recorded files directly from the network doesn't exist.
- Recordings are accessible only through Direc Server, which checks users and their rights (belonging to groups etc).
- Administrator can only manage the DNT system (add/change users and their rights) locally (access is denied over the network).
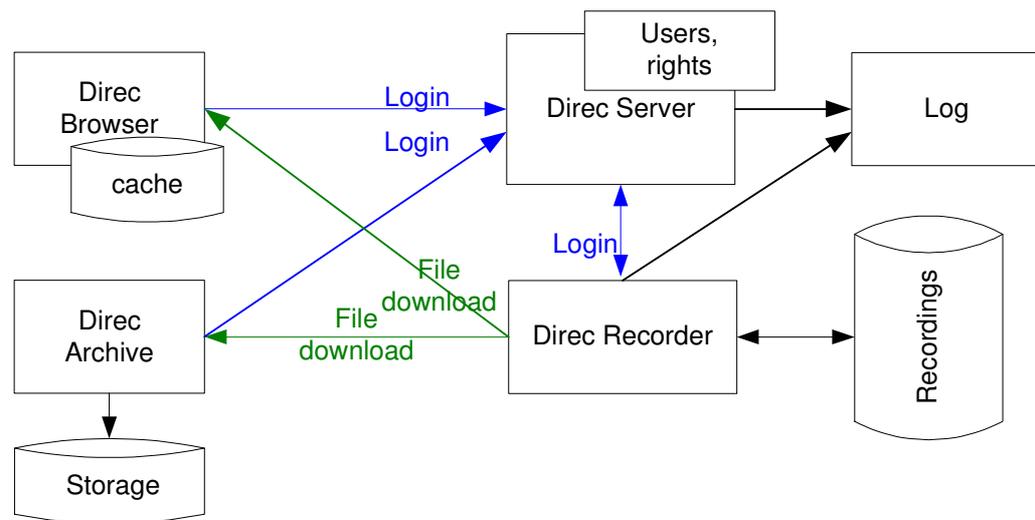
- Users will be asked to log in when the client program is launched. After that the Direc Server program will be contacted. It can't be contacted without a client program.
- Login sessions are crypted.
- All usable protocols are private: Direc proprietary.

Storing the recordings

- Every recorded file has a unique number.
- Recordings cannot be deleted by users. It is possible only in the 'auto delete' mode of Direc Recorder.
- The recorded files are in Direc proprietary format and are not listenable to with common tools.
- An entry will be added to the log file when someone listens to a recording.
- The locally cached voice recordings will be deleted automatically after the program is closed.

2.4 Archiving

- Archiving of the recordings are done with Direc Archive.
- Direc Archive is a client program for Direc Server (refer to section 2).
- Direc Archive program users may have access to archived files so this has to be kept in mind when appointing new users.

3 Recording models

Direc NT (DNT) has different recording models appropriate to the requirements of the technical environment.

3.1 Direc NT: Analog Signal Model

Analog signal model (ANR) is used primarily with:

- conventional phones
- system phones supplied with a recording adapter
- radio channels

3.1.1 ANR features

- Recording of conventional phones starts when the phone is taken off the hook ('off-hook') and ends when the phone is put back on the hook ('on-hook')
- A signal from the telephone adapter (phone put on the hook / phone taken off the hook) is used when controlling the recording of system phones (begin recording / end recording)
- A 'voice recognition method' is used with radio stations
- It is possible to operate with a CSTA Server. The information acquired from this server can be used to register caller A and B numbers

Direc NT: AN
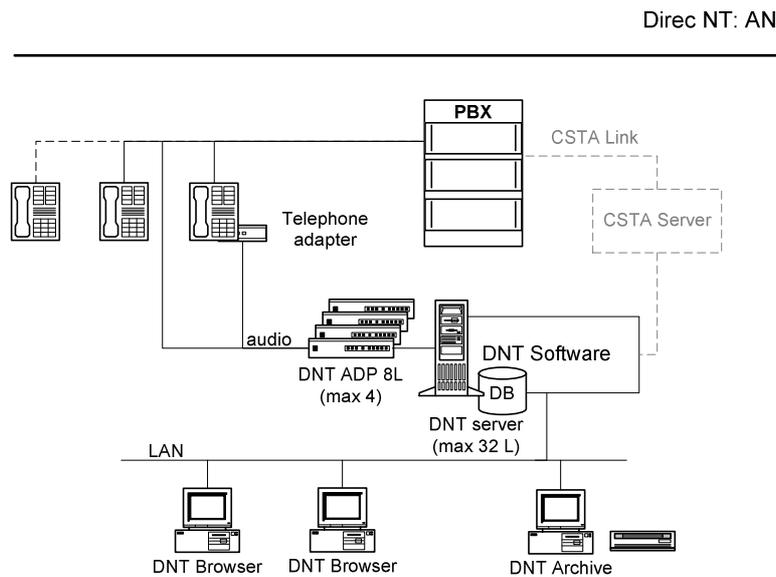
3.1.2 ANR advantages

- Easy to install
- Suits primarily for small and medium size systems

3.1.3 ANR technical data

Hardware

- Server PC
- DNT adapter(s)
- Telephone adapters

Software

- Windows 2000
- Direc Server (includes administration tools)
- Direc Recorder
- Direc Browser
- Direc Archive

Per every Server PC

- Max 32 recordable channels (expandable by 4 channels)

Per every system

- Max 16 recording servers

Recording and maintenance

- PCM compression 64 kbit/s
- User authentication
- User groups with different rights
- Simultaneous recording and playback of an audio file
- Autodelete – automatic deletion of older files when a HDD runs out of space
- Fast search in data

Archiving

- Internal or external archiving devices can be used with the Direc Archive program

3.2   Direc NT: Conference Call Model

The Conference Call Model (CFCM) integrates the recording system with a PBX, in which case the recording process is controlled by the PBX intrinsic software.

3.2.1   CFCM features

- The recording system is connected to the ISDN 30B+D interface (PRI) of a PBX.
- A PBX-specific CSTA Server is used to obtain call data and control the recording process.
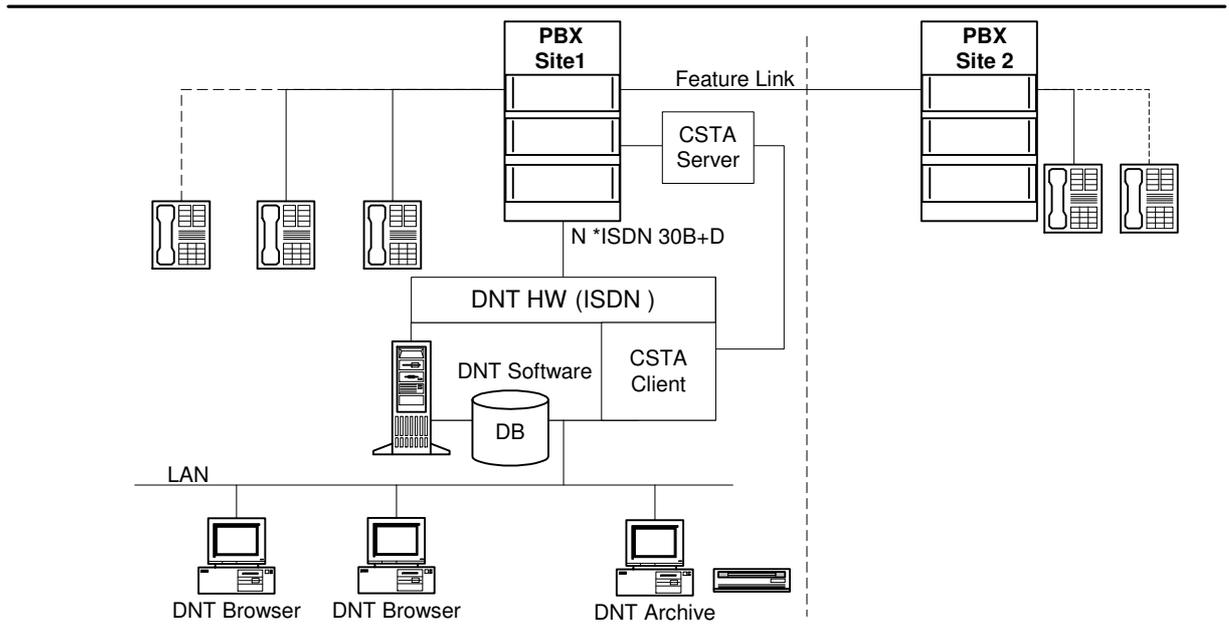
3.2.2 CFCM advantages

- If the system consists of multiple PBX's, all monitored subscribers can be recorded by one central recording system.
- The solution is dynamic, because the fixation/alteration of the recordable numbers is easy.
- The other party's phone number is recorded with the call data.
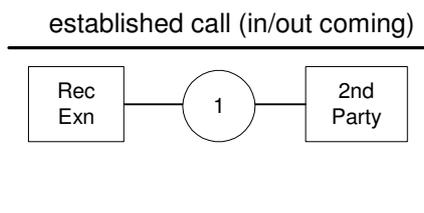
3.2.3 CFCM description

MONITORING PHASE

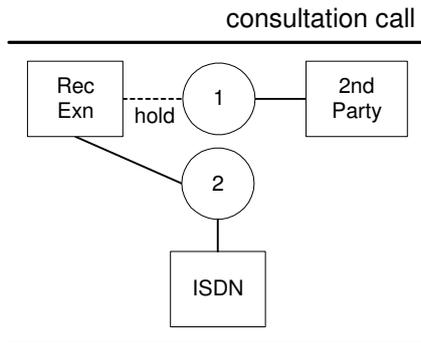(1) CSTA Server initializes the monitoring of recordable phone(s) (Rec Exn).
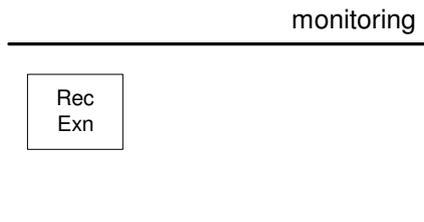
CONTROL PHASE

(2) A Connection between the recording phone (Rec Exn) and the other party (2nd Party) is established.

(3) A Consultation call is made to the ISDN channel of the recording system which becomes the 3rd party of the conference call.

consultation call

RECORDING PHASE

(4) Two calls are merged into a conference call which has three parties: the recording phone, the 2nd Party and the ISDN ("silent party"). Recording is commenced. It will be stopped, when one of the three parties terminates the call.

conference call
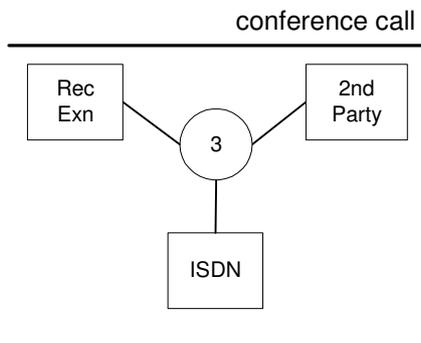
3.2.4 CFCM technical data

Hardware

- Server PC
- ISDN adapter(s) / ISDN server card

Software

- Windows 2000
- Vcom CSTA Client
- Direc Server (includes administration tools)
- Direc Recorder
- Direc Browser
- Direc Archive

Per every Server PC

- Max 240 recordable channels (expandable by 30 channels)

Per every system

- Max 16 recording servers

Recording and maintenance

- PCM compression 64 kbit/s
- User authentication
- User groups with different rights
- Simultaneous recording and playback of an audio file
- Autodelete – automatic deletion of older files when a HDD runs out of space
- Fast search in data

Archiving

- Internal or external archiving devices can be used with the Direc Archive program

3.3 Direc NT: PRI/E1 Direct Recording Model

PRI/E1 direct recording model (IDR) is a solution independant from the PBX, where the recording system is connected parallel to the PBX ISDN interface.

3.3.1 IDR features

- Calls from and to the PBX are recorded
- An opportunity to determine phone numbers, where incoming and outgoing calls are recorded
- In addition to the call, the caller A and B numbers are registered

Direc NT: IDR
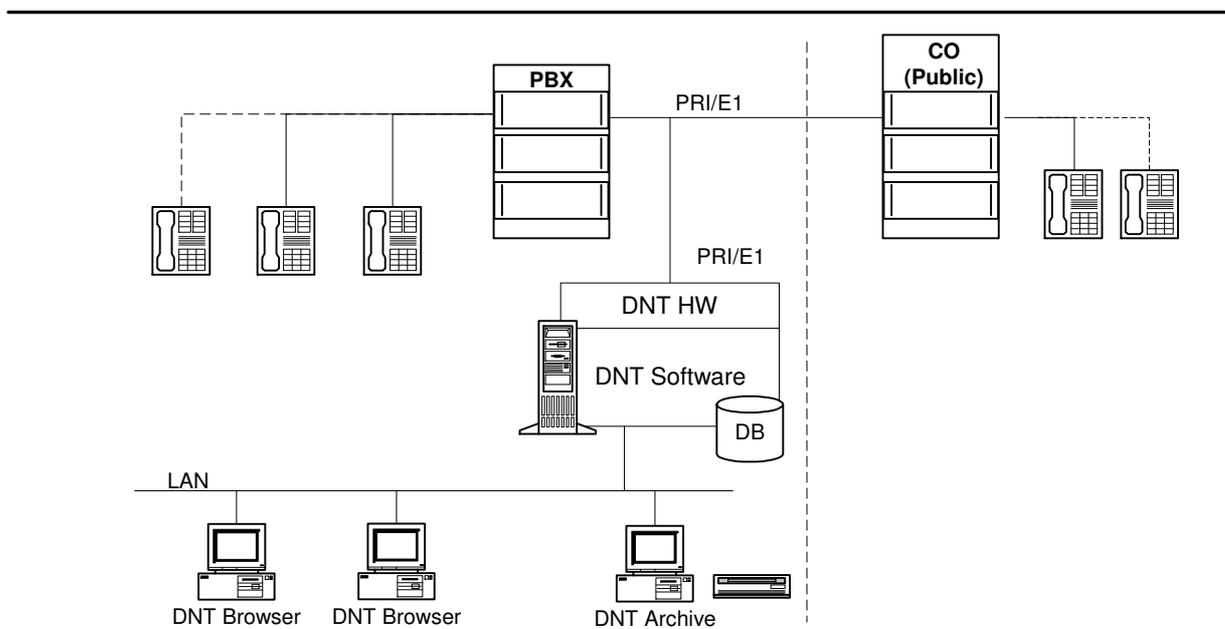
3.3.2 IDR advantages

- Call participants are recordable separately – simplifies the analysis of the call dialogue
- The solution is dynamic, because the fixation/alteration of the recordable numbers is easy

3.3.3 IDR technical data

Hardware

- Server PC
- ISDN adapter(s) / ISDN server card

Software

- Windows 2000
- Direc Server (includes administration tools)
- Direc Recorder
- Direc Browser
- Direc Archive

Per every Server PC

- Max 120 recordable channels (expandable by 4 channels)

Per every system

- Max 16 recording servers

Recording and maintenance

- PCM compression 64 kbit/s
- User authentication
- User groups with different rights
- Simultaneous recording and playback of an audio file
- Autodelete – automatic deletion of older files when a HDD runs out of space
- Fast search in data

Archiving

- Internal or external archiving devices can be used with the Direc Archive program

3.4 Direc NT: ISDN Answering Machine Model

ISDN answering machine model (IAM) is a solution for giving a recording system an answering machine function.

3.4.1 IAM features

- Integrable with other Direc NT recording models using the same hardware
- The maximum length of a recording is changeable
- This solution is perfect for answering a large amount of simultaneous calls
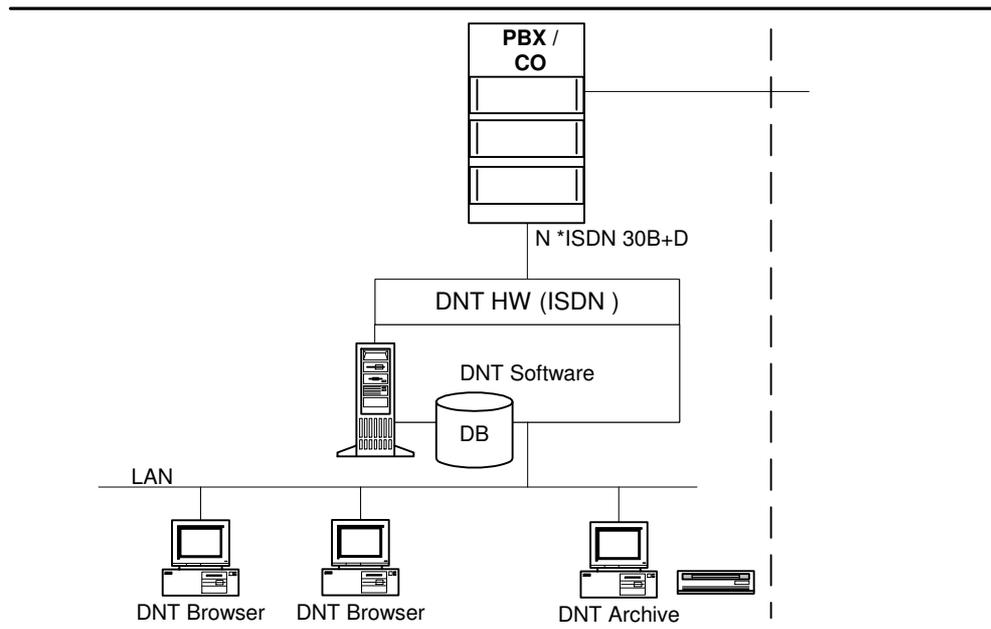
3.4.2 IAM advantages

- Dynamic use of ISDN channels – enables to share the same hardware (ISDN server card) with other ISDN-related recording models (excl. PRI/E1 direct recording)
- Recorded calls are listenable to with DNT Browser software

3.4.3 IAM technical data

Hardware

- Server PC
- ISDN adapter(s) / ISDN server card

Software

- Windows 2000
- Direc Server (includes administration tools)
- Direc Recorder
- Direc Browser
- Direc Archive

Per every Server PC

- Max 240 recordable channels (expandable by 30 channels)

Per every system

- Max 16 recording servers

Recording and maintenance

- PCM compression 64 kbit/s

- User authentication
- User groups with different rights
- Simultaneous recording and playback of an audio file
- Autodelete – automatic deletion of older files when a HDD runs out of space
- Fast search in data

Archiving

- Internal or external archiving devices can be used with the Direc Archive program