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Heynen works for innovators

STUDER®
by HARMAN

CMS
CALL MANAGEMENT SYSTEM

Call Management System

Studer Call Management System

"Over to our reporter in the field - can you tell us what the situation is now please?"

"And now we have a caller from London on line 3 …"

"To vote for Dance Act D, press 4 now …"

"Which city in Italy is famous for its ham…, press 1 for Rome, 2 for Milan, 3 for Parma …"

"Thanks caller 2, we'll put you in our waiting room with other winners, so we can take your name and address…"

The sophistication of telephone interfacing to a Radio or TV studio is rapidly stretching the capabilities of a traditional telephone hybrid device used in countless stations worldwide.

Multiple telephone lines, telephone voting and gaming, off-air interviewing and data collection all require far more flexibility than can be offered by a simple hardware hybrid solution. Presenters and DJs need to rapidly bring multiple callers onto the console fader to get them on air, assistants need to be able to collect addresses for prize mailings, while producers need to brief a journalist who is calling in, are monitoring call-ins and show progress preferably from their workstation rather than from the studio.

Studer's standard IT based Call Management System (CMS) uses VoIP (Voice over Internet Protocol) technology to supplement or replace expensive physical telephone hybrids and codecs controlling processes with the CMS or with Studer's renowned OnAir console software.

A standard IT server interfaces to classic PBX, ISDN and VoIP lines.

Although available as a standalone system, the functionality and control of CMS increases when integrated with a Studer OnAir console platform.

The CMS software applications offer an intuitive and user friendly GUI to easily cover certain challenges in Broadcaster's daily business as presenter, producer or engineer.

Whichever implementation is adopted, the self-explaining and intuitive GUIs require a minimum effort for training and practice for any operator to be comfortable with using CMS.
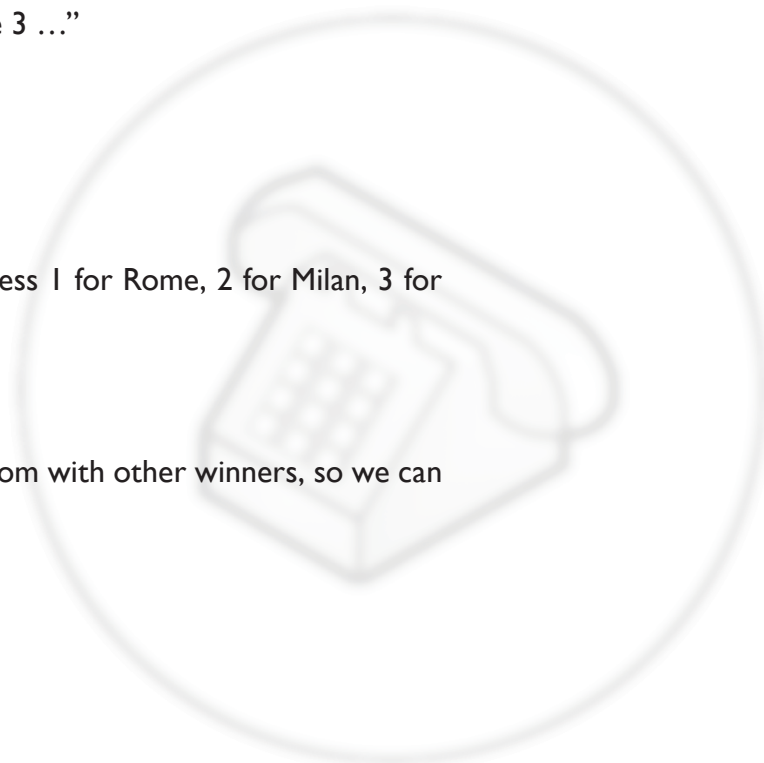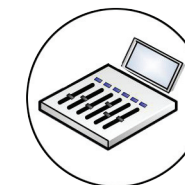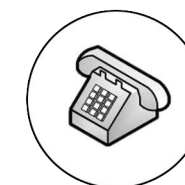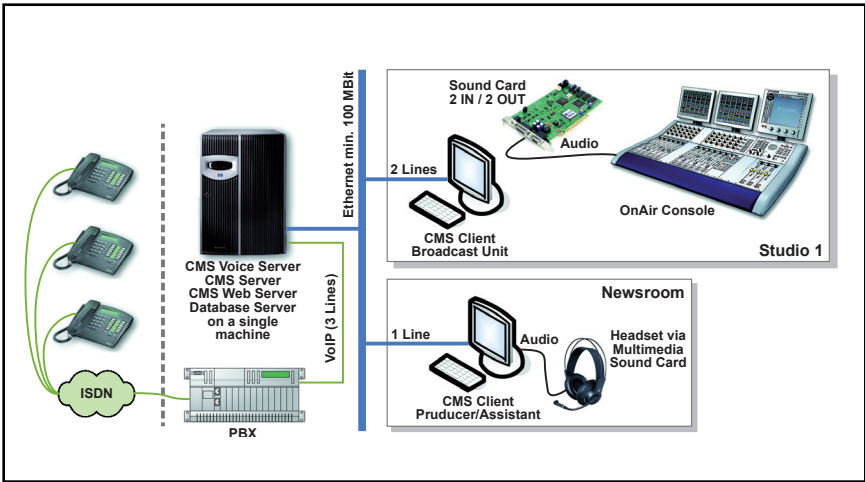
Scaleable System, Scaleable Functionality

CMS is designed for virtually any size of studio, not just for larger multi-studio facilities. Systems can be designed starting with just a single studio client providing call-ins e.g. for only two console faders but easily expandable to multi-studio systems with hundreds of lines.

Key parts of the system are individually configurable, allowing you to select parts best suited to your operation. At a later point the system can be extended with more functions by additional modules or clients to let it grow seamlessly.

Sound Card 2 IN / 2 OUT
Audio
Ethernet min. 100 MBit
2 Lines
OnAir Console
CMS Client Broadcast Unit
Studio 1
Newsroom
CMS Voice Server
CMS Server
CMS Web Server
Database Server
on a single machine
VoIP (3 Lines)
1 Line
Audio
Headset via Multimedia Sound Card
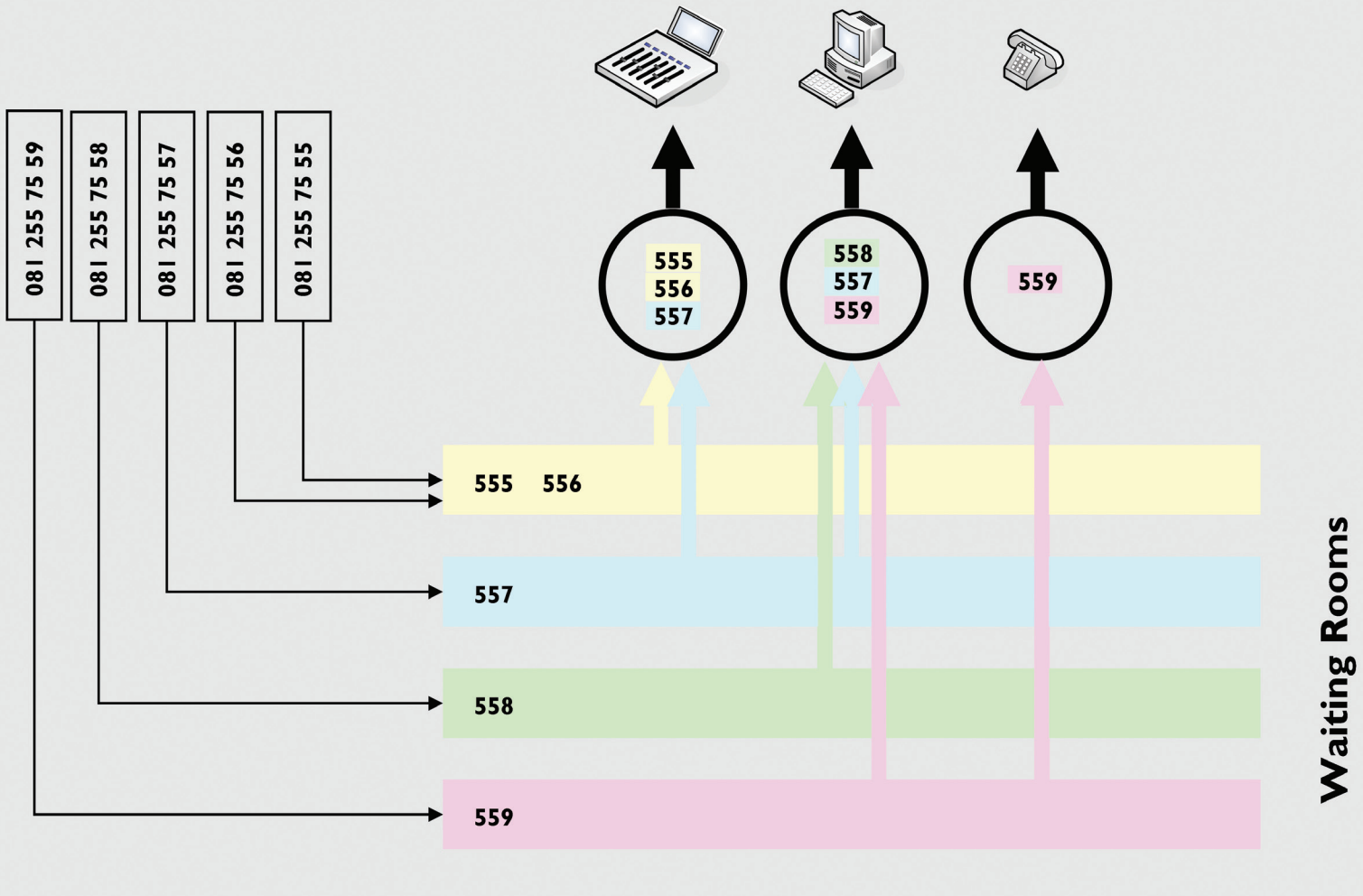ISDN
CMS Client Producer/Assistant
PBX

Waiting Rooms

Studer's CMS offers the ability to set up holding areas for callers known as waiting rooms. Here incoming callers may be held (before being switched on-air) and listen to background music or live program, leave a message on a voice mail or receive info messages about the particular show. Typical messages might be 'the line is now closed, competition is over', or 'all lines are busy'.

Waiting rooms bring some very interesting possibilities. Specific incoming line numbers may be assigned to waiting rooms, so calls are
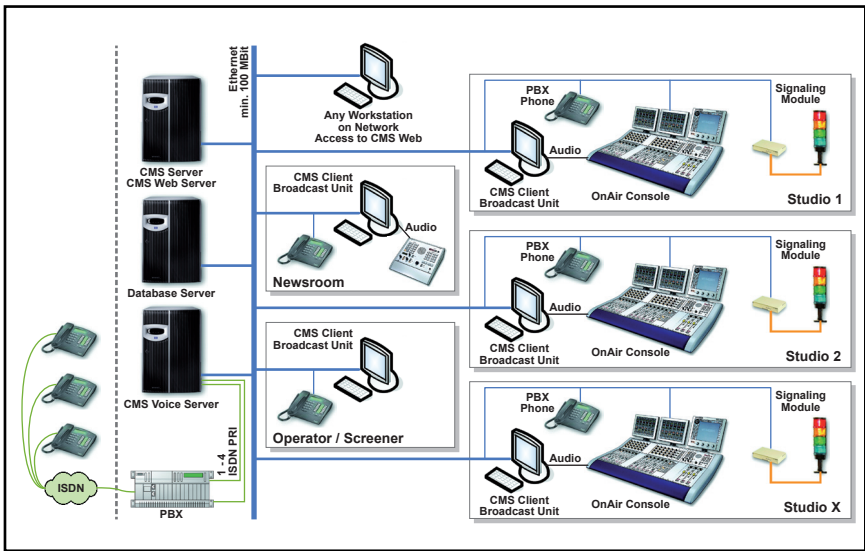
parked there automatically, or callers could be moved to different waiting rooms depending on specific criteria. Waiting rooms could be shared by users so that details of a caller in a

selected waiting room are visible to all parties or just some, depending on setup.

Ethernet min. 100 MBit
Any Workstation on Network Access to CMS Web
CMS Server CMS Web Server
CMS Client Broadcast Unit
Audio
PBX Phone
Signaling Module
CMS Client Broadcast Unit
OnAir Console
Studio 1
Database Server
Newsroom
CMS Client Broadcast Unit
PBX Phone
Signaling Module
CMS Client Broadcast Unit
OnAir Console
Studio 2
CMS Voice Server
Operator / Screener
PBX Phone
Signaling Module
CMS Client Broadcast Unit
OnAir Console
Studio X
ISDN
PBX
4 x ISDN4 PRI

081 255 75 59
081 255 75 58
081 255 75 57
081 255 75 56
081 255 75 55

555 556 557
558 557 559
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555 556
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Simple Telephone Calls

Incoming calls on multiple lines may be held off-air by an assistant or a DJ in a waiting room, and later simply be routed to a console fader when going on-air. In standalone mode this routes the call to an output of the CMS

which then feeds a channel on the studio mixer. When integrated with a Studer OnAir mixing console, the caller is directly linked to a fader via a digital connection.

Opening Hours

Phone lines can be allocated to 'opening hours', routing calls to the studio at certain times only. Outside these times it is possible to offer services like playing a prerecorded message such as 'line is closed', switching to voice mail or streaming a

live program. Opening hours may be predefined or manually changed live by the operator. For easy useability, a standard web application provides access to the configuration for voting, games, statistics and prerecorded voice mails.

Game Shows

CMS allows simple or complex game shows to be created and run.

Preselection of show contestants can be made easy, for example by a simple Q&A session using the caller's keypad to select a correct answer to a prerecorded question, or a production assistant may take a call and park the caller in a suitable waiting room for the presenter.

Preselection could also be defined from every n-th caller with a certain digit in his phone number, from particular regions or other criteria. Such preselections may be nested so that contestants are automatically and gradually reduced off-line before a presenter interaction is required.
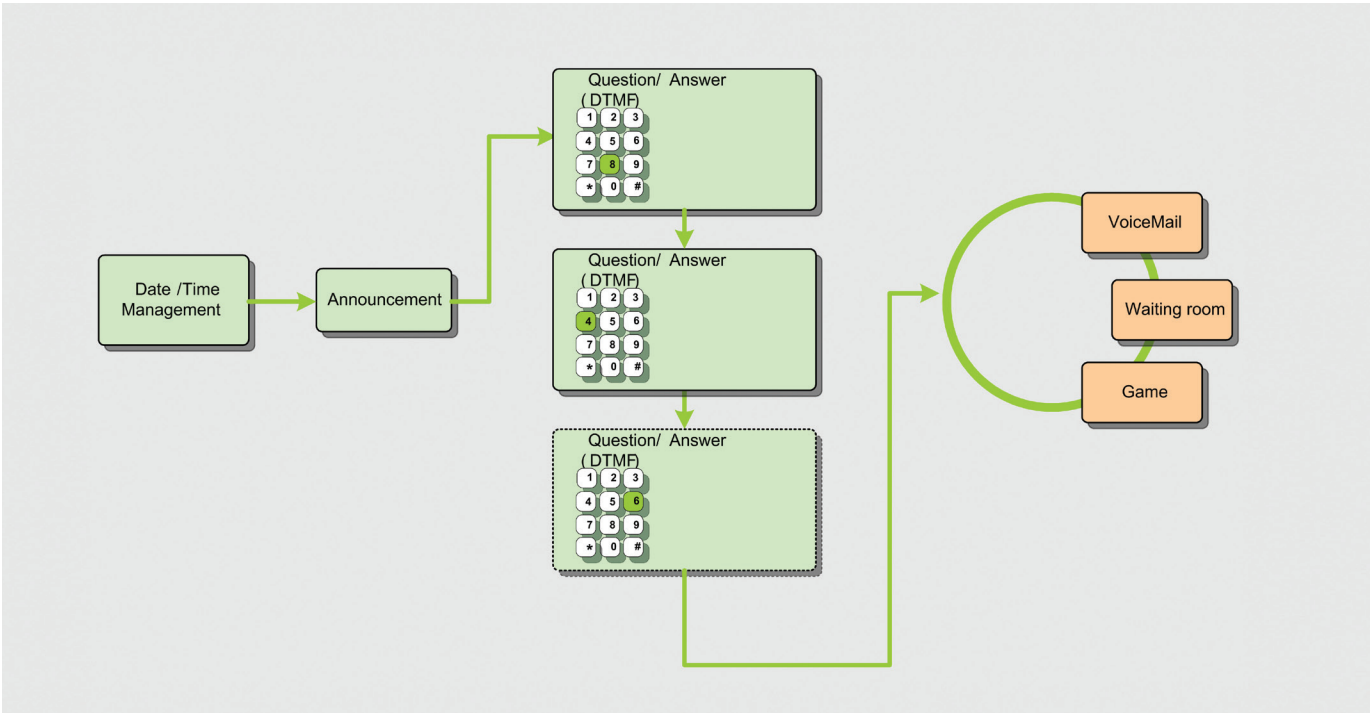
Voting

Telephone voting can be accomplished simply with CMS. Callers may use their telephone keypad to vote for a contestant (e.g. multiple choice acts in a talent show) or a hot local topic (yes/no voting). Like normal calls, games, waiting rooms and voting can also have opening hours assigned to let callers know when a line is closed.

Voting can be done in the background, informing the DJ only of scored results. Any user with correct access rights is able to easily check vote results in a web browser. Voting results may be automatically calculated by CMS.

Database

CMS comes with extensive caller database functionality. Additional information could be managed, for example, winners may be logged, obscene callers noted or addresses kept, enabling a presenter to view and interact as soon as a phone number appears. Undesirable callers

can be moved to a different waiting room rather than progress to a live situation. Statistics may be gathered on how many times a particular caller phones in or to see how popular different times of day or different competitions are.

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The Voice Server

The core of the system is the CMS server that can handle almost any kind of telephone line connection. Operators do not need to know about lines (ISDN, analogue, VoIP) – all appear to be the same.

VoIP: The Studer CMS handles VoIP telephone traffic with ease. With internet connections, the voice server controls up to 240 channels either directly or via holding areas to broadcast studios, editor's desks, or call operators. There are virtually no limits when managing the calls via holding areas. Standard audio cards provide the connection to digital or analogue audio devices.

ISDN: Up to 120 channels can be connected with the voice server via ISDN adapter. Again, operation is processed by the same application that controls VoIP.

Communication between the CMS server and the CMS client is processed just via TCP/IP with QOS mechanism, no special cabling is necessary. CMS supports the following standard communication protocols and codecs:

SIP
H.323 for VoIP
G.711 soft codec for speech
G.722, G722.2
MPEG 1 layer 2
Linear PCM 16 bit/48 kHz

Game Show Auditing

The number of programs that use telephone-based input for chat, voting and games is still increasing. One benefit of CMS is to ensure that voters are not charged when the competition has ended and if premium rate numbers are used, and that data on those games is readily available for the audit.

The CMS system can really help in delivering audience statistics.

Waiting rooms can provide an automatic close-off for voting via the Opening Times functions, while statistics can be configured for tracking, e.g., how many votes were cast with details of winning entries/callers and their numbers.

The Software

Regular daily operations are carried out by client software running on a PC or laptop connected to the CMS server over standard IT infrastructure.

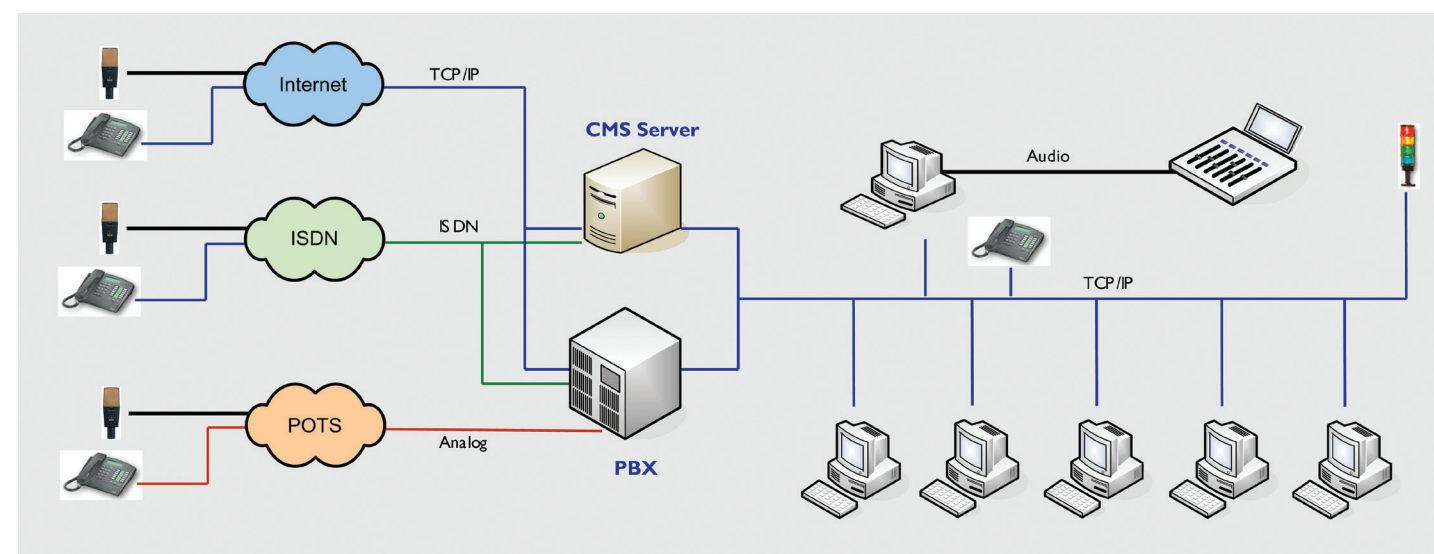The normal operation screen shows in the right area waiting calls and lines. In the left area calls currently 'live' on-air are presented. As soon as calls are received and filtered, they can be simply put onto the live faders of the connected mixing console or sent to other audio devices.

Each call section shows the number of the line being called, the caller's number (and name if already registered in the database) and other stored information. It is also possible to connect to an external phone directory service in order to receive the name and address of a caller

A numerical soft-keypad offers the possibility to make call-backs directly from the screen without the need to use an extra telephone handset.

A simple echo-cancellation routine is implemented to eliminate line echoes.

System Hardware/ Software Overview

CMS is able to deliver a small system with just a few PCs and a single studio, up to very large systems with a large number of clients and many studios. The system connects either with a PBX (Private Branch Exchange) or directly to ISDN and/or VoIP.

The system is based around a main standard IT server which manages all phone lines, calls and database functionality, as well as the operation software for the different clients. These clients run on PCs which are connected via IT network to the voice server. This allows controlling the system from almost any location of a facility with network connections, even from remote studios or stations.

Client Applications

There are several client applications which run on PCs or laptops, according to the current role of the operator.

The Studio Client is designed for operation in on-air and/or production environments. It offers a wide range of functionality to manage either direct calls or the ones forwarded from other CMS clients. The Studio client is optimised for touch-screen operation and offers other functionality such as:

- Priorities for waiting rooms
- Filter functionality
- Autofill function
- Integrated soft phone
- Information window
- VIP visualization

The Producer Client is basically for a telephone operator answering or screening calls. The operator adds the caller's data to the information window and passes the call to the studio or the control room, or assigns it to a waiting room.

Feature	Live	Studio	Newsroom	Producer
Multi-language (Unicode)	✓	✓	✓	✓
Studer OnAir console integration	✓	✓		
Caller identification				
Name/address of caller	✓	✓	✓	✓
Editable additional info of the caller (for all calls and/or for current call)		✓	✓	✓
Time the caller is waiting		✓		✓
Number of calls of the caller, date of last call		✓	✓	✓
Number of on-airs of the caller, date of last on-air		✓	✓	✓
Number of wins of the caller, date of last win		✓	✓	✓
Integrated soft phone				
DTMF send		✓	✓	✓
Redial		✓	✓	✓
Presets		✓	✓	✓
Shortcut keys (considering Softdec)		✓	✓	✓
Holding areas				
Identification by colour		✓		✓
Prioritizing		✓	✓	✓
Direct on-air of callers in waiting rooms and talkback to caller		✓		
Moving callers between waiting rooms		✓	✓	✓
Forwarding callers to other CMS clients		✓	✓	✓
Hang-up for each caller or all callers	✓	✓	✓	✓
Winner notification		✓	✓	✓
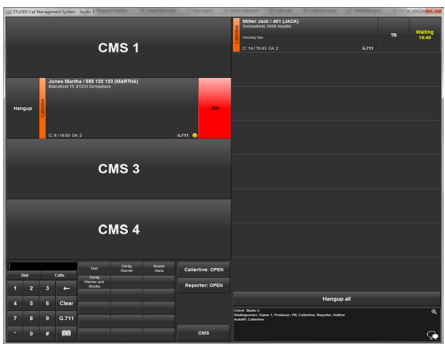
The Newsroom Client is designed for editorial staff and presenters in interview situations. It comes with a predefined set of functionality that is easily selectable. This allows the journalist focusing on the interview or talk, instead of having to interact with the software.

The Live Client is an easy-to-use client for live operation. It is made for live situations to be handled by the presenter in the studio.
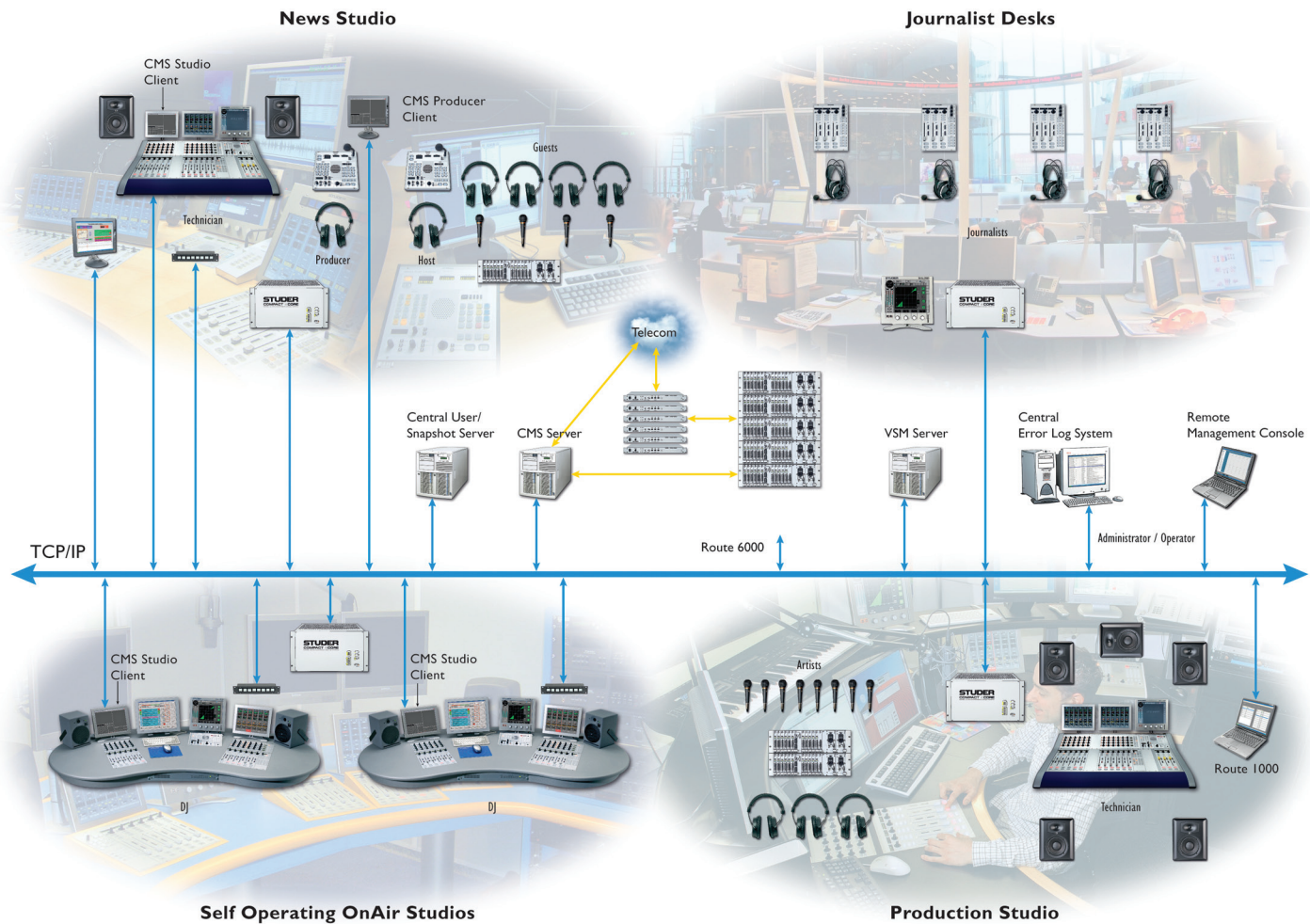
Multiple Language Support
The on-screen labeling of the CMS can be displayed in almost any language supported by Windows, so language barriers are not an obstacle to operation.

Teamwork and Integration

Studio Work Becomes Part of the Office
The CMS waiting room concept perfectly supports the phone line-to-audio workflow in a broadcast studio.

The Producer can choose to work on-site in the studio or at his desk. All he needs is a CMS client and a headset to be part of the on-air team in the studio. If required he could brief a journalist calling from an external location or give information to the public before switching the caller live on-air, all triggered by CMS.

The DJ in the studio can handle calls which are ready to go on-air and doesn't need to know whether the call comes from ISDN or VoIP – CMS takes care about necessary background processing and brings the call information to the DJ's screen.

The Screener can take over calls from the DJ in order to record address details or to handle calls. The same rules apply to any team member such as a researcher or engineer.

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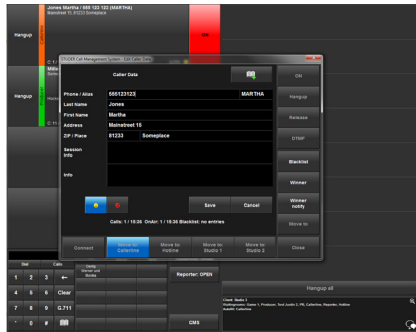# Integration with Studer OnAir Consoles

When integrated with a Studer OnAir console, CMS offers a centralised, seamlessly integrated solution for radio broadcasters. The scaleability of the system allows a close integration of CMS with an existing and running OnAir infrastructure with consoles and routing. Controls of CMS functions become available on an OnAir fader touch screen or fader module, and handling the external sources becomes much more intuitive and reduces the number of required control screens.

Finally, CMS with OnAir consoles offers a completely integrated solution for Radio – centralising control and functions at the operator's fingertips.

News Studio

Journalist Desks

CMS Studio Client

CMS Producer Client

Guests

Technician

Journalists

Producer

Host

Telecom

Central User/ Snapshot Server

CMS Server

VSM Server

Central Error Log System

Remote Management Console

Administrator / Operator

Route 6000

TCP/IP

CMS Studio Client

CMS Studio Client

Artists

DJ

DJ

Route 1000

Technician

Self Operating OnAir Studios

Production Studio

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