

STUDER

professional audio equipment



CMS

CALL MANAGEMENT SYSTEM

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 it’s 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...”

Studer Call Management System

Waiting Room Concept

Pre Selection / Game Shows

Voting

Codec Management

The sophistication of telephone interfacing to a Radio or TV studio is rapidly stretching the capabilities of the 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 the simple hardware hybrid solution. DJ's 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, monitor call-ins and show progress, preferably from their office rather than the studio.

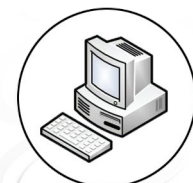
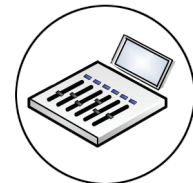
Studer's Call Management System (CMS), uses VoIP (Voice Over Internet Protocol) technology to supplement or replace expensive physical telephone hybrids and codecs, possibly replacing all the Codecs in a Broadcast facility with all control under the CMS/OnAir 3000 software.

A server PC interfaces to standard POTS and ISDN lines, as well almost any PBX with a VoIP interface.

Although available as a standalone system, the functionality and control of the CMS greatly increases when integrated with a Studer OnAir 3000 console platform.

The CMS software applications have an intuitive and user friendly GUI to easily cover certain roles in the Broadcaster's daily business (DJ, Producer, Engineer).

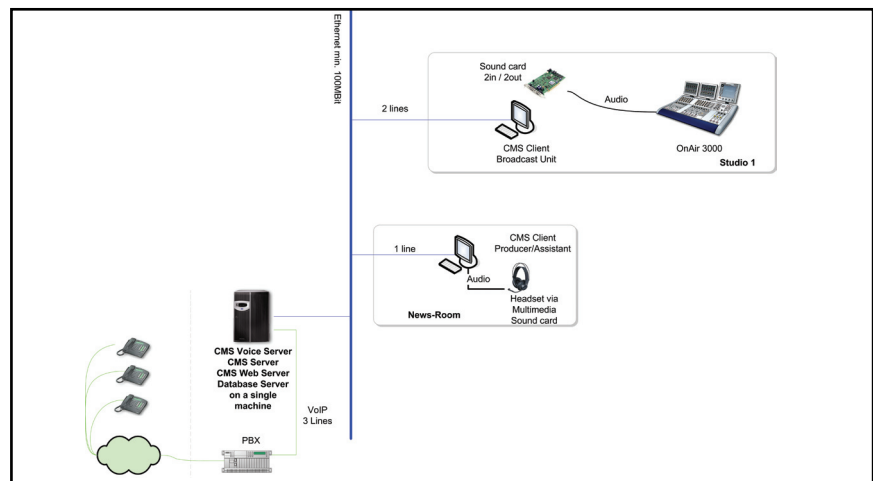
Whichever implementation is adopted, thanks to these clear and intuitive GUIs, the system requires only around 2 hours training for any operator to be totally comfortable using it.



Scaleable System, Scaleable Functionality

The CMS is designed for virtually any size of Broadcaster, not just for the larger, multi-studio facility. Systems can be designed to start with just 2 studio clients providing call-ins to two console faders.

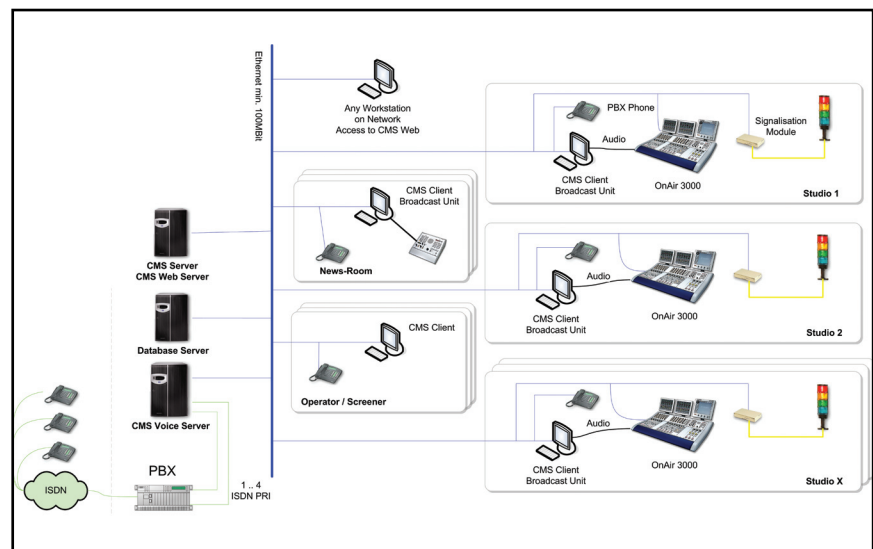
Key parts of the system are individually licensable, so you can choose which parts suit your operation the best, and purchase only those which you need. Later, you can add functionality to grow the system as required by purchasing additional modules and licenses.



Waiting Rooms

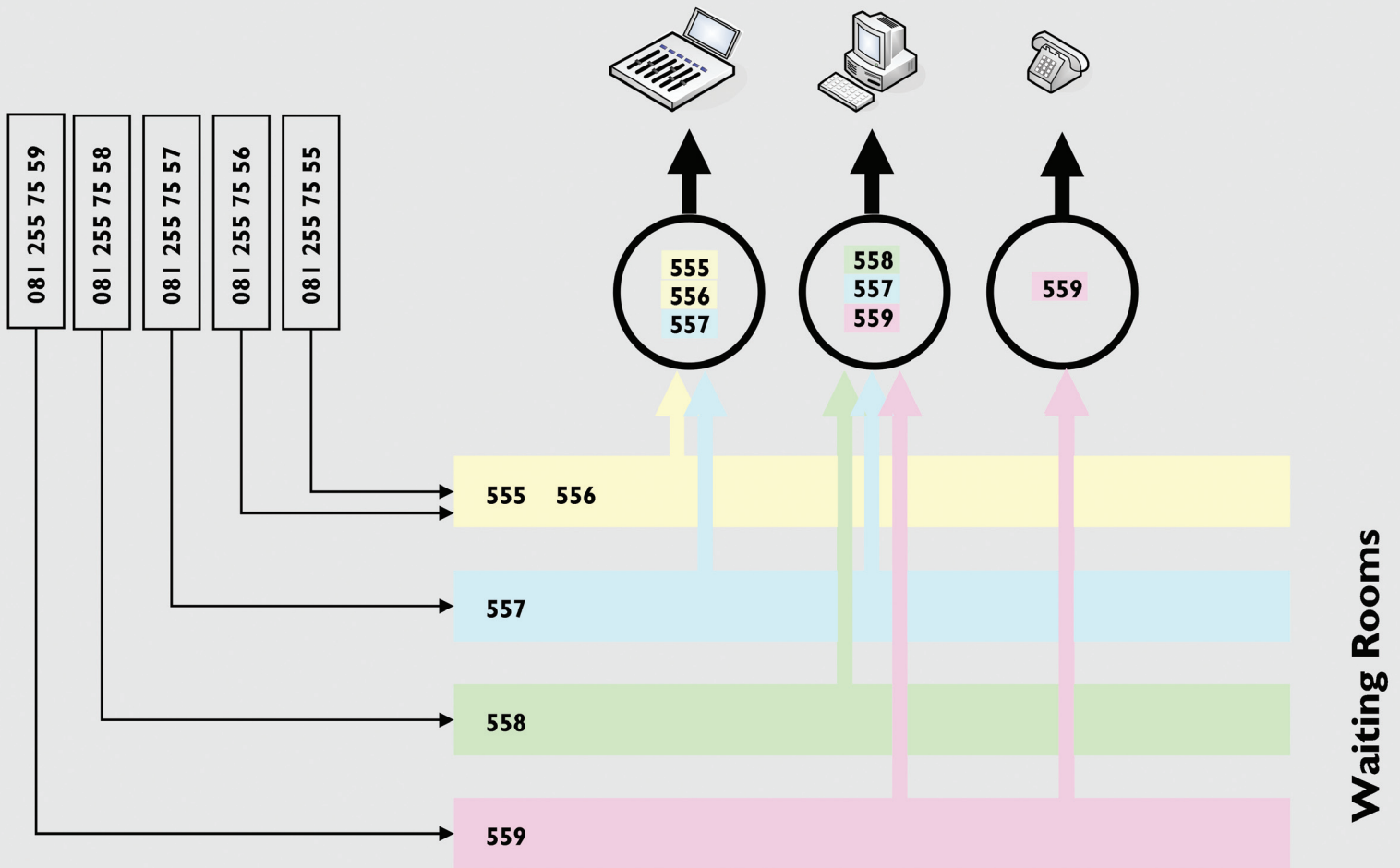
Unique to the Studer CMS is the ability to set up holding areas for callers known as Waiting Rooms. Here, incoming callers may be held prior to being put on-air, listen to hold music, leave messages on an answering machine or be given messages about the particular show, such as 'the line is now closed, 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 can be moved to different waiting rooms depending on specific criteria.

Waiting rooms can be shared by users so that the details of a caller held in a particular waiting room are visible to all parties, or just some.



Simple Telephone Calls

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

a channel on the studio mixer. When integrated with a Studer OnAir 3000 mixer, the caller is directly selected to the fader via a digital connection.

Opening Hours

Phone lines can be allocated 'opening hours', where calls will only be routed to the studio at certain times. Outside these times, it is possible to play pre-recorded messages informing the caller that the line is closed, or played music. These opening hours may be

predefined or manually changed live by the Broadcaster. For easy access and use, a standard web application provides access to the setup for voting, games, statistics and pre-recorded voicemails.

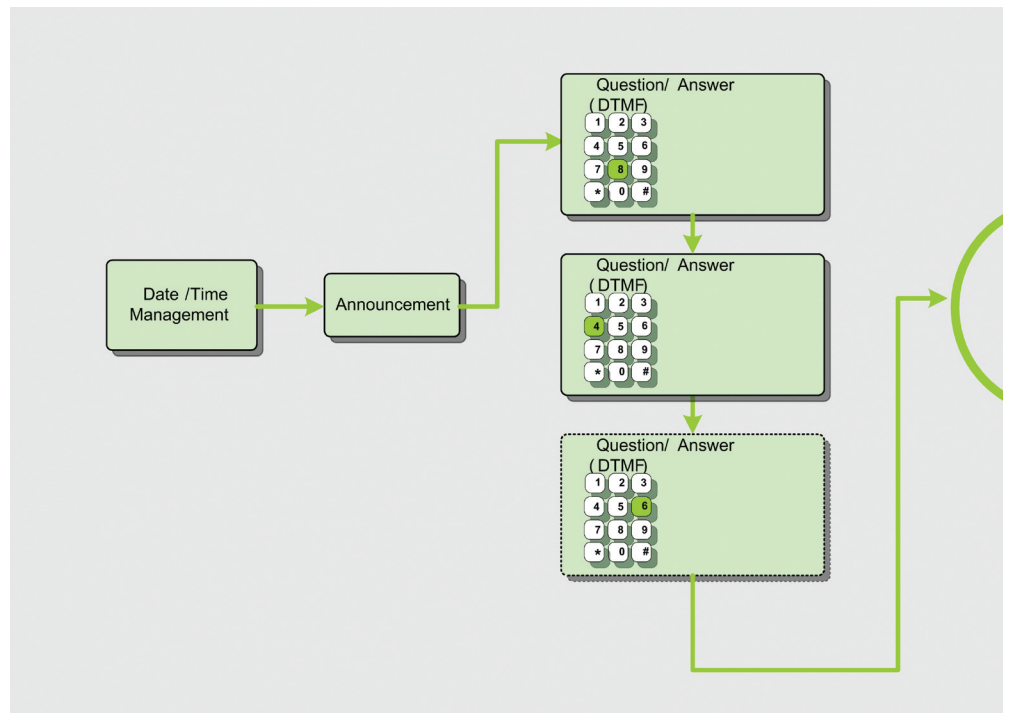


Game Shows

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

Pre-selection of show contestants can be made easy through a simple Q&A session using the callers keypad to answer a pre-recorded question correctly to progress in the competition, or a live operator may take the call and park the caller in a suitable Waiting Room for the DJ. Simple regular .WAV files can be used for pre-recorded messages.

Pre-selection could also be defined from every nth caller, any caller with a certain digit in his telephone number, or callers from particular regions. Such preselections may be nested so that contestants are automatically and gradually refined off-line before DJ interaction is required.



Voting

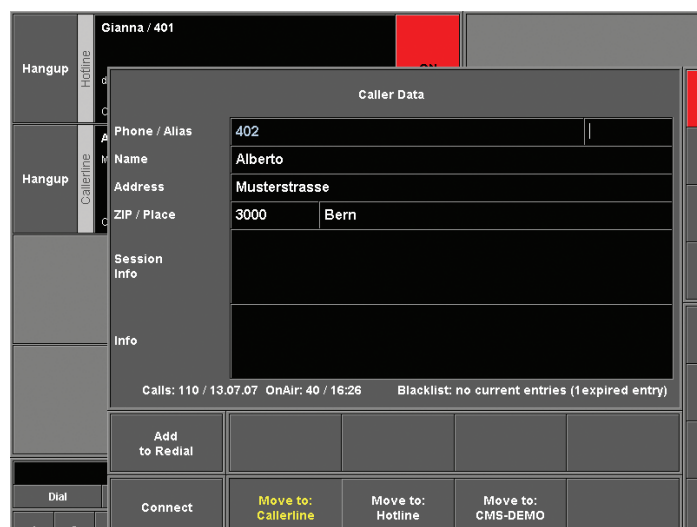
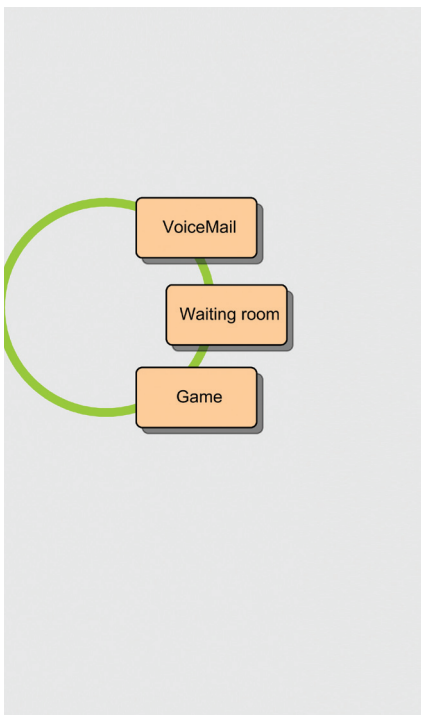
Telephone voting can be accomplished simply with CMS. Callers may use their telephone keypad to vote for a contestant (multiple choice acts in a talent show, for example), a hot local topic (yes/no voting). As with normal calls, games and waiting rooms, voting can also have opening hours assigned to it so callers will know that the line is closed.

Voting can be done in the background, with the DJ then only needing to be informed of the results. Any user with the required access rights can easily check the vote results in a web browser. Results may be automatically calculated by the CMS.

Database

CMS comes with extensive caller database functionality. Where local law permits, data on individual callers may be stored, along with any information the station needs to collect – for example, competition winners may be logged, obscene callers noted or addresses kept, so that the DJ can see any such data when the caller's number comes up, and can interact

with that caller. 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 particular callers phone in, or to see how popular different times of day or different competitions are.





Game Show Auditing

With the number of programs that use telephone-based input for chat, voting and gaming seemingly still on the increase, the spotlight has fallen on this element of Broadcasting to ensure that voters are not charged when the competition has ended if

premium rate numbers are used, and that data on those games is readily available for audit.

The CMS system can really help to provide an audit trail. Waiting rooms can provide an automatic close-off for

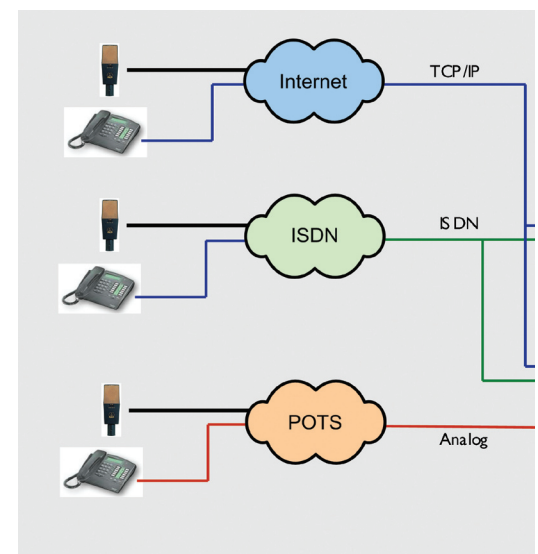
voting via the Opening Times functions, while an audit trail can be made to track how many votes were cast and details of winning entries/callers and their numbers

System Hardware/ Software Overview

CMS can create very small systems with just a few PCs and a studio up to very large systems with a high number of PCs and many studios. The system can either be connected with a PBX (Private Branch Exchange) or directly to ISDN and Internet (VoIP).

The system is based around a main server, which is used to manage all the phone lines, calls and

database functionality, and the in-use operational software, split into Producer and Studio Clients. These platforms run on PC's which are connected as normal over standard IT infrastructure to the Voice Server. This is why control can be accessed from almost any part of a facility with network connections, even from remote studios or stations



The Voice Server

At the heart of the system is the CMS server that can handle almost any kind of telephone line connection. The operators do not need to know which kind of line to handle (eq. ISDN, analogue, VoIP) – to them they simply look the same.

VoIP: The Studer CMS handles VoIP telephone traffic with ease. With internet connections, the voice server can control 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 the analogue audio world.

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

Communication (control, voice/audio and signalling) between the CMS

server and CMS client is just via TCP/IP (with QoS), therefore no special cabling is necessary. The CMS offers the following standard communication protocols:

- H.323 for VoIP
- G.711 soft codec for speech
- G.722, G722.2 available soon,
- Speex, OggVorbis for high-quality audio
- AAC, available soon

The Software

The routine daily operation is carried out by Client Software running on a PC or laptop connected to the CMS server over a standard IT infrastructure.

The normal operation screen shows, on the right, the waiting calls and lines,

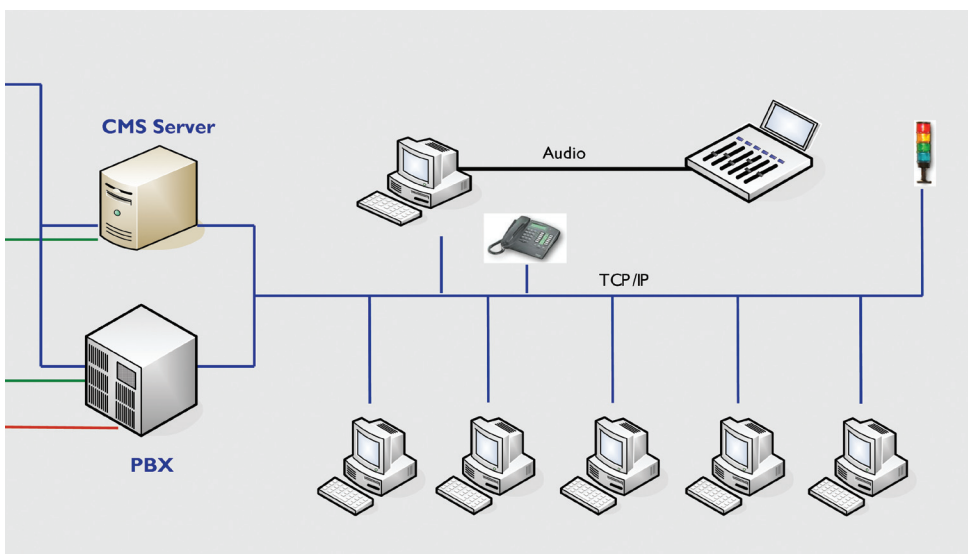
and on the left, calls currently 'live' on air. As calls are received and filtered, they can be simply put onto the live faders.

Each call section shows the number of the line being called, the callers number (and name if already

registered in the database), and any other stored information. It's also possible to connect to a telephone directory service to get the name and address of a caller

A numeric keypad offers the user the possibility to make call-backs directly from the screen without the need to use a telephone handset.

A simple echo-cancellation facility is included to eliminate the most common forms of line echo.



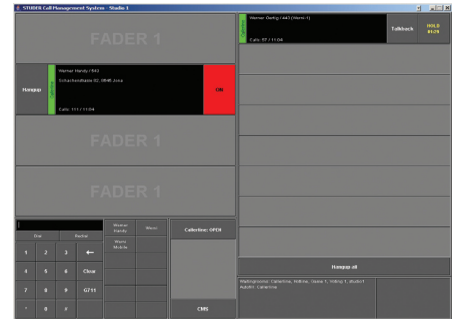
Client Applications

There are several client applications which run on PC's or laptops, according to the function of the operator.

The Studio Client is designed for operation in on-air and/or production surroundings and offers a wide range of functionality to manage calls either directly or forwarded from other CMS clients.

The Studio client is optimised for touch-screen operation, and has other functionality such as:

- Priorities for waiting rooms
- Filter functionality
- Autofill function
- Integrated softphone
- Information window
- VIP signalisation



Feature	Studio	Reporter	Operator
Multi-Language (Uni-Code)	✓		✓
OnAir 3000 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-air's of the caller, date of last on-air	✓		✓
Number of wins of the caller, date of last win	✓		✓
Integrated Softphone			
DTMF send	✓	✓	✓
Redial	✓	✓	✓
Presets	✓	✓	✓
Shortcut keys (considering Softdec)	✓	✓	✓
Holding areas			
Color for each area	✓		✓
Prioritizing for each area	✓		✓
Direct on-air of callers in holding areas	✓		
Moving of callers from one holding area to another	✓		✓
Forwarding of callers to other CMS clients	✓		✓
Hang-up for each caller or all callers	✓		✓
Winner notification	✓		✓

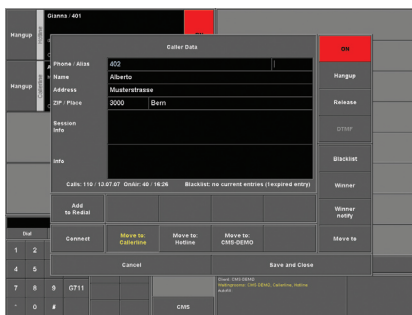
The Producer Client is primarily for the telephone operator answering or screening the calls. The Operator can then add the caller's data to the information window and pass the call to the studio or control room, or assign the call to a waiting room.

The Reporter Client is a soft phone that can be used independently of the CMS. It is designed for external reporters and is compliant with most codec standards. It can communicate over ISDN and VOIP.

Multiple Language support

The on-screen labelling of the CMS can display in almost any language which is 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 broadcaster's workflow.

The DJ - in his studio, can handle calls which are ready to go on-air and doesn't need to know if the call comes either from ISDN or the analogue world - CMS does all the call handling background work and brings the call's information to the DJ's screen.

The Producer - can choose to work in the Studio or in his office, all he needs is a CMS client and a headset to be part of the on-air team in the studio. If he needs to brief a remote journalist calling in, he can do so before putting him on-air all via CMS.

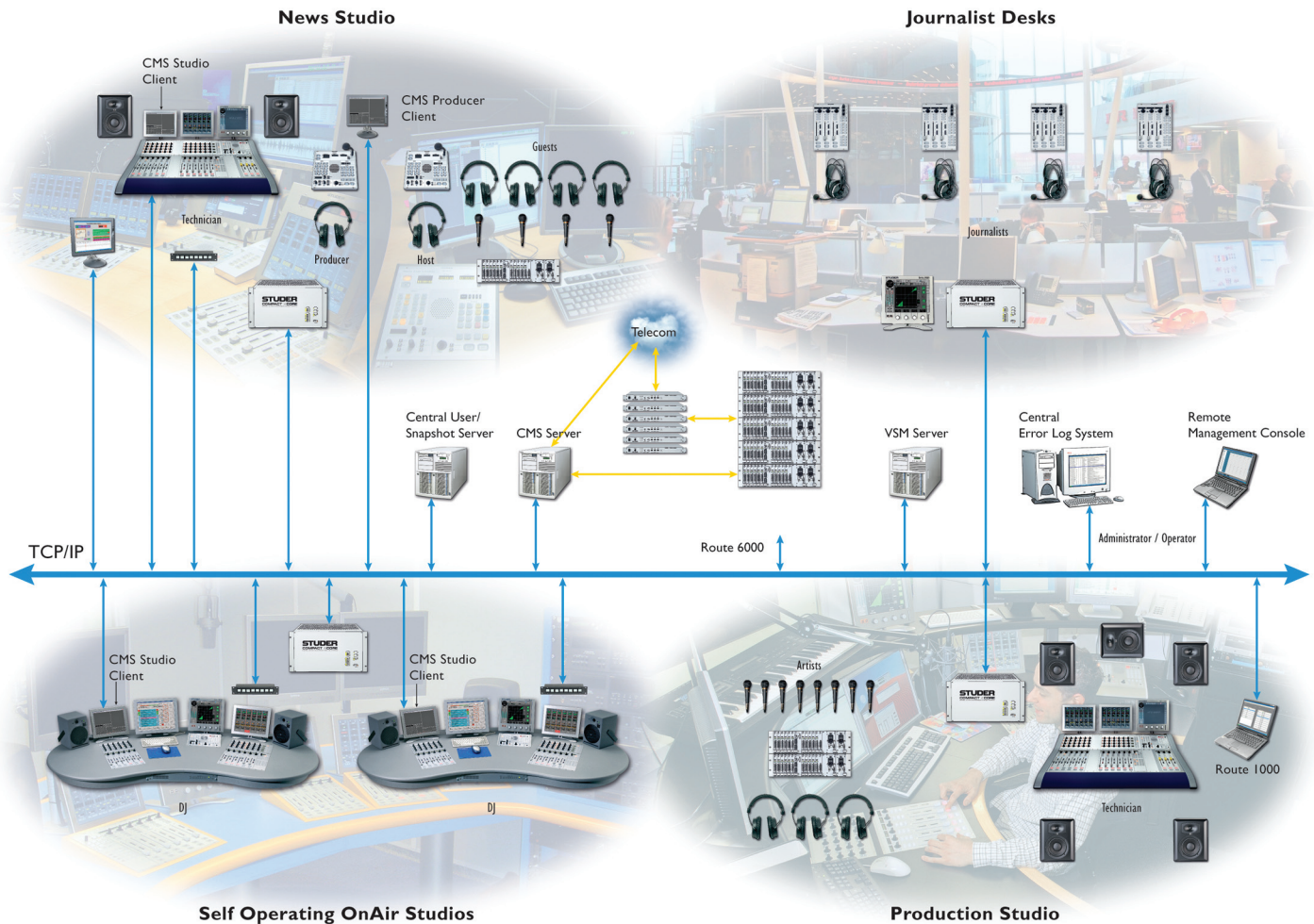
The Assistant - can take over calls from the DJ in order to record address details so that prizes may be sent to the winners. The same rule applies to any team member, such as a researcher or engineer.

Integration with Studer OnAir 3000

When integrated with a Studer OnAir 3000 console, the system offers a centralised, total radio solution. Control of CMS functions becomes available on the OnAir 3000 fader screen touch panel, and handling of the outside sources becomes much more intuitive. This removes the need for several screens around a console which would otherwise be handling several applications individually. Other integration possibilities with

the OnAir 3000 console include routing control (of the OnAir 3000's integral 1728x1728 audio router) and control of automated playout systems such as Studer's DigiMedia 5.

Finally, there is a totally integrated solution for Radio which centralises control and functionality at the operators' fingertips, yet allows control and accessibility from other parts of an organisation.





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