TRUELOG

Integrated Call Recording Platform

Truelog is an advanced Digital Call Recording System, suitable for all sectors of business, industry and emergency services.

A scalable architecture allows cost effective deployment across the market, from the smallest four channel system to large enterprise systems handling hundreds and even thousands of lines.

The Truelog system provides a comprehensive solution for **trunk-side** and **extension-side** recording.

It accommodates Primary Rate and Basic Rate ISDN, analogue trunks and extensions, two-way radios, VOIP recording, and digital extensions on various PABX systems.

Any combination and quantity of these audio circuits can be accommodated simultaneously within a server or a server cluster.

Truelog makes use of a standard PC architecture in combination with custom hardware interface modules. These modules utilise USB connectivity to the server (Universal Serial Bus), providing a number of advantages over the traditional PCI technology usually found in similar professional systems. These advantages include a ‘hot-swap’ capability which allows maintenance, expansion and reconfiguration to be performed without switching off or restarting the system.

The system employs a number of proprietary **Black Boxes** to interface to the various types of telecommunication lines used in the telephone network. The interfaces use non intrusive connections (high impedance) to capture audio and data from these lines.

ISDN Primary Rate Interface

- 30 channels per module
- Compatible with E1 PSTN or inter-PBX links

ISDN Basic Rate Interface

- 2 x So Bus / 4 speech channels per module
- Compatible with So Bus NT - TE connections

Analogue Interface

- 4 channels per module
- Compatible with analogue PSTN, analogue extensions, radio circuits
- DTMF detection for trunks, extensions and radio
- ZVEI tone decoding for two-way radio ID
- FSK Calling Line Identification (CLI) detection

PABX Digital Terminal Interface

- 8 channels per module
- Digital audio is extracted from the terminal's data stream
- PABX CTI info is used to determine call state, dialled no. & CLI
- Decoding of proprietary signalling data is available for specific PABX systems

The various line interfaces work together seamlessly to allow any combination of audio channels to be connected to a server.

A Truelog server is not limited in the number of channels it can handle, but is rated in accordance with the number of concurrent channels that can be recorded (up to 480 per server).

This is a function of the server's CPU processing capability, which is scaled in accordance with traffic requirements.

Above 480 channels, multiple-server 'Cluster' configurations permit scaling to any number of concurrent channels.

A server cluster configuration allows fully transparent working, including multi-site distributed servers within a WAN environment.

Truelog Software Modules:

A suite of software modules allows user-friendly access to a comprehensive array of features and facilities.

The primary attributes of the platform are **Reliability**, **Functionality**, and **Ease of Use,** ensuring the non-stop capture of accurate and tamper proof recordings for the most demanding applications.

Monitor

A network client application which allows users to view and listen to live calls in progress on any channel to which the user has access, in accordance with authorisation and security settings.

Playback

A network client application which allows users to search for and play back recorded calls in accordance with their authorisation and security settings.

Maintenance

Used by the system administrator to set up the configuration of the system and perform user management. The maintenance module can also be run as a network-client application.

Backup

A server module which manages the automated backup of data to removable media or to a network path.

AQM (Agent Quality Monitoring)

An optional module providing stats and analysis tools for use in a call-centre environment.
It provides for the setting up of quality monitoring scheduled tasks, the creation and editing of AQM templates and agent / group evaluations based on assigned schedules and templates.

Agent Screen-Pop

Used in a CTI-equipped system (Computer Telephony Integration), the Agent Screen-Pop is normally minimized and 'pops up' on the user desktop when a new call is made or received. It provides for the referencing of calls, together with the entry of notes and comments which are associated with the call. The Screen-Pop application can also be activated by clicking a tray icon at any time, and allows users to play back any of their own recorded calls.

Automatic updating of client applications

As with any software system, Truelog applications are subject to upgrades, as improvements and new features are added from time to time. When a Truelog user application is launched, it first checks with the server for the availability of a newer version before running. If a new version exists on the server, it is automatically transferred to the client workstation prior to launch.

In this way, only the server needs to be updated when a new version of software is released – all client software is automatically updated, avoiding the need to maintain software on client machines.

Network security

The Truelog server is installed in a near-insulated manner on a customer network, avoiding any network shares or direct access. Server to client communication and data transfer is achieved through a protected FTP process, utilizing a limited number of defined TCP/IP ports.

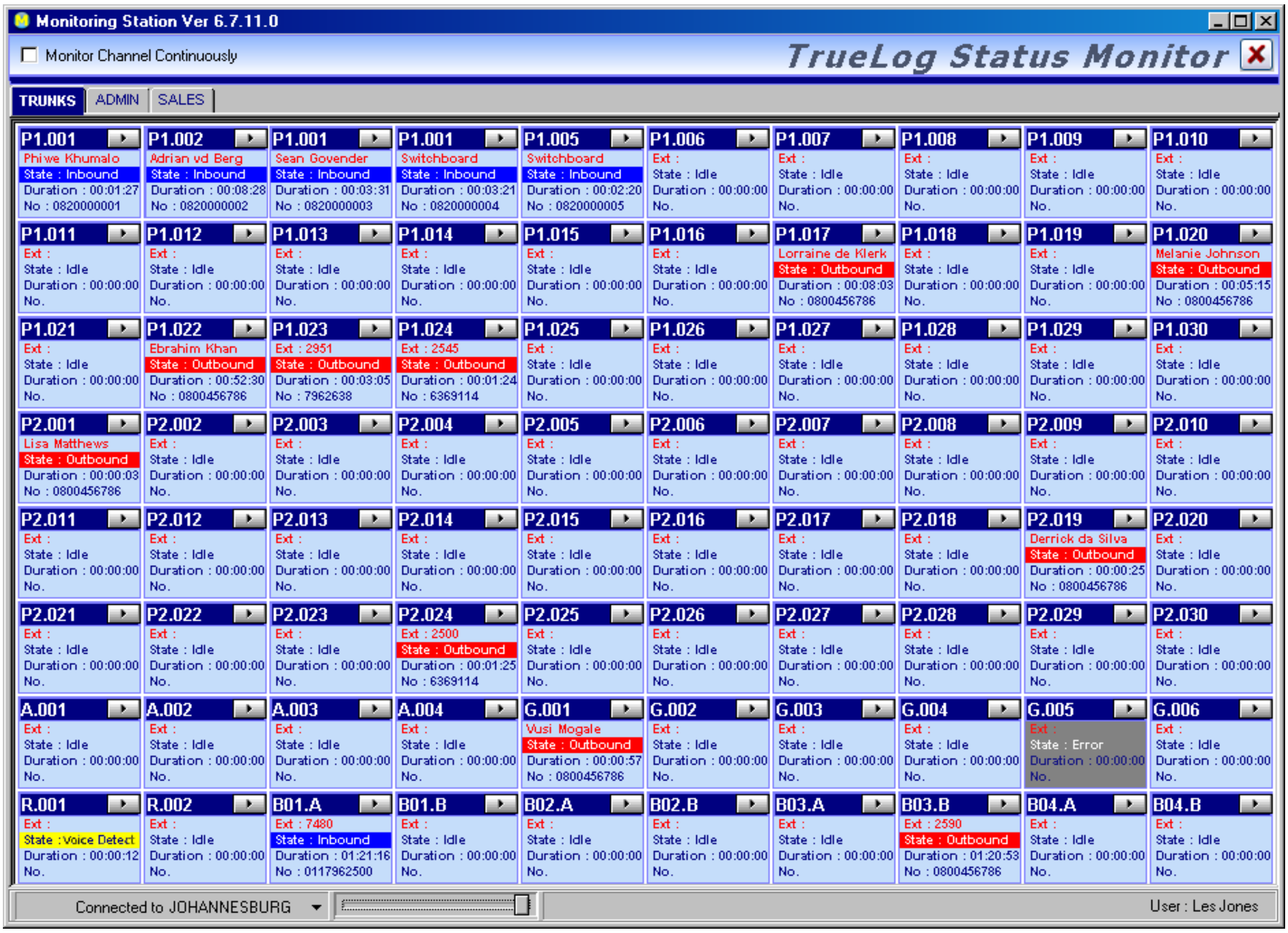
Monitor

The Monitor application can be installed on any Windows (2000, 2003, XP, VISTA, Windows 7) computer on the network. In a WAN environment, Monitor can connect to any number of remote sites and provide live streaming of calls in progress.

With provision for VPN (Virtual private Networking) at a Truelog site, even a portable computer equipped with a 3G data card can be used for monitoring live calls - only an internet connection is required (streaming at 20kbps).

- Monitoring of multiple Truelog sites in wide area multi-office installations
- Selectable Trunk / Extension / Agent views, subject to user authorization levels
- Comprehensive live call information (outgoing dialled number, incoming calling number, call duration, extension number / name, trunk details)

Trunk Monitoring example



In the above example, three tabs (Trunks, Admin, Sales) have been configured.
The '**Trunks'** tab has been selected, displaying the status of each trunk channel.
Click on the "**Play**" button on any channel to listen to the call in progress.

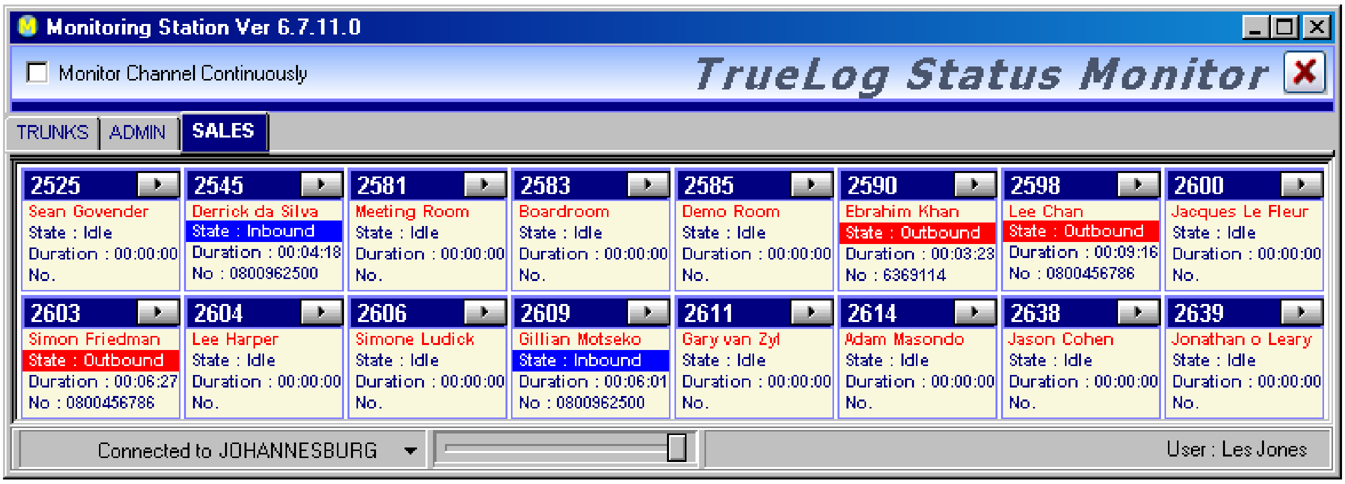
<u>Channel naming in above example</u>

P1.001	= Primary Rate ISDN Line 1, channel 1
P2.001	= Primary Rate ISDN Line 2, channel 1
B01.A	= Basic Rate ISDN Line 1, channel A
B03.B	= Basic Rate ISDN Line 3, channel B
A.001	= Analog Line 1
A.008	= Analog Line 8
G.001	= GSM Line 1 (GSM Router or "Premicell")
R.001	= Radio Channel 1

Note that the Monitor application also provides a convenient view of the physical state of each line.

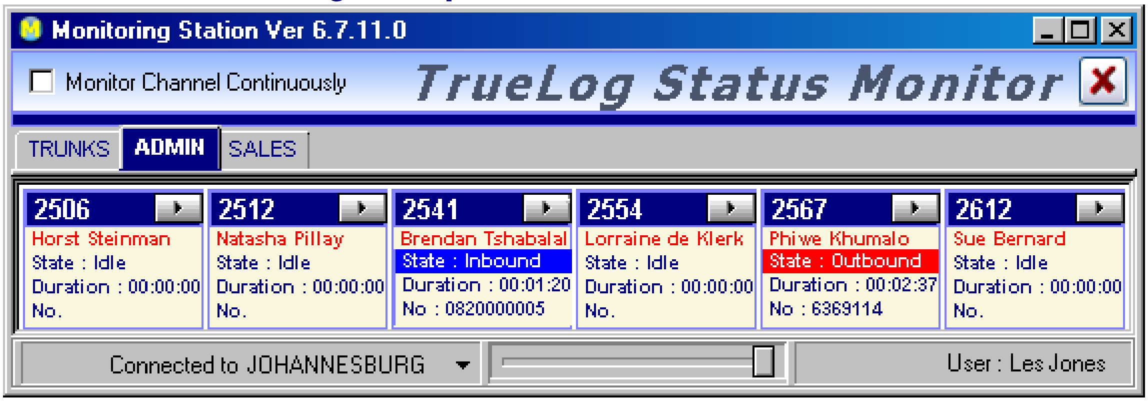
As can be seen above, Line G.005 is "grayed-out", as it is faulty or disconnected from the PBX.

Extension Monitoring example 1



"**SALES**" tab selected

Extension Monitoring example 2



"**ADMIN**" tab selected

Where Truelog interfaces are connected to the exchange-line side (i.e. trunk-side), the use of a CTI (Computer Telephony Integration) link from the PBX allows the system to emulate extension-side logging for external calls.

In other words, despite the fact that calls are recorded on the exchange lines, specific extensions can be monitored using an extension-view screen such as displayed above. The CTI link provides real-time info relating to all calls in progress, which enables the system to identify which extension is connected to a particular trunk channel, and to present the live audio as if it originated from the applicable extension (whilst the recording in fact takes place on the trunk).

The above extension monitoring examples therefore require either:- 1) extension-side monitoring or, 2) a CTI link from the PBX, using any available protocol (i.e. TAPI, CSTA, TSAPI or proprietary).

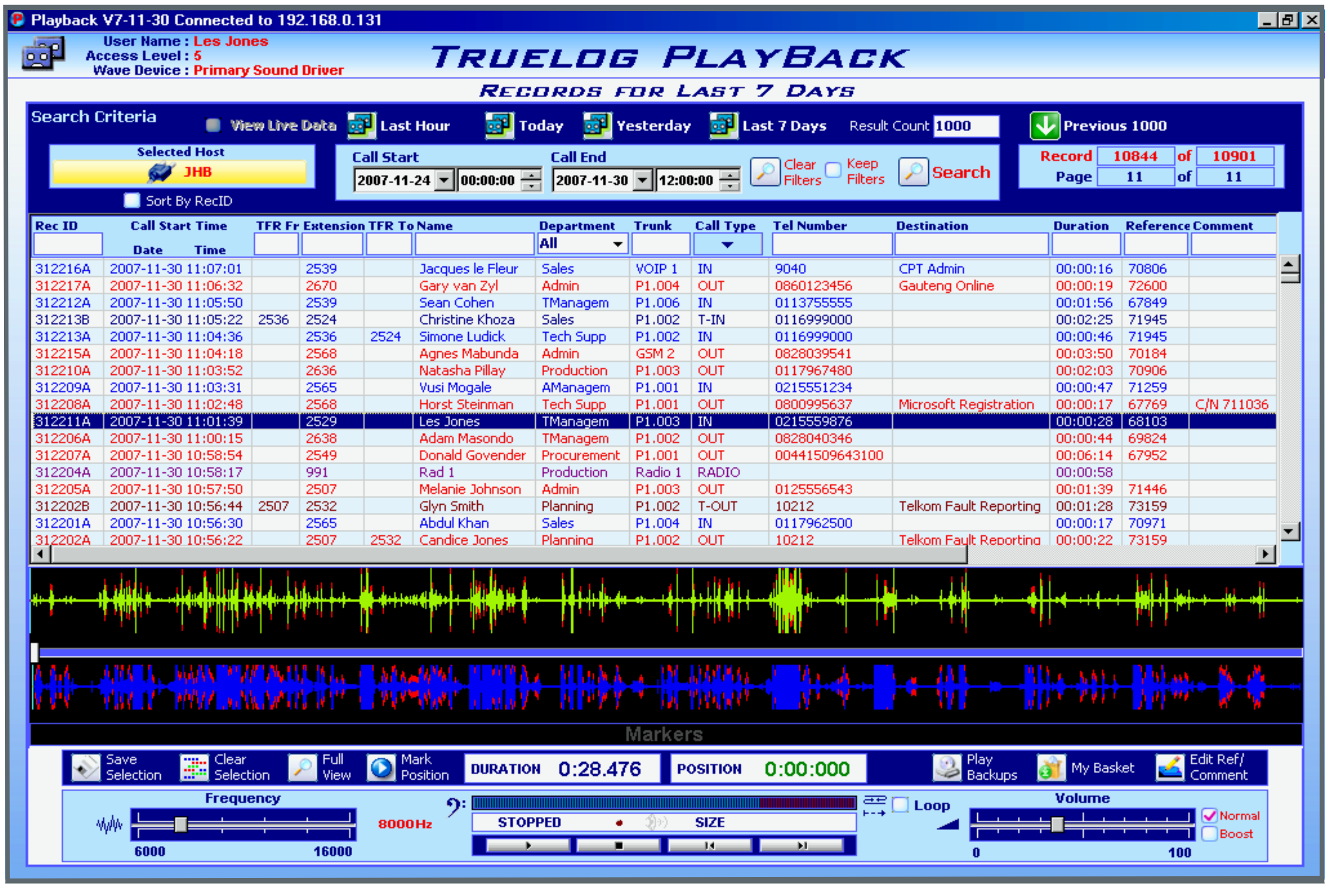
It is possible to combine trunk and extension devices within a single view (i.e. a particular tab can include any combination of trunk channels and extension users).

Trunk channels and/or extensions can also be duplicated on different tab views.

Playback

The Playback application can be installed on any Windows (2000, 2003, XP, VISTA, Windows 7) computer on the network. In a WAN environment, the Playback application can connect to any number of remote sites, and where VPN is provided at a Truelog site, only an internet connection is required.

A user's authorisation level determines the specific calls to which the user has access. This may vary from the user's own calls to those from a defined group of extensions (or department), to multiple departments. Full authorisation allows a user to play back any calls made within the enterprise.



Playback Functionality:-

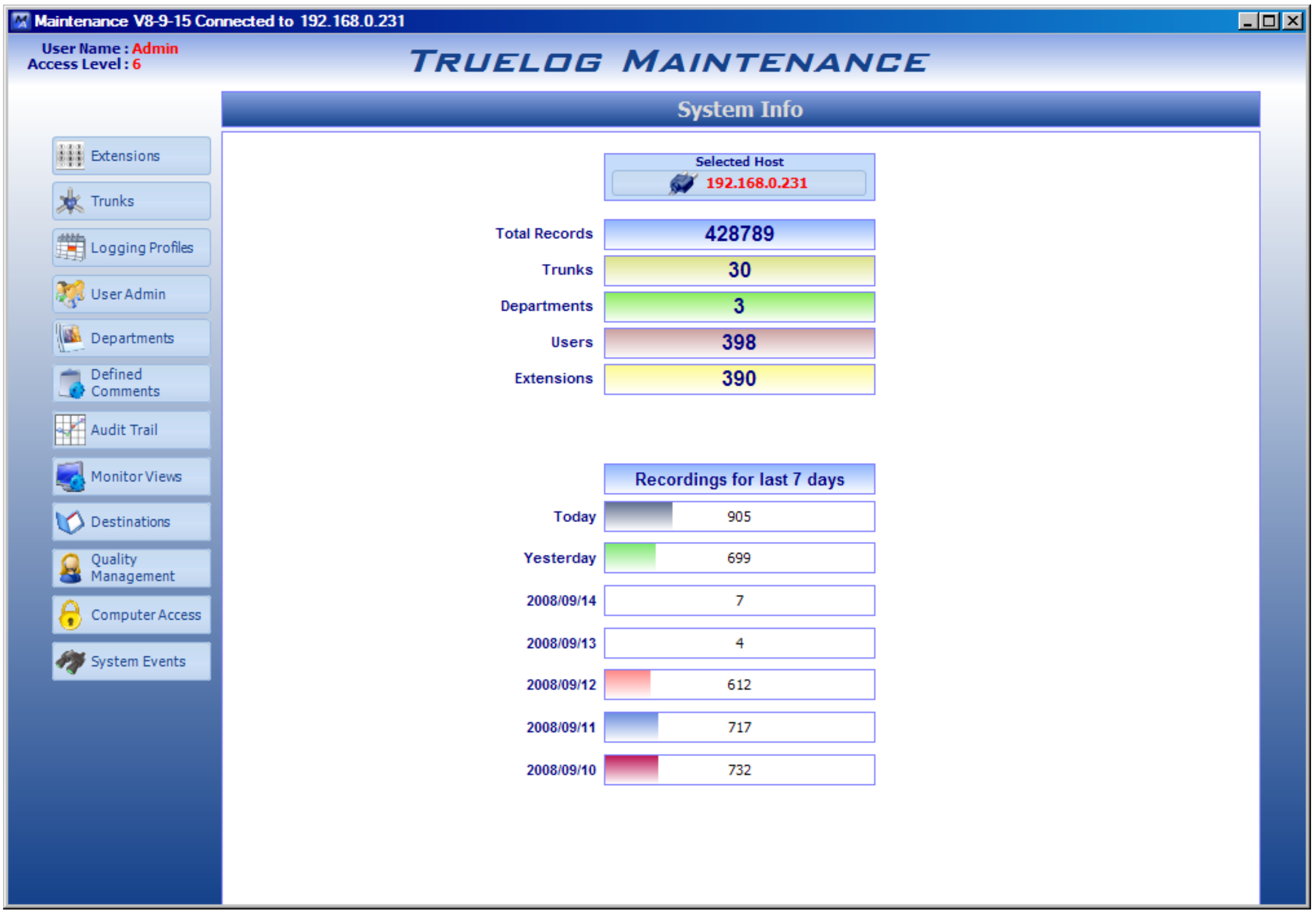
- **Decryption and playback of calls** within a selected date & time range, subject to user access levels
- **Date / time range shortcut buttons** for 'Last Hour', 'Today', 'Yesterday', 'Last 7 days'
- **Live-data view** displays new calls as they are completed
- Playback of all calls stored on server, as well as archived calls stored on removable or networked backup media
- Display of audio signal level (amplitude) for entire call duration, with 'zoom in' to selected portions of a call

Playback functionality contd.

- Highlight selected areas of a call, replay continuously in 'looped' mode
- **Replay-speed** continuously adjustable between half and double speed
- Add and edit **references** and **comments** for any call
- **Save** a complete call, a portion of a call, or multiple calls to hard drive or removable media (compact .MP3 or .WAV format) in a single 'save' operation
- Integration to Microsoft '**Outlook'** (email calls directly from within Playback)
- Data export to **MS Excel**
- Save calls to a "**user basket**" for direct retrieval later
- Retrieve specific calls based on any combination of filter parameters as follows:-
  - **Date / Time range**
  - **Record ID** (a unique ID assigned to each call)
  - **Extension** or **Agent** Number
  - **Extension** or **Agent** Name
  - **Transferring** and / or **transferred** extension
  - **Department**
  - **Trunk**
  - **Call Type** (All calls, Incoming, Outgoing, Outgoing transferred, Incoming transferred, Radio calls, Unanswered calls, Excluded calls)
  - **Destination** (a name assigned to an external party)
  - **Call duration** (greater than / equal to / less than a certain duration, or between limits)
  - **Reference** (obtained from external application, or manually entered)
  - **Comment** (where assigned). Searching for a specific comment only requires a keyword – similar to searching for an email containing a specific keyword
  - **Project** (derived from an external CRM system)
  - **Campaign** (derived from an external CRM system)
  - **Result** and **SubResult** (derived from an external CRM system)
  - **Hangup initiation** (i.e. local or external party)

Maintenance

The Maintenance application is installed on the Truelog server and may also be run on any Windows workstation used by a system administrator.

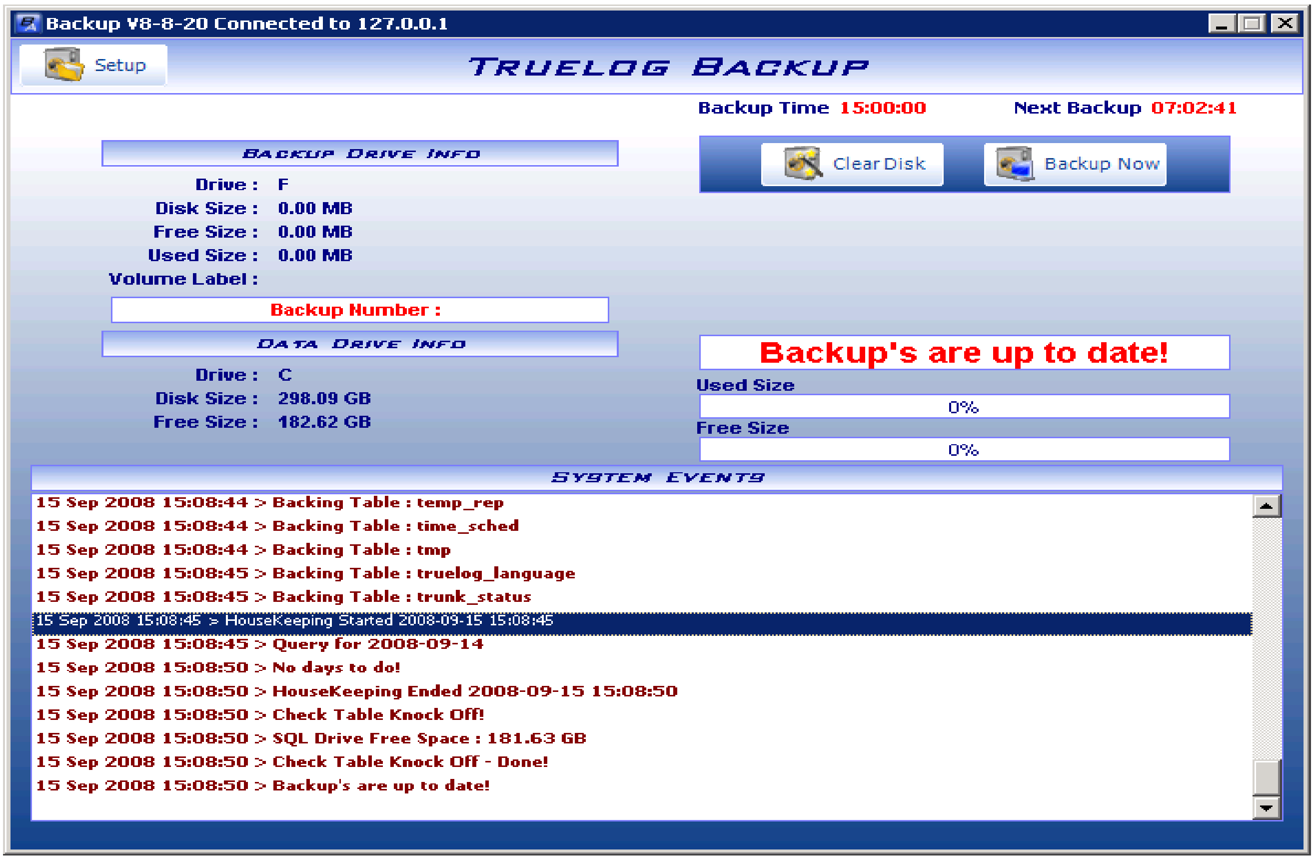


The Maintenance module provides a complete set of tools to configure and manage the Truelog system.

- Define Extension numbers / Names, Departments etc
- Define Logging profiles (days of week, times of day to record / not record)
- Assign Logging profiles to extensions and trunks
- Define custom Trunk / Extension customised views for individual users
- Define ‘Destinations’ by assigning names to specific telephone numbers
- Configure parameters for optional AQM (Agent Quality Monitoring) module
- View Audit Trail of user activity
- Define system access for users and computers

Backup

The Backup application is installed as a Windows ‘Service’ and automatically performs a backup of each day’s calls at a predetermined time of day (usually at midnight).



The system can be configured to archive to a removable SATA drive, removable IOMega Rev drive, external USB hard drive or Flash. Archiving can also be directed to a network path.

Backup can be configured to report its activities via email and / or GSM modem (where equipped).

Archiving does not remove the data from the server, it only copies it across to the archive medium, unless disk space falls below a defined threshold. In this case, the oldest data is incrementally deleted to accommodate newer data.

System Storage Capacity

- The Truelog system captures audio at 64 kilobits per second and converts the audio data to an encrypted MP3 (128 bit MD5) format at 16 kilobits per second. This compression allows for reduced file sizes whilst preserving a high level of voice quality.
- An entry-level Truelog system is configured with a 160GB drive, storing the last 20,000 hours of calls. A 320GB drive enables storage of the last 40,000 hours, and larger drives and drive arrays are available as required (e.g. 1TByte drive provides over 120,000 hours of storage capacity, a 4TByte RAID array provides over 500,000 hours of fault-tolerant storage capacity, directly available on the server).

PABX Integration

The Truelog system can be tailored to diverse PABX and call centre environments.

CDR / SMDR

In the case where a APBX system does not support a third party CTI link, Truelog makes use of the CDR or SMDR output from the PABX to correlate calls recorded on the trunk ports to the extensions associated with the calls.

Truelog accommodates CDR / SMDR via V24 / RS232 or via the LAN, and is usually connected in parallel to the hardware buffer used by the call management system.

In cases where a PBX provides an exclusive LAN connection to a call management system (i.e only a single IP socket is available), Truelog assumes command of the socket and provides a 'proxy' connection to the call management system. Truelog can additionally provide data buffering on this proxy connection.

CTI

Truelog can accommodate various CTI protocols, including TAPI, TSAPI, CSTA and proprietary protocols. Where a CTI server is available, the system monitors the port devices directly from the CTI server.

In the case where a CTI server is not a part of the customer infrastructure, a TSP (Telephony Service Provider) for the specific PBX is installed on the Truelog server, which then assumes the role of a CTI server

CRM and Back-office Integration

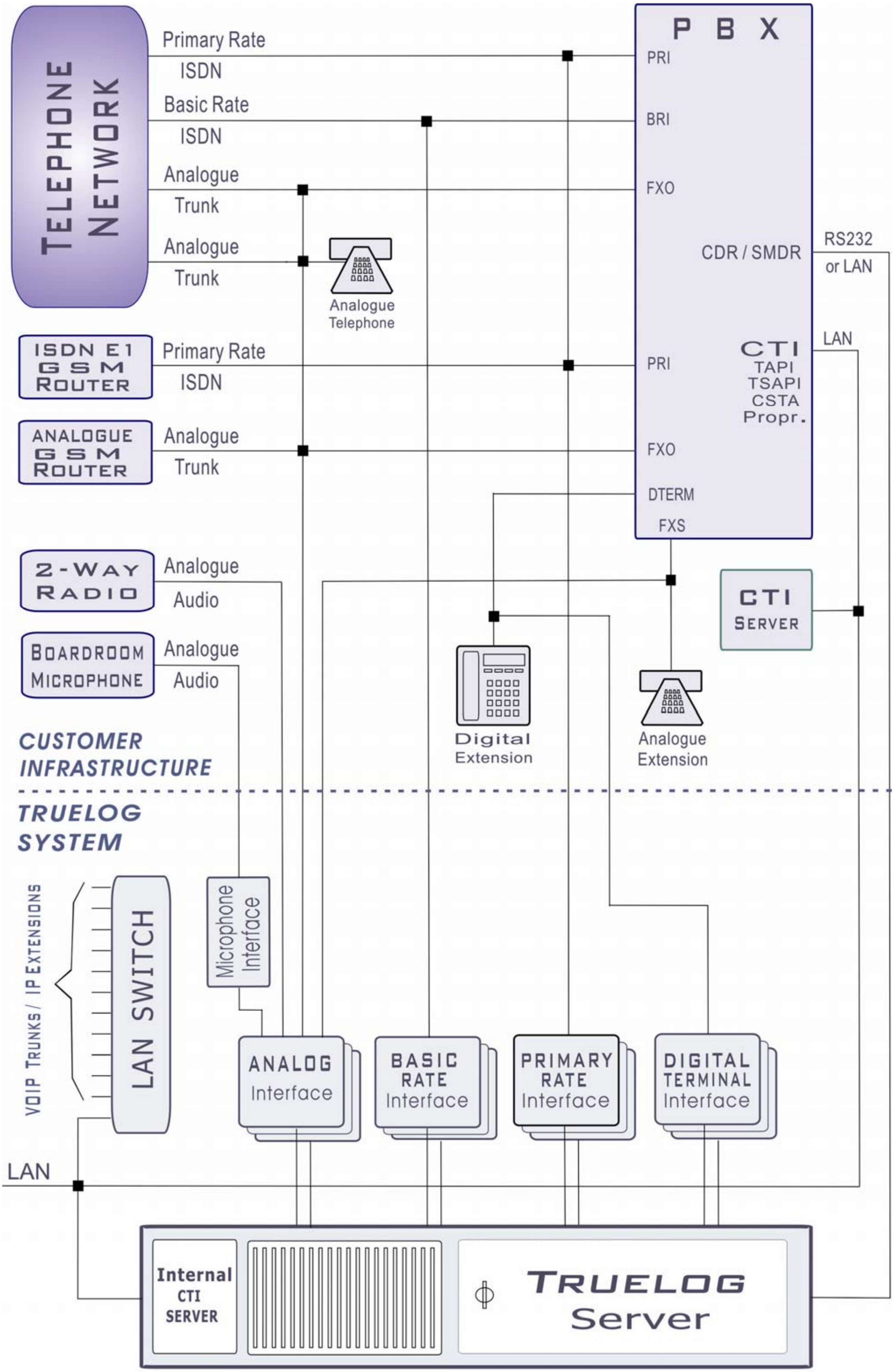
Integration to CRM and back-office systems normally entails call referencing or tagging, and usually requires a CTI link to the PBX. In some instances (e.g. analogue extension monitoring) a CTI link may not be required.

In a basic form, integration can be implemented via the Agent Screen-Pop, which allows the manual entry of a customer code/account number or similar, which is associated with a specific call. Such referenced calls can be retrieved from the Truelog database using the Playback application, or can be retrieved by an external application (e.g. document management system).

The process can be automated with referencing being 'pulled' from the external application, or info may be 'pushed' from Truelog to an external database.

All info pertaining to a call (extension number, dialled or calling number, time of call, duration etc) can be transmitted to a back-office system. The call recording can also be transferred externally, using a Truelog DLL.

Integration at this level is usually undertaken on a joint project basis, involving the customer's software developers.



TRUELOG CONNECTIVITY OPTIONS

ICASA

Independent Communications Authority of South Africa
Pinmill Farm, 164 Katherine Street, Sandton
Private Bag X10002, Sandton, 2146

TELECOMMUNICATIONS EQUIPMENT TYPE APPROVAL LICENCE

LICENCE NUMBER

TE-2005/133

The Authority, in the exercise of the powers conferred upon it by section 35(1) of the Electronic Communications Act, 2005 (Act 36 of 2005), the applicable Telecommunications Regulations which currently remain in force in terms of section 95 (2) of the Electronic Communications Act and subject to the terms and conditions set out in Addendum A attached hereto and any further conditions which may be imposed by ICASA from time to time, hereby issues a telecommunication equipment type approval licence to the company whose name and particulars are listed below:

COMPANY PARTICULARS

NAME	: TRUELOG DIGITAL (PTY) LTD
STREET ADDRESS	: 92 INDABA LANE, RIETFONTEIN/HONEYDEW KRUGERSDORP
TELEPHONE NUMBER	: 011-796-2500
FACSIMILE NUMBER	: 011-796-2584
REGISTRATION NUMBER	: 2005/018415/07

DESCRIPTION OF APPARATUS

TYPE OF EQUIPMENT	: ISDN PRI, BRI, ANALOGUE & RADIO CONVERSATION RECORDING DEVICE
MAKE	: TRUELOG
MODEL	: PRI, BRI, ANALOG

PARIS MASHILE
CHAIRPERSON: ICASA

THIS LICENCE IS VALID UNTIL:

3 1 MAR 2009

DATE: 19-06-08

Only the original or a certified copy of the telecommunication equipment type approval license shall be considered valid

The Legalities of recording telephone conversations

In South Africa, the recording of telephonic and other electronic forms of communication is regulated by the Regulation of Interception of Communications and Provision of Communication-related Information Act, No 70 of 2002 (RICA)

The purpose of the RICA in broad terms is to regulate and control the interception of electronic and other communications. This act came into effect in late 2005.

In terms of the act, a party who records a conversation has to also be party to the interaction – this means that where one of the parties is aware that a conversation is being recorded, the recording is entirely legal, even without the other party's knowledge or consent. This caters for the case where individuals record their own conversations.

In business, the legal recording of telephone conversations requires that employees whose conversations are recorded be aware that their calls are recorded, and sign a memo or similar whereby they acknowledge and effectively consent to their calls being recorded. This permits a third party (i.e. the employer) to record business interactions and to use the recordings as lawful evidence in matters of dispute etc. Again, no knowledge or consent is required by the external party.

An example of a Memo issued to all staff

Please be advised that in view of the extensive use which we make of telephone communications in the conduct of our business, a decision has been made to evaluate a Telephone Call Recording System.

This recording system is connected to our Telkom and GSM exchange lines, and will record all calls into and out of the business.

Internal calls (i.e. between extensions) will not be recorded.

This ensures that in future, the details of our telephonic communications may be easily verified, as is the case with other forms of correspondence used in our business.

Any member of staff requiring a copy of their own calls may arrange for this in the form of an audio file which can be played back on any computer, and which can also be emailed to a recipient.

Please note that the recording system is not able to differentiate between business calls and private calls, and although every effort will be made to respect privacy, it is unavoidable that any personal calls made or received on the PABX system will also be recorded.

The Business Benefits of recording All telephone conversations

The Legal Side:- A Business Telephone Call is no less a form of correspondence than a Letter, Fax, or an E-mail. And under the law, a verbal contract is no less binding than a written one, but enforcing a verbal contract can be challenging. The solution lies in being able to prove exactly what was stated, or possibly not stated - i.e. in archiving the spoken word.

The Cost Saving Side:- In most businesses today, few people hesitate to make a call to a cell phone, and a ten minute private call won't raise any eyebrows. But at almost two rand per minute, the cost of this call is close to twenty rand. If just one employee makes two or three such calls a day, this little perk will cost the business in the region of R 1000 per month.

But, once a recording system is installed and all conversations go on file, telephone usage patterns change completely. Employees avoid personal calls on business phones, and use their own cell phones instead. And private outgoing calls also tend to be shorter, as these are now at their own cost.

As a result, most businesses with four or more incoming lines will reflect a cost saving which exceeds the amortised monthly cost of the recording system. And in many cases, a system will pay for itself in a matter of months. So, the following benefits become available at little or no cost:-

- **Verify Orders, Information, Instructions, Undertakings** etc
- **Resolve Misunderstandings and Disputes** - "He said - She said"
- **Improve Customer Service** - identify problems by listening to how staff liaise with customers
- **Improve Sales Performance** - a valuable sales training tool which provides your sales managers with the means to analyze both successful and unsuccessful sales calls
- **Memory Refresh** - review a past telephone discussion, recover information which was jotted down during a call and subsequently lost
- **Uncover Suspicious or Fraudulent Activities** - for example, the unauthorised disclosure of business information
- **Improve Productivity** - half an hour per day on private calls translates to ten hours per month, which is more than a full working day
- **View the Costs of Outgoing Calls** - at nominal Telkom rates, which enables the verification of savings from GSM and VOIP "Least Cost Routing" solutions
- **Identify Faulty Lines on the PABX System**
- **Facilitate 'Compliance'** - for businesses in the financial services sector

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