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FROM
INTERACTIONS™

NICE Perform eXpress 3.0

Solution Overview



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Scope

The goal of this document is to explain to the reader how the NICE Perform eXpress solution works. This document should mainly be used by Sales Engineers together with their customers to drill down into the technical aspects of the NICE Perform eXpress solution, and by technical audiences for a high level overview of the solution and how it is built. The solution overview focuses on the technical explanation and description of the added value functionalities that the NICE Perform eXpress solution provides.

Readers that are already familiar with NICE Perform eXpress Release 1.0 and Release 2.1, can focus on the new features and capabilities added in Release 3.0 and that are described in the following chapters:

Quality Management chapter – the main goal of Release 3.0 is to provide just the right Quality Management solution for small and medium contact centers. The Quality management solution includes recording plans, screen recording, Form Designer, evaluation capability and reports.

Migration from NiceCall Focus III and Version 8.9 – migration is essential in order to enable replacing legacy systems with NICE Perform eXpress.

NICE Perform eXpress Overview

The NICE Perform eXpress solution is designed to meet the recording and playback needs of small to medium sites. Based on the NICE Perform® state-of-the-art architecture, NICE Perform eXpress is easy & scalable call recording platform to mitigate risk, address compliance and Quality Management needs.

The solution can be provided as standalone or fully integrated with NICE Perform® (Orchid). This allows organizations to perfectly tailor their solution based on their needs. For multi-site environments, the solution enables **centralized administration and storage** capabilities providing customers with an easy to use deployment and administration compliance suite.

NICE Perform eXpress system is an all-in-one single box solution. A single NICE Perform eXpress system runs on a COTS based platform utilizing small footprint. The solution allows rapid deployment and installation both locally and across several sites.

When looking inside the NICE Perform eXpress architecture, three main layers are identified.

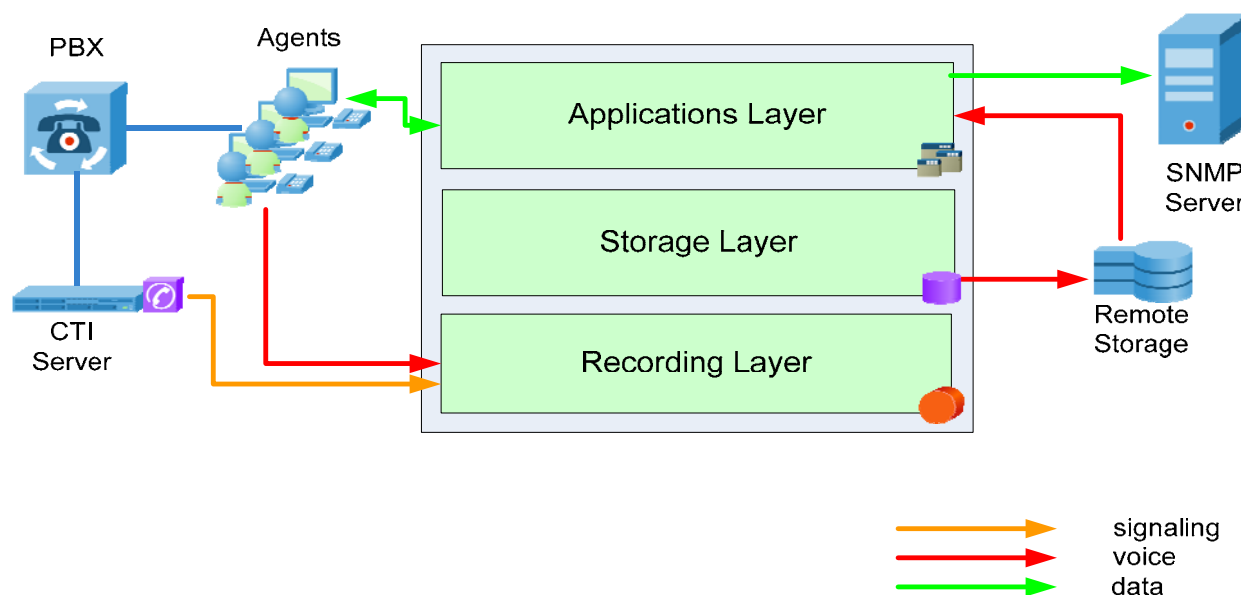


Figure 1: NICE Perform eXpress Architecture

1. The Recording Layer. This layer is responsible for recording the audio conversations inside the organization. The layer interacts with the telephony equipment to receive the audio and its accompanying metadata. When Quality Management solution is used the recording layer is responsible on recording agents' desktop activities.
2. The Storage Layer. This layer is responsible for managing the archiving of the recorded interactions in remote storage and backup devices. The layer also provides business logic processing that serves the Application Layer.

3. The Application Layer. This layer is responsible for the NICE Perform eXpress interface with the user. It is comprised of an HTML based user interface that can be used from the desktops of the various users of the NICE Perform eXpress.

Deployment Models

NICE Perform eXpress offers three different deployment models.

1. Standalone
2. Centrally Administered Sites
3. Hub & Spoke - NICE Perform eXpress at the branches with NICE Perform® (Orchid) at the organization's data center.

Standalone

With the standalone deployment model, each NICE Perform eXpress serves its local site's users only. Other NICE Perform eXpress solutions can be deployed in the organization, however, each one works independently. Configuration and installation are also locally controlled.

In addition, a few standalone systems can use the same central remote storage. However, even though the same physical storage is used, each NICE Perform eXpress manages its interactions in a different logical storage.

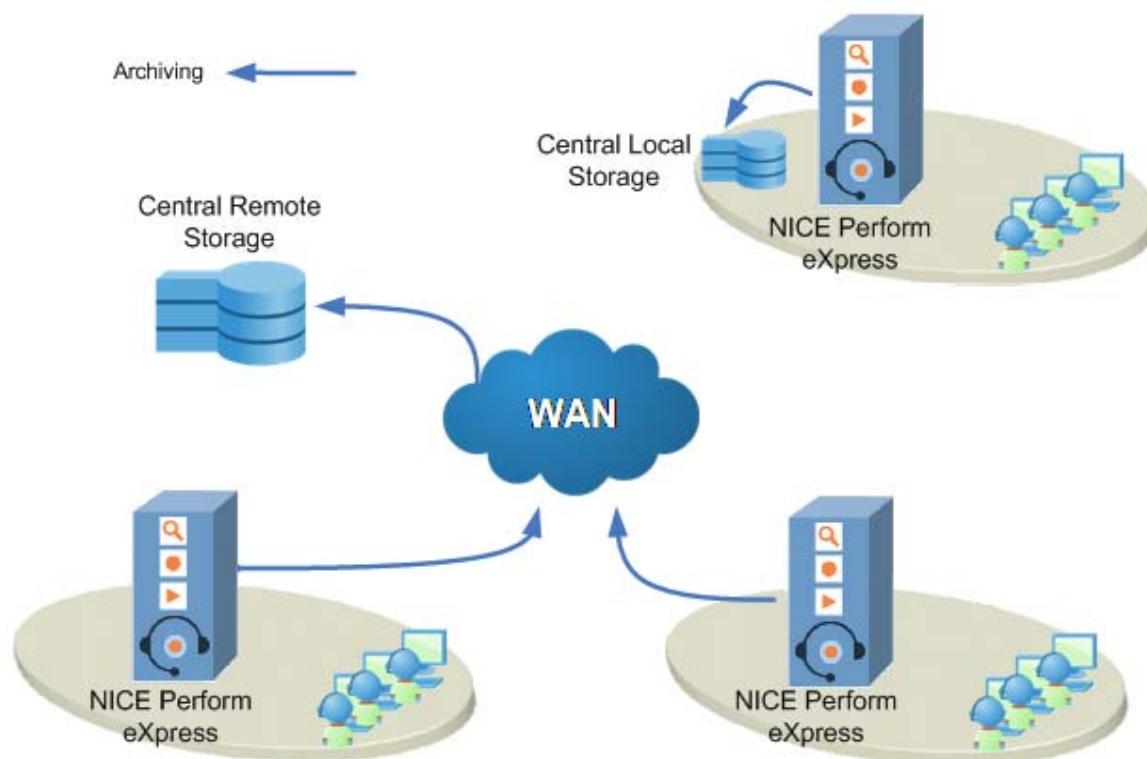


Figure 2: Standalone deployment with either central storage or branch-side storage.

The standalone solution is beneficial for small to medium scale organizations with independent sites.

Centrally Administered Sites

With the centrally administered sites deployment, each NICE Perform eXpress in the organization still provides services to its local site's users only. However, the IT department can simultaneously use a common configuration for several sites and maintain all the NICE Perform eXpress systems in the organization from one central location using a dedicated NICE Perform eXpress Central Administration application. Similarly, the unified approach also applies for software updates. Update Packs can be instantly and silently deployed from the central location to the NICE Perform eXpress systems in the separate sites using a deployment infrastructure such as SMS.

Business users located at the main office can use the Central Administration application to log in seamlessly (without again entering user and password) to each of the branches to use the NICE Perform eXpress application capabilities, such as search and play interactions.

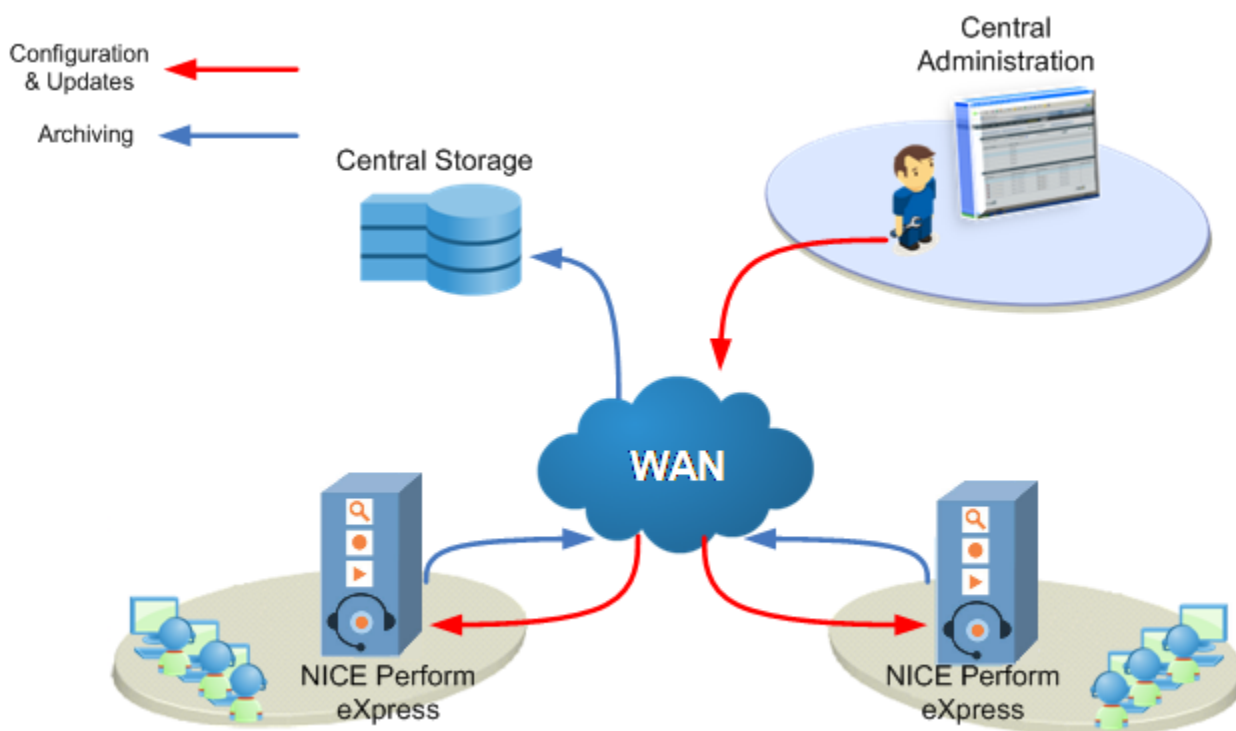


Figure 3: Centrally Administrated Branches Deployment

This deployment model is beneficial for organizations seeking to have many NICE Perform eXpress systems at their sites and to enjoy a unified administration of all their NICE Perform eXpress systems. Additional information about the different unified administration capabilities can be found in the Centralized Administration section.

Hub & Spoke

With the Hub & Spoke deployment, the NICE Perform eXpress systems at the branches will be able to export data to the centralized NICE Perform® (Orchid) system that resides on the data center. The recordings of the branches can be stored in the Storage area located on the data center (or anywhere else according to customers' requirements), while the interactions' metadata and users' information will be uploaded to the NICE Perform® database.

As with the centrally administrated branches deployment, the Hub & Spoke deployment offers unified configuration and maintenance architecture of all the NICE Perform eXpress systems in the organization.

However, managing retention rules and agents should be done on each of the NICE Perform eXpress systems at the branches.

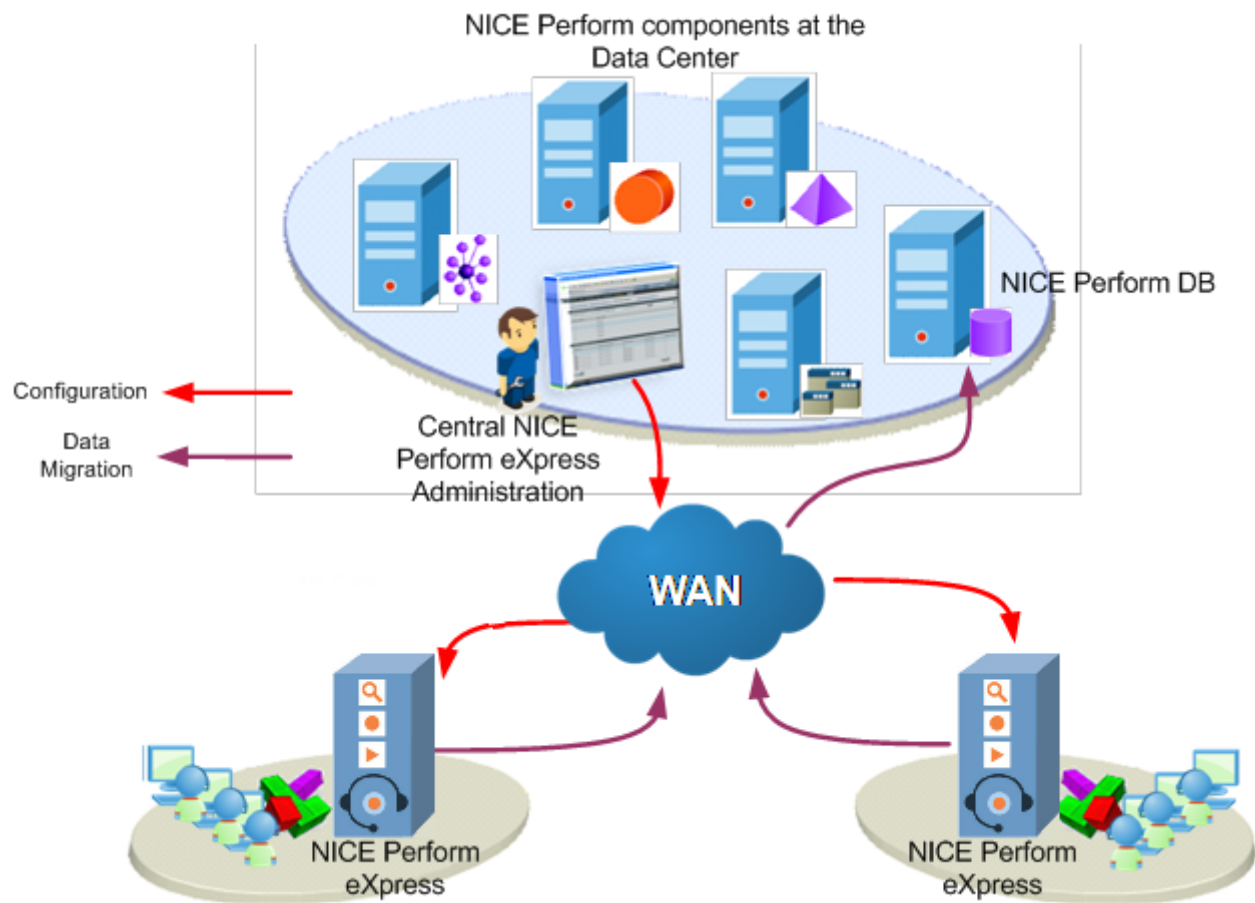


Figure 4: Hub & Spoke Deployment

This solution is suitable for organizations that have a data center and branches environment and would like to operate all of them from one place. By transferring data from the NICE Perform eXpress systems at the branches into a central NICE Perform system, these organizations will be provided with an additional added value that utilizes the variety of functionalities that NICE Perform® has to offer, such as search and play calls on all branches or advanced analytics.

Using NICE Perform applications to search, play and use advanced applications on all branches is a simple task. NICE Perform eXpress users' information is transferred to the NICE Perform user administration database and located under the NICE Perform eXpress group. Users are uploaded under a specific branch to a group to which they belong.

However, users are transferred without their NICE Perform eXpress privileges. After granting NICE Perform Business Users privileges to NICE Perform eXpress sites, groups and users, they can start using NICE Perform advanced applications.

Virtualization

In addition to the various deployment models, NICE Perform eXpress is able to run as a virtual machine on VMware ESX 3.5 and ESX 4.0 environments. When running as a virtual machine, the NICE Perform eXpress can only support Passive VoIP environments recording on the Storage Center, because TDM boards and tape devices are not supported in virtual environments.

NICE Perform eXpress Internal Workflow

I.1. Recording

The NICE Perform eXpress is designed to supply a reliable recording that matches compliance regulations. This capability is referred to as Total Recording, and it is applicable for recording up to 200 recording channels in TDM and VoIP environments, which can co-exist in the organization.

NICE Perform eXpress is capable of recording almost any environment available on the market whether it is TDM or VoIP.

The recorded audio is always summed, incorporating both sides of the call in the same recording and is compressed to G.729 or G.723.1 (if the VoIP call is already compressed to G.723.1).

Let's review the various total recording methods that the solution has to offer:

Total TDM extension side recording

The Recording Layer of NICE Perform eXpress is capable of recording both analog and digital phone extensions by tapping the line of the extension and the PBX. The Recording layer is using the AudioCodes LDA2409EH (24 ports) board or LD809EH (8 ports) board for analog extensions recording and the AudioCodes NGX2400EH (24 ports) board or NGX800EH (8 ports) board for digital extensions recording. Upgrade from a previous version is supported using the ALI board for analog extensions recording and the NATI board for digital extensions recording.

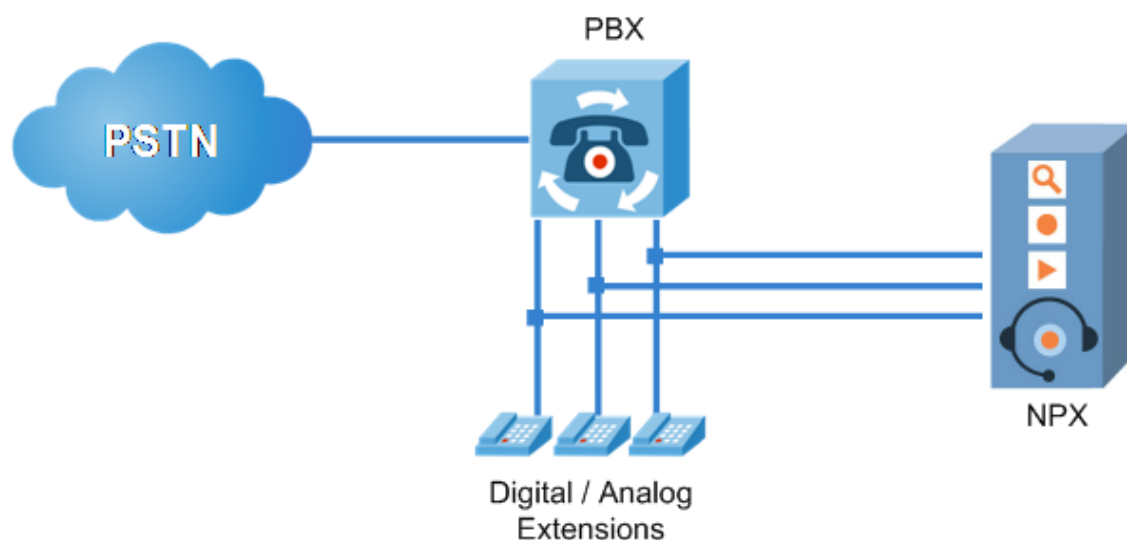


Figure 5: TDM Extension side recording

Total TDM trunk side recording

The Recording Layer of NICE Perform eXpress is capable of recording calls conveyed over a TDM trunk, by tapping the trunk between the PBX and the PSTN. This recording method provides recording of all inbound and outbound calls to/from the organization. However, it will not record the internal calls within the organization. The Recording Layer is using the AudioCodes DP6409EH board for recording TDM trunks. Upgrade from a previous version is supported by using the ETAI board for recording the TDM trunks.

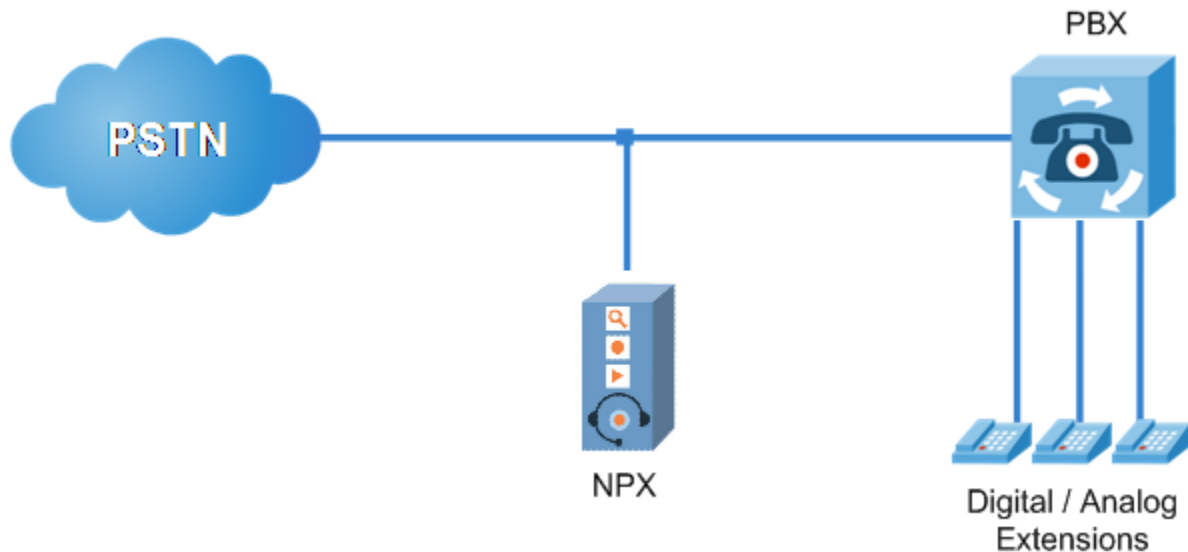


Figure 6: TDM trunk side recording

Total dedicated TDM trunk side recording

The Recording Layer of NICE Perform eXpress is capable of recording calls conveyed over a dedicated TDM trunk from the PBX. The dedicated trunk recording is carried out according to a dedicated recording protocol that is provided by the PBX vendor (e.g. IPC, Etrali or BT). The direction of the calls that are recorded (Inbound, Outbound or Internal) is dependent on the vendor's implementation of this dedicated protocol. The Recording Layer is using the AudioCodes DT6409EH board (e.g. for IPC or Etrali) and the AudioCodes PCM6409 board (for BT environment) for recording the TDM dedicated trunks. Upgrade from a previous version is supported by using the ETAI board for recording the TDM trunks.

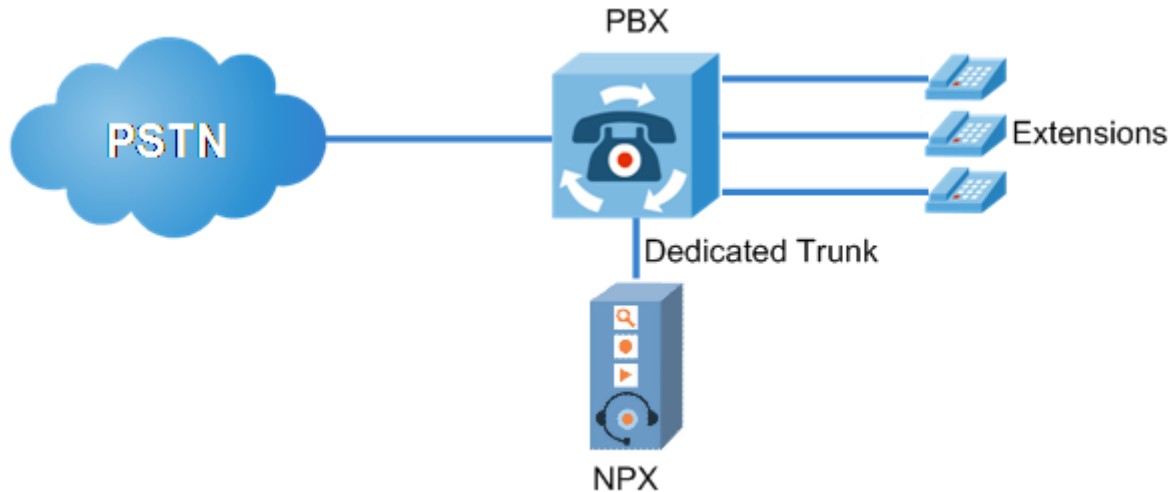


Figure 7: Dedicated TDM trunk side recording

Total VoIP passive sniffing

The Recording Layer of NICE Perform eXpress is capable of recording VoIP extensions by sniffing the VoIP traffic. The network switch in the organization needs to be configured to mirror the IP sessions between the PBX and the extension to NICE Perform eXpress.

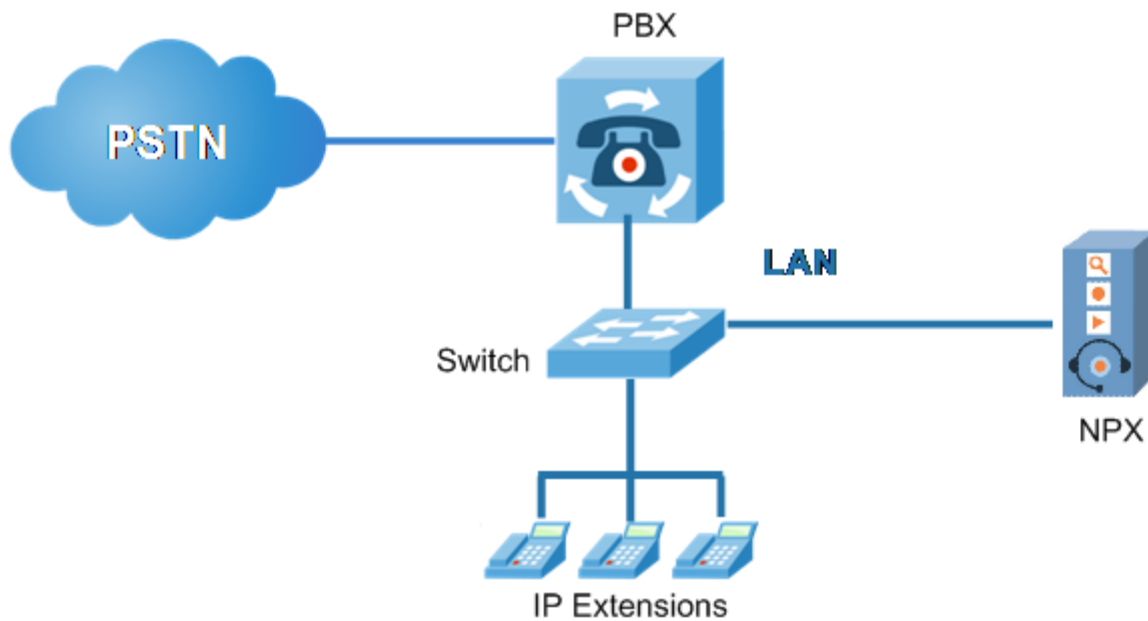


Figure 8: VoIP Passive sniffing recording

Total VoIP Active Recording

The Recording Layer of NICE Perform eXpress is capable of recording VoIP extensions by emulating Logger recording channels as virtual extensions and using three party conference of customer, virtual extensions (Logger channels) and IP phones (agents phone) for recording the calls.

NICE Perform eXpress does not support a mixed environment with Active recording.

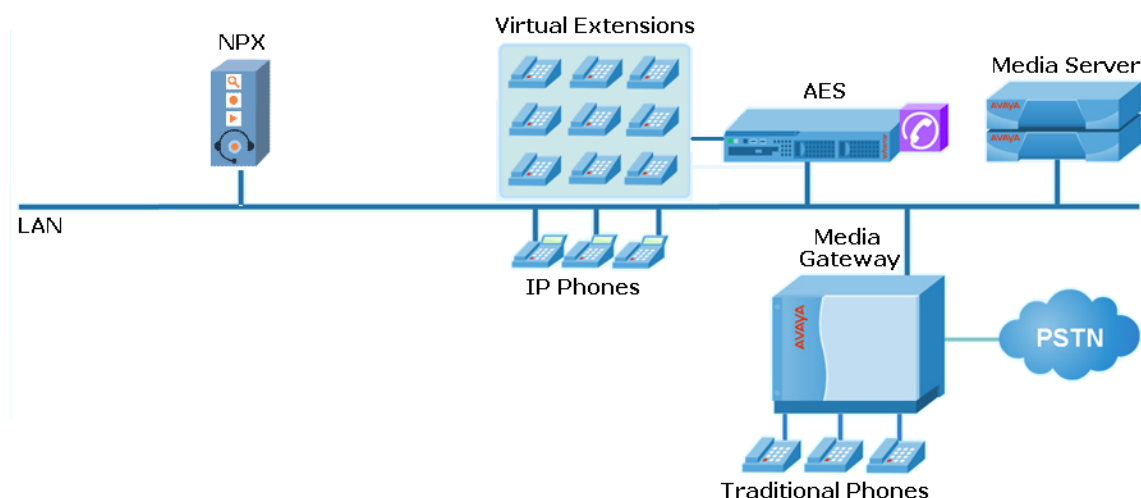


Figure 9: VoIP Active recording

Recording Mechanism

The recording plan is preconfigured and requires a dedicated recording channel for each recorded source (TDM extension, TDM trunk timeslot, VoIP extension). The recording is initiated once the NICE Perform eXpress system is loaded, and voice interactions continue to be recorded as long as the system is up.

Calls that are being recorded are initially stored in a designated location on the NICE Perform eXpress hard drive in a compressed format. This temporary storage area for new calls contains a limited space of 193 GB and has a cyclic behavior. Thus, once the temporary storage area reaches 90% of its storage, an internal process start deleting the earliest calls until 80% of its storage is reached (First In First Out behavior). In order to store calls for extended period of time, the archiving mechanism is used, as is explained in the next section.

NICE Perform eXpress uses the G.729 or G.723.1 compression method to store the recorded audio. Using a 193 GB storage area for recordings, allows approximately **45,000** hours of recording. Please note that the system is capable of handling audio with different compression methods as well. However, the recorded audio will always be stored in its raw format using the G.729 or G.723.1 compression methods.

Recording Capacity

NICE Perform eXpress can record both VoIP and TDM up to 200 channels according to the below table:

Recording Type	Board Name	Board Capacity	Maximum Boards	Maximum Capacity
VoIP	-	-	-	200
Analog	LD	24 channels 8 channels	8	192
Digital	NGX	24 channels 8 channels	8	192
Trunk	DP	2 EI / TI trunks	3 EI / 4 TI	180 EI/ 192 TI
Dedicated Trunk	DT	2 EI trunks	3	180
Dedicated Trunk	PCM	2 trunks (32 channels each)	3	192

Figure 10: NICE Perform eXpress recording capacity

NICE Perform eXpress can work with any two configurations (recording types), excluding **VoIP Active, which cannot be used with other configurations.**

Screen Recording

NICE Perform eXpress supports screen recording for Quality Management purposes only. Users can configure several Quality management rules that tag interactions for QM and record the screen.

The recording is initiated once the call is started and completed after wrap-up time is passed. The system supports up to 200 screen agents and up to 20 simultaneous screen recordings. It runs on desktops and terminal Servers such as Citrix.

System recording storage capacity is defined during installation and has a minimum of 1 GB Hard Drive space. Thus, once the temporary storage area reaches 90% of its storage, an internal process start deleting the earliest calls until 80% of its storage is reached (First In First Out behavior).

NOTE – long term storage for screen recording is described in the Archiving section.

Integration with the telephony environment for call metadata retrieval

No one can deny the importance of the calls metadata when utilizing a recording system in the organization. The metadata can be used to perform smart queries on the recorded calls and to better meet the compliance regulations. For instance, it is important to know the time that a call was recorded, which agents answered the call, and the telephone number of the customer that dialed the call. To acquire these pieces of information, NICE Perform eXpress can extract the additional metadata by integrating with the telephony vendor CTI/CDR interfaces. In many cases where CTI/CDR is not available, NICE Perform eXpress utilizes the information passed between the switch and phones for extracting call's metadata. In TDM environment, it extracts D-Channel line signaling information, while in VoIP environment it analyzes the VoIP protocol.

TDM Metadata

In Digital extension environment, the NICE Perform eXpress recording layer captures the D-Channel information passing between the switch and the phones such as ON/OFF Hook, Light ON/OFF, Answer, Release Button, Digit press, Ring ON/OFF, Ring light ON/OFF, Speaker Light ON/OFF and the display text on the phones. It analyzes this data for detecting the call's metadata.

In addition, NICE Perform eXpress Recording Layer extracts information from the line signaling between the PBX and the PSTN in TDM trunk side recording, and between the PBX and the phones in TDM analog phones recording.

The following table summarizes the metadata that NICE Perform eXpress extracts from the signaling when working in TDM environments.

Metadata Information	Analog Extensions	Digital Extensions	ISDN PRI Trunks
On/Off Hook	Supported	Supported	Supported
Caller ID	Supported	Supported	Supported
DTMFs	Supported	Supported	Not supported
Dialed Number	Supported using DTMFs	Supported	Supported

For the analog extension, the metadata listed is supported for phone lines and not supported for microphones, headsets and any other non phone line equipment.

NOTE: please check IDD to verify line signaling and D-Channel support according to exact environments and phones models.

VoIP Metadata

For VoIP environment, NICE Perform eXpress uses VoIP signaling decoding mechanisms to extract metadata information. Two signaling protocols are currently supported: SIP and Cisco Skinny. The following metadata fields are available when working with each of the configurations.

Cisco Skinny	SIP
Device Number	Station
UDI (MAC Address)*	Phone Number (ANI)
Call Direction	Call Direction
Call ID	Call ID
Dialed Number Identification Service (DNIS)	Dialed Number Identification Service (DNIS)
Calling Party Name*	
Called Party Name*	
Original Called Party	
Original Called Party Name*	
Last Redirecting Party*	
Last Redirecting Party Name*	
Line Instance*	

The above listed metadata fields availability depends on whether the switch supports them and was configured to report this information. The metadata fields marked with an asterisk are not presented through the NICE Perform eXpress Query & Playback application. These fields may only be presented if data is migrated to NICE Perform.

CTI/CDR Metadata

Until now we have discussed how NICE Perform eXpress is capable of working with the organization's telephony environment without CTI and extract beneficial metadata information

from the line signaling. In addition, NICE Perform eXpress has embedded capabilities for integrating with the external CTI Server that is provided by the PBX vendor. Depending on the relevant interface, NICE Perform eXpress can extract and provide additional metadata.

The following table summarizes the telephony environments that are supported with NICE Perform eXpress.

PBX	Interface	Recording Method				
		TDM extension side	TDM trunk side	TDM dedicated trunk side	Passive VoIP	Active VoIP
	Real-time VOX	Supported	Supported	Supported	Supported	
Avaya	TSAPI	Supported	Supported		Supported with all Avaya mapping methods (Push, SMS, SNMP)	
	CVLAN	Supported	Supported			
	SIP decoder				Supported	
	CDR	Supported	Supported		Supported	
	DMCC (TSAPI or CIS)					Supported
Cisco	TAPI				Supported	
	SIP decoder				Supported	
	Skinnny				Supported	
Nortel	Symposium	Supported	Supported		Supported	
	CDR	Supported	Supported			

Nortel BCM	CDR	Supported			Supported	
Etrali	Real-time CDR			Supported		
	SIP					Supported
IPC	CDR			Supported		
BT	ITSLink			Supported		
Alcatel	TSAPI	Supported	Supported		Supported	

NICE Perform eXpress is capable of handling up to two configurations simultaneously, e.g. Cisco TAPI and Avaya CDR.

Both analog and digital recording are supported in a single configuration that supports extension side recording.

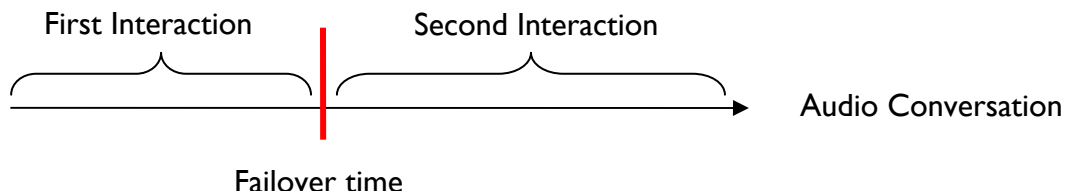
NICE Perform eXpress IDD is monthly updated and presents the exact PBX versions, supported phones and recording methods.

CTI/CDR failure

Compliance environments have one fundamental requirement; to be able to handle failure of each of the components in the system. When working with an external CTI interface, the CTI Server component is a candidate for failure and NICE Perform eXpress is designed to handle such cases.

Because NICE Perform eXpress is a compliance compatible system, it will continue to record the calls without any audio loss, even if the CTI server is down. In addition, two mechanisms can be applied for recovering from the CTI loss. One mechanism is the CTI redundancy, where the NICE Perform eXpress interacts with the redundant CTI server. This configuration requires the telephony environment to support CTI server redundancy, and is completely dependent on the CTI vendor redundancy architecture.

The second mechanism is where the system automatically switches to TDM Line Signaling using D-Channel information or VoIP signaling decoders when available, and thus continues to provide some metadata information of its interactions. During this failover, all open interactions are closed and new interactions are created using the new line signaling metadata. Therefore, in the case of failure, an audio conversation will be constructed out of two interactions.



When the connection with the CTI server is restored, the mechanism automatically falls back from the line signaling decoding to the CTI interface.

NICE Perform eXpress cannot detect failures in a CDR environment. However in case of CDR failure, the system continues to record the audio and the TRS process (described in the next chapter) completes the calls' metadata.

The following table demonstrates the CTI/CDR fallback capabilities.

Primary CTI/CDR	Fallback
TDM extension side & trunk side	Line Signaling (D-Channel) / Real-time VOX
Cisco Passive VoIP	Cisco Skinny Decoder
CDR	TRS

Total Recording Solution – TRS

As in the NICE Perform[®] solution, also NICE Perform eXpress provides call metadata completion in scenarios where CTI information cannot be captured (neither from an external CTI interface nor from the line signaling decoding).

The TRS (also known as the Inserter) component compares between the call metadata records inside the NICE Perform eXpress Database and the actual recorded call captured by the Recording Layer. When the TRS identifies call records which were not inserted into the database, it extracts the available metadata information residing within the Recording Layer and inserts the information into the Database.

Find Audio

NICE Perform eXpress system enables the user immediate search and playback of voice recordings directly from the Logger recorded channels.

It can be used in case of CTI/CDR failure, when the user would like to immediately locate the recording and not to wait for the TRS to insert the calls into the database.

It also can be used to search and play recorded audio that was retrieved from tapes recorded on different NICE Perform eXpress, NiceCall Focus III and Version 8.9 systems.

1.2. Archiving

Recorded calls are initially stored in a temporary location inside the Recording Layer. The length of time a call will reside in this temporary location depends on the temporary location size and the number of new calls that are received. In order to have the recorded call available for a longer period of time, it needs to be archived in the storage area.

Three types of storage areas can be used with NICE Perform eXpress.

- Local storage located on the NICE Perform eXpress hosting platform hard drive.
- Remote NAS/SAN storage devices supporting either CIFS or NFS file system protocols.
- Remote ESM devices like EMC² Centera or IBM Tivoli.

Archiving is performed either constantly or during a user configurable archiving window for **all** the calls that were recorded by the Recording Layer. No archiving rules can be set and therefore filtering only a portion of the calls for archiving is not possible. The Storage Layer fetches interactions from the Recording Layer, transforms them into NICE Media Format (NMF) files and saves them to its cache. Then the Storage Layer sends the saved NMF files to the actual Storage Device. Once this is done, the interactions' archiving information is saved in the Database (in case of an ESM device, the Unique ID is also saved).

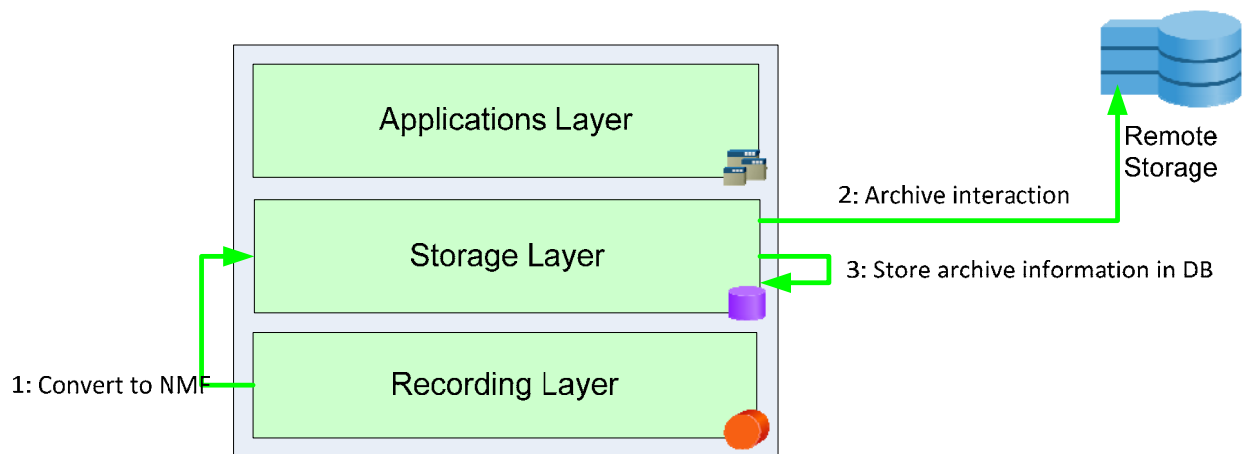


Figure 11: Archiving process

With NICE Perform eXpress, the user only needs to define the archiving path; the size of the storage is calculated based on the available space.

Central archiving

A remote storage device can be shared across several NICE Perform eXpress systems. However, each system will manage its archiving independently. It is also possible to utilize the hosting platform hard drive of one of the NICE Perform eXpress systems, as a remote storage device for other NICE Perform eXpress systems. Each system will only relate to its own content.

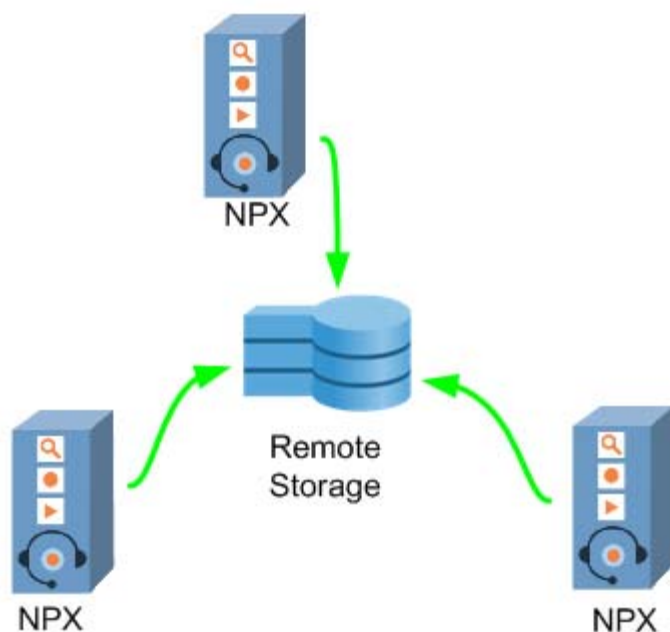


Figure 9: Central Archiving

If there are several NICE Perform eXpress systems that are archiving to the same storage device, each system will archive to its designated archiving path, thus separating between the stored information of each system. However, even though the size of the NICE Perform eXpress storage cannot be defined, the systems will be able to archive as long as there is enough space. This storage space is of course dependent on the other systems archiving as well. Let's assume, for example, that there are three NICE Perform eXpress systems that are sharing 1TB storage. If the first system is currently using 600 GB of storage, the three systems are left with only an additional 400 GB of free storage space.

Retention

NICE Perform eXpress supports retention of up to ten years. Retention is the minimum length of time an interaction needs to be archived in the system and must not be deleted. With NICE Perform eXpress, the auto deletion process is working regularly to delete the audio of all interactions, where the retention period has passed. An interaction's audio will be deleted once the retention period has passed, even if currently there is enough storage space available. Only the interaction audio is deleted from the storage device. The NICE Perform eXpress will continue to retain the interaction metadata in the database.

It is important to note that if there is no space for archiving new interactions because the retention period of the other stored interactions has not expired yet, new interactions will not be archived. The IT administrator is able to detect such scenarios using the System Management application, as is further explained in the Maintenance and SNMP section.

NICE Perform eXpress complies with strict regulations that oblige enterprises to save interactions for different periods of time, and supports multiple retention rules filtered by group of users and metadata such as dialed number and caller ID.

Retention rules are processed periodically and set the retention period for new interactions right after their creation. Based on this retention period, the auto deletion process is deleting expired interactions from the storage area.

To reduce enterprise risk and comply with regulations, NICE Perform eXpress supports deleting expired interactions from the database and from the online recording. This process should be handled carefully as these interactions will be deleted and cannot be restored.

Enterprises have disputes with their customers that force them to save interactions for long periods until the dispute is resolved. To reduce risks, NICE Perform eXpress supports expanding manually the selected interaction retention period.

Screen Archiving and Retention

The system is capable of archiving screen in remote NAS/SAN storage devices supporting either CIFS or NFS file system protocols, or in remote ESM devices like EMC² Centera or IBM Tivoli.

There is one retention period for screen recording that can be configured according to organization Quality Management needs. In case calls are permanently deleted from the Storage Center, Logger and database, screen recording will also be deleted.

Users cannot manually extend retention of screen recording, however, voice plus screen calls can be saved on a local hard drive using standard ASF format.

1.3. Backup

A different method available for maintaining the audio recording is by archiving them to a backup device. NICE Perform eXpress supports archiving to backup tape devices. NICE Perform eXpress supports DAT backup tape devices that are connected either through SATA or USB. One tape device is supported for each NICE Perform eXpress system. Each tape can be used for either archiving or retrieval at any period of time. Defining the tape mode is done through the Configuration application, which is part of the NICE Perform eXpress HTML user interface.

Backup of screen recordings is not supported on backup devices and Storage Center should be used instead.

Archiving process

NICE Perform eXpress archives the raw audio data directly from the Recording layer. No conversion is made to the audio before it is written to the data tapes. The backup process is working in a continuous archiving mode, thus the raw data is backed up immediately after it is available.

Retrieval Process

The retrieval process utilizes a tape device that was defined for archiving in the NICE Perform eXpress configuration. The system does not currently support Media Library; therefore the user must know in advance on which tapes the interactions are archived. Once the correct tape is located, it should be retrieved using the System Management application. In this process, the raw audio is copied from the tape device to the Recording Layer internal cache. Only then can the user perform a relevant query and search for desired interactions.

1.4. Query and Playback

The playback mechanism of NICE Perform eXpress is based on the windows media streaming architecture. The user requests to play back an interaction based on a previous query the user initiated. Once the required interaction for playback has been located, either on the local storage or the remote storage, it is streamed from the Application Layer to the NICE Perform eXpress user over HTTP. The user can control the playback using the designated Player interface.



Figure 13: NICE Perform eXpress Player

The playback mechanism is explained in further detail in the following section.

Query for interactions

After the interaction has been recorded and archived by NICE Perform eXpress, it can be searched for by using the query mechanisms. Users can view their interactions (or other users' interactions, if they have permission to do so), by specifying their query criteria such as time period, duration, direction, groups, agents, dialed number, caller ID and more. The query operation should result in a list of interactions, from which the user can select the interaction for playback.

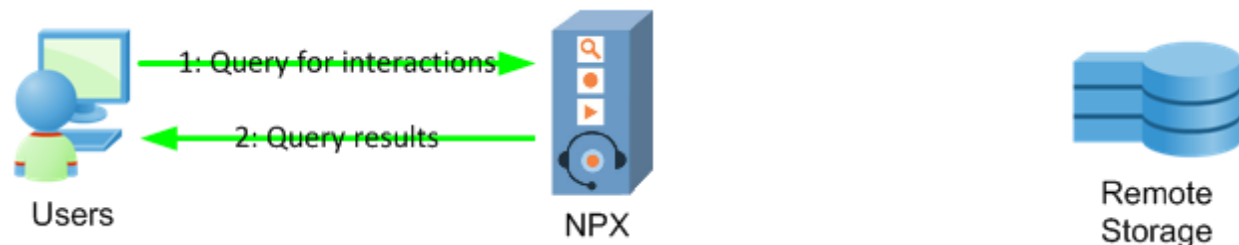


Figure 14: Query for interactions

Locate process

The locate process is the first step used in order to find the location of an interaction that needs to be played back. The Application Layer examines the Recording Layer first. If the interaction is not found in the Recording Layer internal storage, the Application Layer searches for the interaction in the storage device. Depending on the storage location, an interaction can be searched either on the NICE Perform eXpress local storage (the hard drive) or on a remote storage device (e.g. ESM Device). If the interaction is archived on an ESM device, the Application Layer fetches the Unique ID from the Database and uses this Unique ID to fetch the interaction

from the Storage Device. In addition, the user is prompted that playback is carried out from an ESM device, even though the playback operation might take longer.

Playing Voice Recordings

Once the interaction is located and fetched, the Application Layer generates a temporary ASF file on its internal storage from the interaction audio. The Application Layer returns the location of this ASF file to the user's client application.

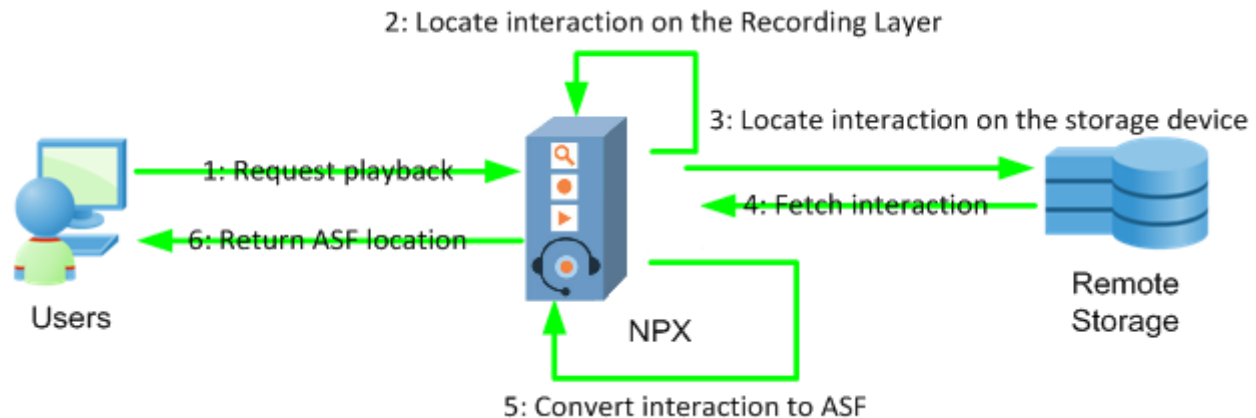


Figure 15: Locate an interaction that exists on a storage device

The user's client application initiates a streaming session from the Application Layer based on the ASF file location that was provided during the locate process. The Application Layer utilizes the Windows Media Services to stream the interaction over HTTP to the NICE Perform eXpress Player. At this point, there is no connection between the NICE Perform eXpress and the storage area where the interaction resides, as the whole process is done with the temporary ASF file. After the streaming, an automatic process deletes the temporary ASF files.

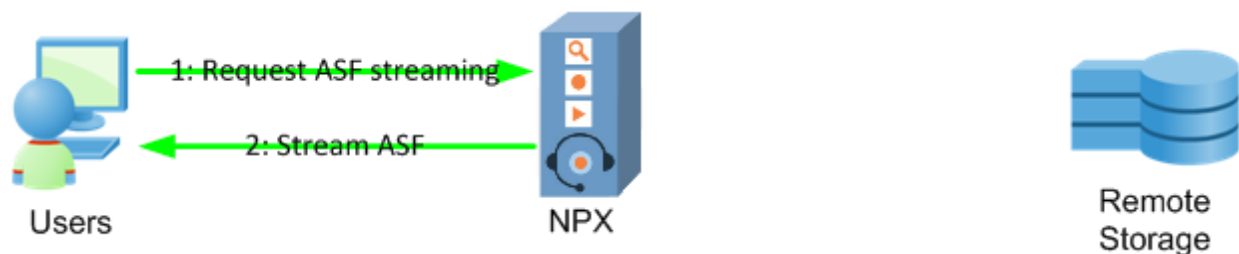


Figure 16: Streaming voice interaction

Playing Voice and Screen Recordings

Creating ASF file for voice and screen streaming playback requires extensive platform resources, therefore playing screen or voice plus screen, requires a different mechanism, as follow:

Once the interaction is located and fetched, the Application Layer generates a temporary raw data file that includes audio and screen raw data. The Application Layer returns the location of this raw data file to the user's client application.

The user's client application initiates a streaming session from the Application Layer based on the raw file location that was provided during the locate process. The Application Layer utilizes the Windows Media Services to stream the interaction over HTTP to the NICE Perform eXpress Player. At this point the client decodes the screen and voice raw data and plays it on the client Player.

For decoding the voice and screen on the agent's desktop, a NICE Playback codec pack should be installed on client machines. The system provides an automatic mechanism to update the playback codec pack when the main system is upgraded or UP is installed.

Please note that sites that use Quality Management, but do not need to record the screen, do not need to use NICE Codec Pack.

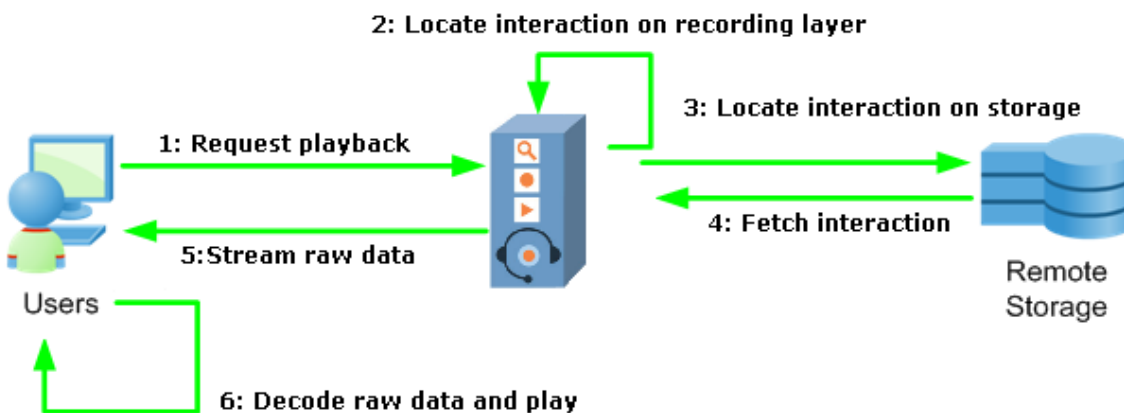


Figure 17: Streaming voice and screen interaction

1.5. Monitoring Applications

Channel Monitoring

The channel monitoring application is used to ensure that all the channels are actually recording. The Application Layer queries the Recording layer for the current status of each recording channel. Based on the information it receives, it displays the current channel status for the user.

When a current call is recorded, the channel monitoring application provides live playback of the audio. The recorded audio is automatically converted into an ASF stream, which is sent to the channel monitoring application. No actual ASF file is generated during this process.

The Channel Monitoring application enables administrators and technicians to monitor channels to make sure they are working properly. They can also play back recordings of channel activity that were recorded from each channel, as well as play the channel activity (monitor) in real time.

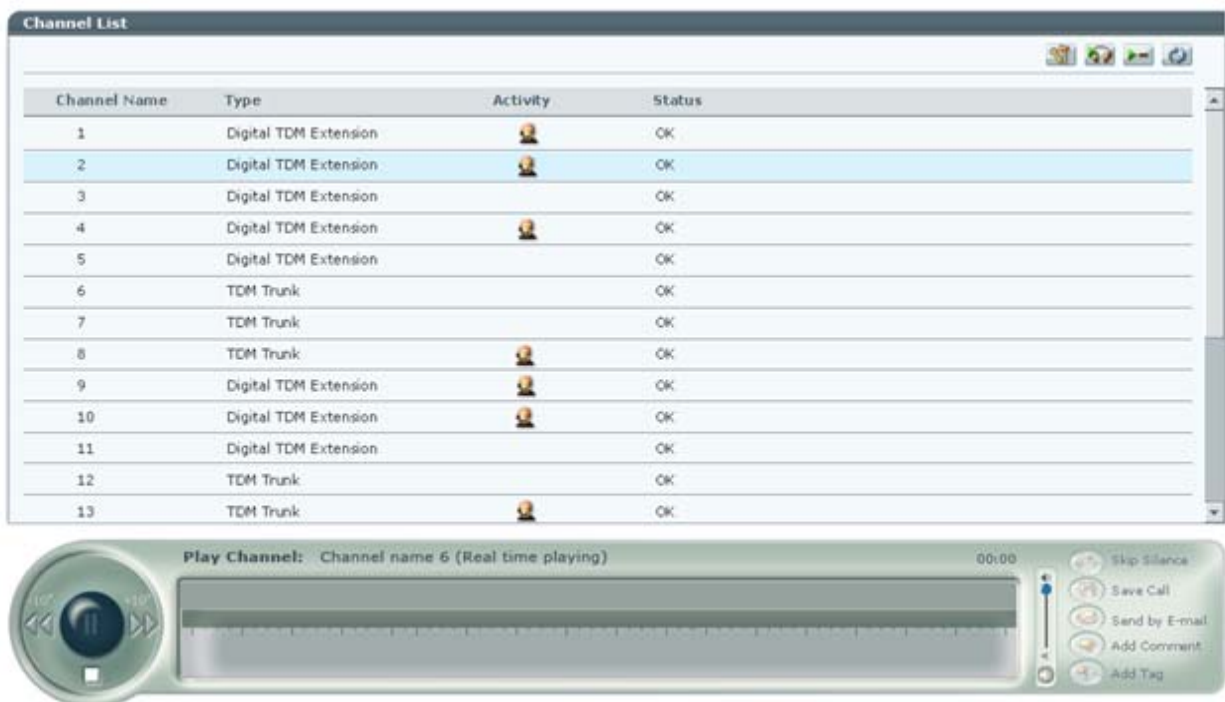


Figure 18: Channel monitoring application

Audit Trail

A comprehensive, detailed Audit Trail is an essential part of any recording system. NICE Perform eXpress Audit Trail is designed with the needs of today's security conscious organizations in mind. It enables organizations to verify and demonstrate adherence to security policies and compliance imperatives by providing a complete solution encompassing all data and all applications contained in the NICE Perform eXpress system.

The screenshot shows the 'Audit Trail application' interface. On the left, there is a 'Queries' sidebar with 'Public folder' and 'Private folder' options. The main area is titled 'Last 24 hours' and shows 'Display Top 100' with '28 out of 28 results are shown'. Below this is a table with four columns: 'Full Name', 'Message Title', 'Audit Message Time', and 'Audit Message Text'.

Full Name	Message Title	Audit Message Time	Audit Message Text
ITNew, ITnew	Playback Start	3/12/2009 11:40:54 AM	User ITNew, ITnew starts playback of call ID 1823609. Call details- start time 10/03/2009 08:02:21:000, agent Unmapped, User
NICE, Superuser	Playback Start	3/11/2009 5:37:50 PM	User NICE, Superuser starts playback of call ID 1825583. Call details- start time 10/03/2009 16:15:15:000, agent Agent, 60
NICE, Superuser	Playback Start	3/11/2009 5:37:28 PM	User NICE, Superuser starts playback of call ID 1825583. Call details- start time 10/03/2009 16:15:15:000, agent Agent, 60
NICE, Superuser	Playback Start	3/11/2009 5:37:05 PM	User NICE, Superuser starts playback of call ID 1825583. Call details- start time 10/03/2009 16:15:15:000, agent Agent, 60
Unmapped, User	Playback On Channel	3/11/2009 3:46:11 PM	User Unmapped, User starts playback on channel ID Unmapped. Channel name 4 Start time Channel 4
Unmapped, User	Start Monitor	3/11/2009 3:39:28 PM	User Unmapped, User starts monitor on channel ID Unmapped. Channel name 1
Unmapped, User	Playback On Channel	3/11/2009 3:35:33 PM	User Unmapped, User starts playback on channel ID Unmapped. Channel name 1 Start time Channel 1
NICE, Superuser	Playback Start	3/11/2009 12:27:25 PM	User NICE, Superuser starts playback of call ID 1825637. Call details- start time 11/03/2009 10:01:00:000, agent Agent, 60
NICE, Superuser	Playback Start	3/11/2009 12:27:10 PM	User NICE, Superuser starts playback of call ID 1825599. Call details- start time 11/03/2009 08:24:29:000, agent Agent, 51
NICE, Superuser	Playback Start	3/11/2009 12:26:53 PM	User NICE, Superuser starts playback of call ID 1825604. Call details- start time 11/03/2009 08:26:40:000, agent Agent, 51
NICE, Superuser	Playback Start	3/11/2009 12:24:57 PM	User NICE, Superuser starts playback of call ID 1825614. Call details- start time 11/03/2009 08:32:19:000, agent Agent, 51

Figure 19: Audit Trail application

Every action performed by every user is logged and time stamped for a complete Audit Trail. The Audit Trail data is maintained in a secured database (not in log/text files that can be easily tampered) with a retention period of one year.

Audit Trail advanced query application allows complete analysis of "who did what and when". This capability itself is also secured to prevent any interference with its operation in any way by staff other than those designated. The Audit Trail query and viewer allows the user to display the audit trail messages in easily readable format, on a day-to-day basis. Events can be filtered by category so that for example, only specific user events are displayed.

Dozens of different user actions are tracked and logged in the Audit Trail database. All NICE Perform eXpress audit messages are listed in the Appendix.

1.6. Database Backup

NICE Perform eXpress uses Microsoft SQL 2008 Workgroup database. A full backup of all the information inside the database is automatically performed every day. The backup can be performed only to a file system directory and not to external back devices (for example: tapes). During the backup process, the system continues to function normally regardless of the background backup process.

The NICE Perform eXpress database can also be restored. However, this process is outside the scope of this document.

I.7. Maintenance and SNMP

In recent years, as communication networks grow in size and complexity, the ability to monitor devices remotely has become a vital task. One of the most effective means of managing devices remotely in a network is via the Simple Network Management Protocol (known as SNMP). NICE Perform eXpress provides the network manager with the power to remotely monitor the system thereby enabling the highest standard of quality for a robust and reliable system.

The Application Layer is responsible for constantly monitoring the different layers for abnormalities. When an abnormal condition is detected, the Application can expose the information to the system administrator in one for the following manners:

- NICE Perform eXpress System Status describes the current status for each of the main different system modules. In case there is a warning or error in one of the modules, it is reflected with yellow or red colors respectively.
- System information is also sent to a configured SNMP Server. The SNMP Server can be defined through the System Setting tab in the System Management application. If more than one SNMP server is needed, it can be defined through the Windows SNMP Service.

The information is presented in the System Status tab of the System Management application, as is shown in the figure below.

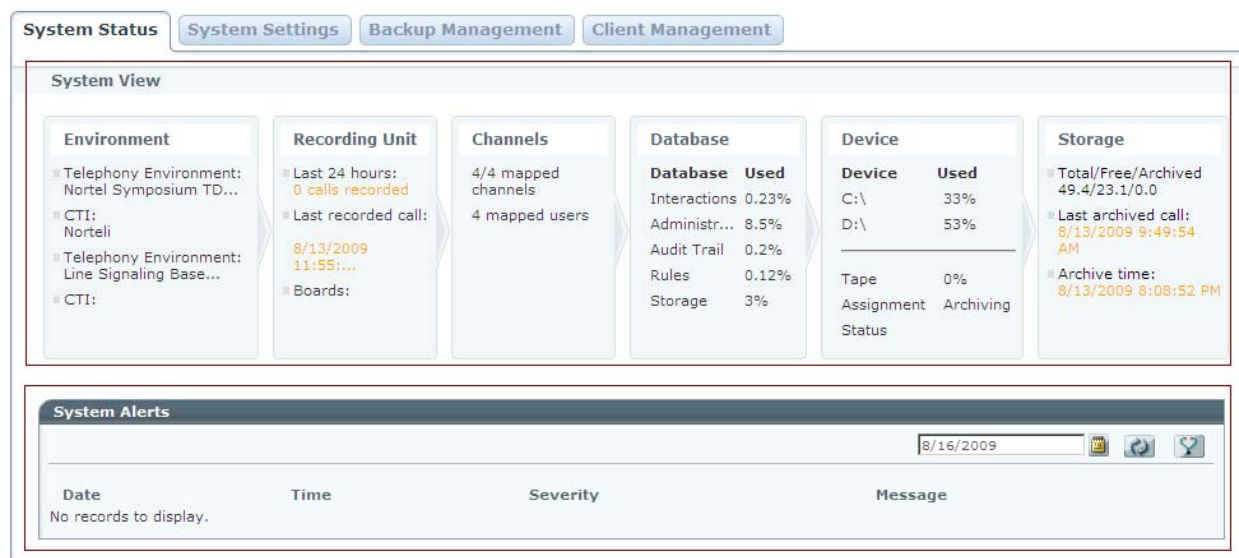
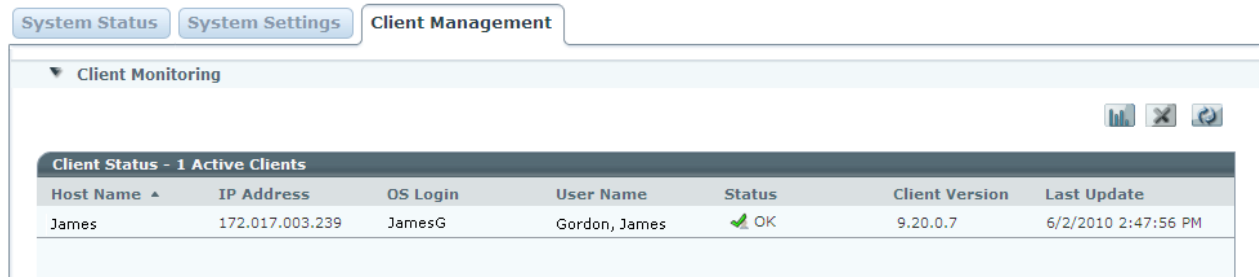


Figure 20: Monitoring application

To maintain simplicity, only acute errors are propagated through the SNMP/Monitoring mechanism. A list of the monitored trap messages can be found in the Appendix.

For managing screen recording agents, NICE Perform eXpress enables users to monitor each of the clients, presenting their Host Name, IP Address, OS Login, Version, and current status as shown below. The information is presented in the Client Management tab of the System Management application.



Client Status - 1 Active Clients						
Host Name ▲	IP Address	OS Login	User Name	Status	Client Version	Last Update
James	172.017.003.239	JamesG	Gordon, James	OK	9.20.0.7	6/2/2010 2:47:56 PM

Figure 21: Client management application

Client management is an excellent tool for making sure that all clients are installed and working properly.

1.8. System Configuration

The NICE Perform eXpress design was carefully considered to provide a simple and user friendly interface. Part of this goal is achieved by maintaining a simple system configuration interface that enables a quick and clean installation and configuration process.

There are several methods for performing the system configuration. The configuration can be done locally or remotely. The IT administrator may configure each NICE Perform eXpress system in the organization independently or use a central configuration tool to configure a few systems together. The configuration information can also be taken from an external file.

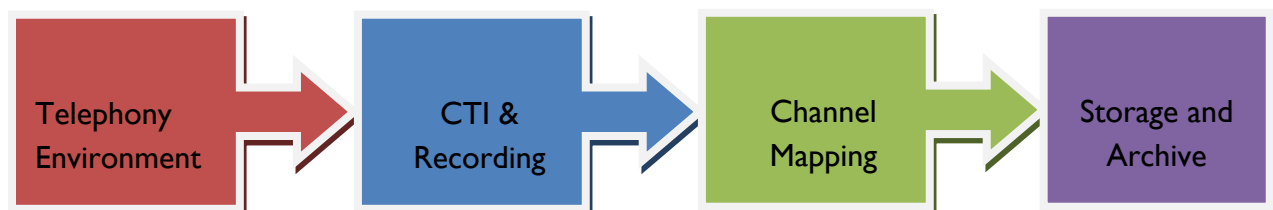
No matter which configuration method is used, the configuration process can be separated into two main processes: Configuration and Users Administration.

Configuration

Within the configuration, the main focus is to configure the NICE Perform eXpress infrastructure components that interact with the external organization environment. The telephony environment is defined, the capturing method is configured, and the integration with an external storage and archive device is also set.

Easy configuration is achieved by allowing the NICE Perform eXpress administrator to configure only the relevant and most important pieces of information that are needed for the system to successfully perform its tasks. For instance, the integration telephony environment was packaged into several predefined environments which include the Telephony switch, the CTI interface and the recording method, e.g. Avaya TSAPI TDM Extension or Cisco TAPI Passive VoIP. Up to two packages can be defined for each NICE Perform eXpress. Once the telephony package is selected, the recording channel should be allocated for each of the recorded sources (e.g. TDM extensions, TDM trunks, VoIP Extensions).

A more general reflection of the configuration process can be found in the following schema below.



- Telephony Environment is used for selecting one of the predefined packages of supported telephony environments.
- CTI & Recording is used for defining additional parameters about the Telephony switch and the Recording Layer.
- Channel Mapping is used for mapping between the recorded sources (extensions, trunks) to the Recording Layer.

- Storage and Archiving is used for defining the archiving mechanism.

Users Administration

NICE Perform eXpress User Administration is used to easily define the various entities within the system. The entities are described below:

1. Agent

An agent is a person in an organization, who makes or answers telephone calls. Each agent should have an associated extension number (e.g. in a fixed seating environment) or agent ID (e.g. in a free seating environment) which is used by NICE Perform eXpress for correlating the call recordings to the relevant agent. In NICE Perform eXpress, an agent may have login access rights to the system. In this case, the agent is able to query and play back his own recordings. If the agent does not have access rights, the agent is only defined in the system to ensure that recorded calls will be correctly correlated.

2. Manager

The manager is responsible for several agents and has the capability to query and play back the recording of his subordinates. If the manager is defined as a recorded manager, the calls of that manager can also be queried and played back using the system user interface. In such a case, the manager of course needs to have an extension number or an agent ID.

3. Supervisor (managers that do evaluations)

One process to manage Quality Management at Contact Centers is doing the evaluation by the team managers. In addition to manager authorization, supervisors are authorized to use QM applications for evaluating agents, run reports or managing and creating evaluation forms. As manager, the Supervisor can also be defined as recorded.

4. QM user

At many Contact Centers, the Managers do the ongoing group and agents management while the evaluations are done by a dedicate QM team.

QM user is a person of the QM team that centrally operates the quality for all teams at the Contact Center. The QM user can search and play back interactions of all agents, evaluate agents, run reports or manage and create evaluation forms. As manager, the QM user can also be defined as recorded.

5. IT Administrator

The NICE Perform eXpress IT administrator has full access rights to the system. The IT administrator is responsible for system configuration and monitoring. However, the IT administrator can also query and play back calls of all the other entities in the system. As manager, the IT administrator can also be defined as recorded.

The system manages authorization for these types of users using a role mechanism. Each new user should be associated with the appropriate role.

For more flexibility, attributes of each role can be changed to fit organization needs.

The following table lists the different roles, their access rights for the different applications, and the privilege adjustments:

Role	Privileges	Role Adjustment
User w/o login	No access rights	No access rights
Agent	Search and play their own calls	Save Interactions
Manager	Search and play their own and subordinate calls	- Save interactions - QM applications (Evaluations, Reporter, Form Designer)
QM	- Search and play all calls - Access QM applications (evaluation, reporter, form designer)	- Save interactions - Monitor application
IT	- Search and play all calls - Access all applications	- Save interactions - Channel monitor - Interactions - QM applications (Evaluations, Reporter, Form Designer)

NICE Perform eXpress also provides a simple groups management mechanism. All the entities defined in the system are automatically added to a default group called All Users Group. In addition, each agent or manager can be added to one additional group in addition to the default group. The group can have several managers, which can play back all the calls of the agents and managers in that group.

User's Applications

Each system user can access the NICE Perform eXpress application using a web based interface. This interface is based on HTML and therefore no additional installation or configuration is needed on the user's desktop. The user should use Internet Explorer 6.0 or higher in order to access the HTML based user interface and Microsoft Media Player version 10 and above for streaming the audio.

When QM package is available, screen recording agent and NICE Playback codec pack should be installed on the client machine.

The NICE Codec Pack can initially be installed by using a software push mechanism such as SMS, which pushes the NICE Codec pack to all clients automatically.

When a new version of the Codec pack is installed on the NICE Perform eXpress server, the Codec pack of all the clients' is updated automatically.

NICE Perform eXpress provides a multilingual application interface. At login, users can decide which language they would like to use. By default, NICE Perform eXpress supports the following languages: English, French, German, Japanese, Simplified Chinese, Spanish, Russian, Portuguese and Korean. Adding additional languages is easy and requires the installation of a new language pack which contains the translations of the user interface. Of course, the system also supports the insertion of localized textual information regardless of the language of the user interface.

In addition to the translated GUI, NICE Perform eXpress provides translated users manuals and on-line helps for the above translated languages.

Site Readiness Tool

For a smooth and fast system installation, validation of prerequisite of the system is possible.

The Site Readiness Tool is an application that can run locally on the server and check if the server is ready for NICE Perform eXpress installation.

The business logic checks the readiness of the Operating System, Update Packs, disk size, partitions, etc.

Post Configuration Validation Tool

The post configuration validation tool is an external semi automatic application, running on the NICE Perform eXpress system, and is used to validate that the configuration was completed successfully. The validation is comprised of the following steps:

- The user is prompted to enter an extension that he would like to validate.
- The validation tool ensures that the extension is monitored.
- The validation tool ensures that the extension is mapped to an active recording channel.
- The user is prompted to initiate an inbound call.
- When the call ends, the validation tool automatically searches for the call in the database and validates the metadata information that was gathered.
- The user is prompted to listen to the recorded interaction and verify that the audio was recorded successfully.
- The same procedure can be executed several times to validate all channel recordings correctly.
- If one of the steps fails, an extensive troubleshooting wizard helps the user to detect and fix the problem.

1.9. Centralized Administration

One of the NICE Perform eXpress solution greatest strengths is its capability to provide central administration to several NICE Perform eXpress systems deployed in the organization. The eXpress Central Desktop is an external application that should be used by the IT administrator mainly for maintenance, configuration and monitoring purposes of NICE Perform eXpress systems in the organization. The central administration application should run on a COTS based platform with Windows 2003 or Windows 2008, SQL 2008 and IIS 6.0.

The central administration application provides three main capabilities for the IT administrator:

1. Administrating and using the various NICE Perform eXpress systems at the sites.

By using the central administration application, the IT administrator manages centrally the NICE Perform eXpress systems. The central administration application allows adding or deleting NICE Perform eXpress systems and even restarting the systems remotely when needed.

In addition, the IT administrator can use the central administration platform to launch the NICE Perform eXpress user's interface and thus have an extended control on a specific NICE Perform eXpress system. IT and managers located at the central site are empowered and can easily manage the different NICE Perform eXpress sites transparently without the need to enter user and password. For example, managers can select a site and search for specific interactions located at this site. Later on, they can easily select a different site and search for different interactions.

2. Administrating the organization resources which interact with the various NICE Perform eXpress solutions.

As a recording solution, NICE Perform eXpress needs to interact with the PBXs, CTI servers and the storage devices in the organization. The IT administrator can use the central administration to define a list of these common components that will be propagated to the various NICE Perform eXpress systems at the local sites. NICE Perform eXpress systems at the sites can use these common components in order to finalize the site configuration.

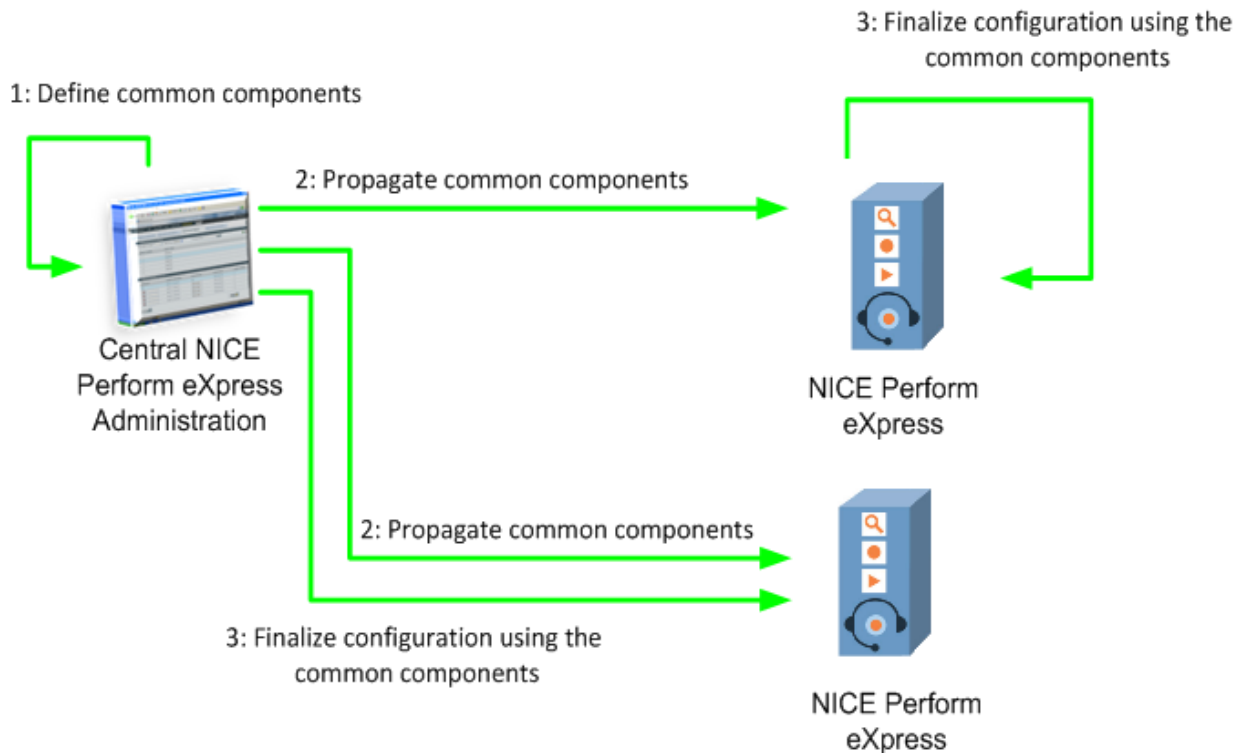


Figure 21: Common component definition and configuration

3. Define users' organization settings.

Synchronization process

The synchronization mechanism is responsible for distributing the changes made in the central administration application to all the NICE Perform eXpress systems at the local sites. Each site will receive all changes made to the common organization resources and will enforce only the changes it uses. For example if a change was made to a switch that is used in a local site, this local eXpress system will apply the relevant changes. Making local modifications to common organization resources is possible; however, doing so will prevail over receiving additional updates. Some of the changes might require the restart of NICE Perform eXpress internal modules. These modules are automatically restarted when changes are locally applied.

When using the central administration application, it is possible to manually perform the synchronization and later view the synchronization status for each NICE Perform eXpress system. One of the following synchronization modes is possible:

- **Offline.** When a NICE Perform eXpress system is unreachable for 24 hours, its state will be offline and the synchronization mechanism will stop trying to access it. Renewing the communication with an offline system should be done manually by the IT administrator.

- Not synchronized. The synchronization mechanism failed to synchronize the NICE Perform eXpress system. The reason could be that it was impossible to access the branch or there were conflicts in the synchronization.
- Restart Required. The NICE Perform eXpress system was synchronized; however, changes were not applied yet.
- Synchronized. The NICE Perform eXpress system is synchronized.

Dual phased deployment

NICE Perform eXpress centralization capabilities make the deployment of several NICE Perform eXpress systems in the organization short and simple. The deployment can be divided into two phases. In the first phase, all the NICE Perform eXpress systems are installed in a central location.

In the second phase, the NICE Perform eXpress systems are physically connected and the branch level and their configuration are finalized. The IT administrator can choose to finalize the configuration locally or to use the remote access capability that is provided by the central administration application.

Patch update

NICE Perform eXpress updates can be distributed using Microsoft® Systems Management Server (SMS). For a description of the SMS protocol, see Microsoft documentation.

Additionally, each NICE Perform eXpress system can be updated locally by following the designated maintenance user interface.

Quality Management

NICE Perform eXpress fast and intuitive web-based thin client applications provide managers the means to examine their customer interaction data and extract insights.

For analyzing and managing these insights, NICE Perform eXpress includes just the right Quality Management process for small and medium contact centers.

NICE Perform eXpress Quality Management process starts with creating quality rules that tag interactions for the evaluation process and that record screen including wrap-up time.

Supervisors and the Quality Management team can now search, play and evaluate these interactions.

Managers and Supervisors gain insights from agent evaluations using a powerful and intuitive integrated report-generator that can create a wide range of reports and graphs. These reports empower users by using advanced operations such as group by, sorting and drill-down capabilities.

NICE Perform eXpress Quality Management process was designed to fit small and medium contact center needs using an intuitive user interface and focuses on simple application usage, training and deploying of the entire solution.

Defining Quality Management Rules

NICE Perform eXpress supports the setup of up to 20 Quality Management rules.

Quality rules can be focused according to different business needs such as fair evaluation of agents using random programs; evaluation focus on a specific group; analyzing long calls and more.

Each rule can be filtered by group of agents, dialed number, caller ID, direction, duration and business data fields. It can be set to randomly tag voice interactions and record agent desktop during and after the call.

Update Rule

Rule Name:

Screen Recording

Screen Recording: ☒ Enabled

Screen Wrap-up Time: Seconds

Schedule

Schedule Type: ☒ Daily ☐ Weekly ☐ Monthly

From:

To:

Sampling

Sampling Method: ☐ Random ☒ Percentage

Record % of interactions

[Cancel](#) [Save](#)

Figure 22: Setup Quality Management Rules

Creating and Managing Evaluation Forms

NICE Perform eXpress introduces a thin client web based Form Designer, that was designed to fit small and medium contact center needs using powerful and simple user interface.

The new Form Designer includes fast creation of forms, sections and questions. It support a variety of question types such as YES/NO, checkbox, data list, scoreable list, bonus/penalty and more. There is no limitation to the number of forms that can be created in the system.

Form Designer includes an advanced and flexible formulas mechanism for managing evaluation scores according to enterprise needs. The First formula method uses percentage for calculating the score where each question receives the same weight. The second formula method is using a weighted section where each of the sections receives different weights according to their importance. The last scoring is counting the points gain of answered questions.

During the design phase, the user can preview and change the form, answer questions and run scoring simulations to make sure it meets the exact needs.

The screenshot displays the 'Form Designer' interface for a 'Mobilecom Service Evaluation' form. The top header shows the evaluation context: 'Evaluating: Debra Knox | 03/02/09 | 08:07:53 PM | 00:02:04 | Inbound'. The form is titled 'Mobilecom Service Evaluation' and includes a 'Scoring: Weighted Sections' indicator. The form is divided into sections with associated weights and scores. The 'Greeting' section (Score: 85) is currently active. The form contains several questions with different input types: radio buttons for 'A. Said "Thank you for calling"?' and 'B. Provided individual name?', a dropdown for 'C. Time customer was on hold?', a rating scale for 'D. Overcame objections', checkboxes for 'E. Closed the lead' and 'F. Able to effectively answer customer queries', a list of service subjects for 'G. Service subjects:', and a rating scale for 'H. Demonstrates active listening'. The bottom of the interface shows a 'Save' button, a progress indicator '8/15 Questions Evaluated', and a 'Total Score: 85/150'.

Weight	Question	Input Type	Score
(20)	A. Said "Thank you for calling"?	Radio buttons (yes/no)	
(10)	B. Provided individual name?	Radio buttons (yes/no/N/A)	
(5)	C. Time customer was on hold?	Dropdown menu	
(10)	D. Overcame objections	Rating scale (Poor to Excellent)	
(30)	E. Closed the lead	Checkbox	
(15)	F. Able to effectively answer customer queries; gives accurate information	Checkbox	
(20)	G. Service subjects:	List of checkboxes (Billing, Technical, Complaint, Subscription, New Customer)	
(15)	H. Demonstrates active listening	Rating scale (1-10)	

Figure 23: Form Designer

Evaluation Process

NICE Perform eXpress includes an optimum and effective evaluation process. This process was developed with deep understanding of supervisors and evaluators needs.

Supervisors search Quality Management interactions based on QM tag and evaluation status. To initiate the evaluation, the supervisor needs to select an interaction and open the evaluation.

The evaluation includes built-in playback as shown in the figure below. In one single screen, evaluators can control the playback view, the screen recording and fill in the evaluation. The system allows the user to customize the size of the screen area vs. the evaluation area for better usability.

While evaluating the form, the score is automatically calculated using the client side scripting to improve performance and user experience.

The user can open more than one evaluation. Each evaluation is opened in a different IE tab, and the user can easily move from the evaluation process to the interaction tabs for searching and playing interactions for dispute or other urgent reasons.

Playing: bogota, colombia, 6/1/2010 10:52:42 AM

Contact Detail

BankCard Member Services

Member: Joe Manli Address: 112 Ocean Ave
Account Number: 240-456-2743
E-mail: joe@manli.com City: Anytown
Phone: (212) 125-0392 State: NY
ZIP Code: 23623 Country: USA
Mothers Maiden Name: Manly
Last Results: Other

Notes | History | Activities | Account Info | New Account

Balance	\$1,200.00	Total Available Credit	\$5,000.00
Payment Status	Current	Cash Access Line	\$2,000.00
Amount Past Due	\$0.00	Available for Cash	\$2,000.00
Minimum Payment	\$10.00		
Previous Balance	\$6.00	Rewards Balance	20,000
Payments, Credits	\$600.00	Earned @1%	12
Purchases, Cash, Debits	\$1,200.00		

Evaluation

percentage

Agent: Ted Farnston Evaluator: Ted Benjamin
Interaction Start Time: 03/02/2010 08:07:53PM Score: 8
Interaction Duration: 00:24:04 Bonus Score:

1. Call Flow (Score: 5) ☐ N/A

1.1 Introduced self, stating full name and company name ☒ yes ☐ no
1.2 ☐ Verified customer name
1.3 Is problem resolved? ☐ yes ☒ no

2. Problem resolution (Score: 3) ☐ N/A

2.1 Obtained and verified all information 1 2 3 4 5
2.2 Discussed appropriate alternatives 1 2 3 4 5
2.3 Clearly described resolution 1 2 3 4 5
☐ Problem resolved in the first call

3. Technical Knowledge (Score: 0) ☐ N/A

3.1 Demonstrated expertise Poor Average Good Excellent
3.2 Provided accurate information Poor Average Good Excellent
3.3 Proper hold/transfer Poor Average Good Excellent
☐ Asked permission and waited for response
☐ Informed caller of reason for hold/transfer
☐ thanked caller for holding on return
☐ Provided name of person or department in case of transfer

3/17 Questions Evaluated Total Score 8 Save

Interaction Details: bogota, colombia, 6/1/2010 10:52:42 AM 00:00:19

Playing

Figure 24: Evaluation Process

Analyze Using Evaluation Reporter

NICE Perform eXpress utilizes Microsoft Reporting services for creating and managing reports. The system supports powerful reports including grouping by agent, manager or evaluator, sorting and sophisticated drill down from one report to another or to interaction or evaluation content.

The reports use simple UI along with aesthetically looking graphics and appealing UI.

Users can easily export reports to MS Excel with all necessary information and customize them in the Excel sheets to exactly fit business needs.

Upgrade and Expansion

NICE Perform eXpress supports fast and simple upgrade from previous versions.

Upgrading any previous version is a simple and fast process that is completed while keeping old audio and definitions such as configuration, users, interactions, etc.

NICE Perform eXpress avoids replacements of old hardware and capture boards. In addition, the upgrade of Windows 2003 to Windows 2008 is not needed, as the solution supports old operating systems and hardware.

However, if the customer is required to expand the system and add more recording channels than were supported in the previous version, it is necessary to replace the audio boards with the new set of boards.

Migration

NICE Perform eXpress provides simple and easy migration from NiceCall Focus III and Version 8.9 legacy systems to NICE Perform eXpress. This process (downtime) takes less than 8 hours for NiceCall Focus III systems and up to two days for large Version 8.9 systems.

The system supports an easy and simple migration process that can be done directly by Business Partners.

Users' information, Interaction data including business data and Storage Center paths are migrated to enable the customers to search and play back interactions previously located on the old system.

There is also a well defined process to support old legacy end of life tape devices such as AITI, DVD RAM, etc.

Migration Main Flow

The following steps are necessary for completing the migration flow:

- I. Install Nice Perform eXpress on the new Server

During the operation of the legacy system, and to reduce system downtime, the new NICE Perform eXpress system should be installed. This is a critical phase in the installation of NICE Perform eXpress that makes sure that the server, Operating System and environment is ready.

After installation you should not configure the new NICE Perform eXpress system. The configuration should be done after the migration.

2. Stop migrated environment

After making sure that NICE Perform eXpress is ready for the migration process, the legacy system should be shut down. It is necessary to make sure that all recorded audio is being archived to the Storage Center or offline storage device.

3. Backup database to a network path

The first phase of the migration is backing up the legacy system database to a network path. This database will be migrated to the new NICE Perform eXpress system.

4. Database migration

Database migration is a time-consuming phase and takes most of the migration process.

During database migration the following information is automatically migrated:

- Users' attributes such as user name, password, agent ID and association with switch will be migrated to the new system. Users' profiles and privileges will not be migrated and should be defined separately on the new system. However, user with valid agent identity will automatically be migrated with "Agent" role.
- Organization security setting will be migrated excluding forbidden passwords.
- Interactions metadata will be migrated to the new system. As NICE Perform eXpress does not support compound calls, compound data will not be restored to the new system. Migrated interaction metadata includes calls information, such as start time, end time, duration, Caller ID, dialed number and other available attributes.
- Interactions Storage area path is also migrated. In case the storage was located on a local hard drive on the legacy system, the user can change the path to a new network path and all links will be migrated to the point on the new path. Later the Storage Center data should be copied to the new path.
- Any business data information available in the old system will be copied to the new system. Later, users will be able to map these business data using NICE Perform eXpress configuration application.
- **Quality Management data will not be migrated.**

5. NICE Perform eXpress configuration

After completing database migration, NICE Perform eXpress configuration must be completed before starting recording in the new system. Configuration should include the following:

- Define PBX and recording type.
- Set CTI/CDR information.
- Add new recording boards (in case of TDM).
- Define devices and map them to recording channels.

- Create new groups using NICE Perform eXpress user administration application.
- Define group attributes for all agents (there is no need to define other agents attributes as they were already migrated). In case groups were not defined, agents will be associated with the NICE Perform eXpress root group.
- For none agent users (users without valid agent identity information), set new role.

6. Migration validation

The system is now fully functional, recording and archiving all devices. At this phase, the user should validate that migration was completed using the following steps:

- Search and play new interactions recorded after migration process.
- Search and play interactions recorded on legacy system prior to migration process.
- Retrieve interactions from all storage devices (Storage Center, offline devices), later search and play retrieved interactions.

Offline / Online Data Migration

Legacy systems use two main methods for audio archiving

1. Storage Center
2. Offline storage such as DVD RAM or DDS3

If Storage Center is used and the data is located on a network file server, the migration is done automatically and a user can search and play interactions from the Storage Center. However, if the storage was located locally on the legacy system server, the users should copy the data to a network file system, and prior to the migration, make sure to configure the new storage path. During the migration process, a new path is set to all the interactions, and the system is ready for searching and playing the interactions located in the new Storage Center path.

Offline storage devices - there are three different scenarios according to the different devices and media used by the legacy system:

1. DAT72, DDS4 and DDS3 – these tapes are compatible with DAT72 device, which is fully supported in new system.
2. DVD RAM, DVD R/W – these medias are not supported by the new system. To support these media the following should be done:
 - Copy each tape to a dedicated location on a network File Server.
 - Use the new NICE Perform eXpress Archive and Retrieve tool to retrieve information from the file server back to the Logger.

- Search and play retrieved interactions.
3. AIT I – this media types are not supported by the new system. For supporting this media, the following should be done:
- Install USB DAT72 on legacy system. DAT72 should be ordered separately from devices required for NICE Perform eXpress.
 - Use Novastor TapeCopy tool (COTS tool that should be ordered) to convert old tapes to DAT72 tapes.
 - NOTE: AIT2 and AIT I tapes that are larger than 36 GB will not be migrated.
 - Retrieve interactions from migrated DAT72 media.
 - Search and play retrieved interactions.

Appendixes

Appendix A – Audit Trail Messages

Security and Administration

Audit Group	Message
Security	User {0} logged in
	User {0} logged out
	User {0} login attempt failed
	User {0} changed password
	User {0} account locked by system
	User {0} disabled user named {1} account
	User {0} enables user named {1} account
	User {0} updated license. New SN: {1}
User Administrator	User {0} added new user. New user details: name {1}, role {2}
	User {0} deletes user named {1}
	User {0} changed role of user {1} from {2} to {3}
	User {0} added new group named {1}
	User {0} deleted group named {1}
	User {0} updated user named {1}
	User {0} updated group named {1}
	User {0} added user named {1} to group named {2}
	User {0} removed user named {1} from group named {2}

	User {0} reset password for user named {1}
	User {0} changed User Administration Settings. Details: {1}
	User {0} updated user role {1}

Playback and Channel Monitoring

Audit Group	Message
Playback	User {0} saved call ID {1}. Call details: start time {2}, agent {3}
	User {0} started playback of call ID {1}. Call details: start time {2}, agent {3}
	User {0} started playback on channel ID {1}. Details: channel name {2} start time {3}
Channel Monitor	User {0} started monitor on channel ID {1}, channel named {2}
	User {0} changed channel configuration. Details: {1}

Applications

Audit Group	Message
Form Designer	User {0} created new evaluation form {1}
	User {0} modified form {1}
	User {0} deleted evaluation form {1}
	User {0} installed evaluation form {1}
	User {0} enabled form {1}
	User {0} disabled form {1}
Evaluations	User {0} created new Agent Evaluation

	User {0} deleted evaluation with ID {1} on agent {2}
	User {0} modified evaluation with ID {1} on agent {2} on {3}. Old score is {4}, new score is {5}

Configuration and System setting

Audit Group	Message
Monitor	User {0} acknowledged trap. Trap details: {1}
	User {0} performed system test
Configuration	User {0} applied configuration
Configuration - Storage	User {0} configured storage parameters {1}
	User {0} updated storage and archive parameters. Storage name: {1}
	User {0} configured ESM device. ESM parameters: {1}
	User {0} updated ESM device. ESM parameters: {1}
	User {0} deleted ESM device. ESM parameters: {1}
Configuration - Recording	User {0} added new recording package {1}
	User {0} deleted recording package {1}
Configuration - Recording - switch	User {0} added new switch. Switch Name: {1}
	User {0} updated switch parameters. Switch Name: {1}
	User {0} deleted switch. Switch Name: {1} }
Configuration - Recording - capture	User {0} added capture unit. Details: {1}
	User {0} deleted capture unit. Details: {1}
	User {0} updated capture unit. Details: {1}

Configuration - Recording - devices	User {0} added devices. Device ID: {1}
	User {0} deleted devices. Device Id {1}
Configuration - Recording - channel mapping	User {0} updated channel mapping. Channel ID: {1}
Configuration – Screen	User {0} enabled screen recording
	User {0} disabled screen recording
Configuration – QM Rules	User {0} added new quality management rule. Rule Name: {1}
	User {0} updated quality management rule. Rule Name: {1}
	User {0} deleted quality management rule. Rule Name: {1}
Configuration – Business data	User {0} added business data field {1}
	User {0} updated business data field {1}
	User {0} deleted business data field {1}
System Management – Client Management	User {0} changed Screen Agent configuration
Backup	User {0} enabled backup device
	User {0} disabled backup device
Retention	User {0} requested extend retention for Interaction ID {1} with new expiration date {2}
	User {0} added new retention rule. Rule Name: {1}
	User {0} updated retention rule. Rule Name: {1}
	User {0} deleted retention rule. Rule Name: {1}
Updates	User {0} installed SW update. Details: {1}

Appendix B – Monitored Traps

Module	Trap Message	Type
Recording	The system detected logger software Error. The loss of recorded data is probable.	Error
	The system detected logger hardware error. The loss of recorded data is probable.	Error
	The system detected logger line-connectivity error. The loss of recorded data is probable. It is recommended to check cables connectivity.	Error
	The system detected a screen recording software error. The loss of screen recorded data is probable.	Error
Archiving	Error in archiving recorded data. The system detected that not all recorded information is being archived.	Error
	Error in archiving recorded data. The system detected failures in archiving some of the recorded data.	Error
	Error in archiving recorded data. The system detected insufficient archiving rates.	Error
CTI	Error in collecting metadata on recorded data. The system detected that call were recorded with missing CTI information.	Error
DB	The system detected that a DB backup operation has failed.	Error
	DB related error. The system detected a general DB error.	Error
Backup	The system detected backup device hardware error.	Error
	The system detected backup device software error.	Error
	The system detected that a manual maintenance action is required on the backup device.	Info

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