OAISYS and ShoreTel: Call Recording Solution Configuration

An OAISYS White Paper

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Introduction

OAISYS provides feature-rich, tightly integrated call recording solutions for the ShoreTel UC system. Our Talkument and Tracer software solutions are designed to provide superior reliability and flexibility while seamlessly integrating with the ShoreTel communications infrastructure.

This document will describe, discuss and demonstrate the options available for integrating OAISYS call recording solutions with the ShoreTel UC system, delivering the unique combination of call recording functionality and resource efficiency customers require. The seven diagrams included in this white paper cover trunk integration, passive Real-Time Protocol (RTP) Capture and active VoIP recording.

OAISYS products offer tight integration with the ShoreTel UC system. For example, OAISYS solutions are capable of selectively recording calls using Computer Telephony Integration (CTI). This is accomplished through the use of ShoreTel TAPI technology. ShoreTel uses TAPI to combine the capabilities of the UC platform with computer applications. This allows for sophisticated call and PBX control functionality. OAISYS leverages ShoreTel TAPI technology to provide a full set of call information that can be used for call recording triggers, permissions and searches.

ShoreTel's TAPI-WAV functionality allows software applications like OAISYS recording systems to receive a full copy of the audio stream directly from a ShoreTel trunk gateway. This active approach to audio connectivity preserves the customer's ability to deploy encrypted audio streams to edge devices and delivers a centralized connection point regardless of the edge device distribution.

OAISYS Recording Servers and Appliances seamlessly operate in high volume and geographically distributed environments while providing a single image for ease-of-use and administration. Any number of servers and appliances can operate together while hosting up to 1,500 connections in a single database.

These guidelines will assist you in planning the installation of an OAISYS recording solution. While this document describes specific installation configurations, it should not be considered a comprehensive list, as OAISYS recording solutions provide tremendous flexibility to address a myriad of configuration requirements. Continue reading to discover the right network configuration to maximize your return on investment while meeting your operational, customer satisfaction and compliance requirements.

ShoreTel Networks

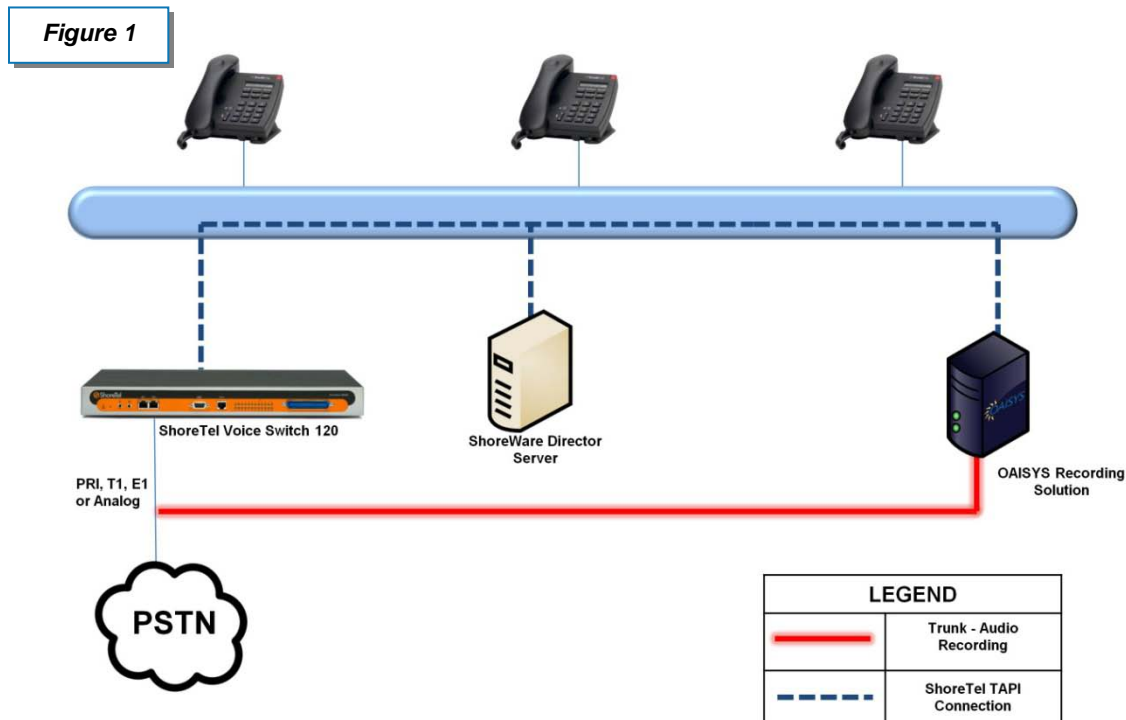## Trunk Side Recording

Organizations requiring cradle-to-grave call recording, which means capturing everything the outside party experiences (including an automated attendant, IVR, ACD queuing and voice messaging), will benefit from trunk side recording. Trunk side recording is also potentially advantageous to organizations wanting only to record external calls (i.e. calls with outside parties) that have many more telephones deployed than connections to the public telephone network.

OAISYS recording solutions integrate with PRI, T1, E1, analog and SIP trunks. By interpreting trunk signaling, solutions in this environment are able to reliably record each desired trunk-based call. Contrasting this with the active TAPI-WAV connection discussed in a later section of this white paper, this connection method offers more reliable recording and is preferred for organizations whose recording requirements are mission-critical.

All TDM trunks (PRI, T1, E1 and analog) can be monitored using a TAPI connection to the ShoreTel UC system. In these environments, the OAISYS software will be aware of trunk delivered data including the outside party number, inbound dialed number (DID or DNIS) and call direction as well as each telephone device that joins a call and for how long. It uses this information to start or stop recording, assign access permissions, deliver search results and trigger workflow actions like live monitoring sessions. This information is also used to enable desktop integrated capabilities such as desktop video recording, user call tagging and CRM application integration.

Figure 1 below depicts a single location TDM trunk side integrated recording environment.

Figure 1

TAPI monitoring **is not** available for SIP trunks from the ShoreTel UC system. OAISYS recording solutions can be used to integrate directly with SIP trunks, but will not be able to offer the features available with TAPI integration. Users of this configuration will have access to outside party information, call direction, call duration and dialed inbound number (DID or DNIS) as the basis of starting and stopping recording, access permissions and search criteria.

Figure 2 below depicts a single location SIP trunk side integrated recording environment.

Figure 2

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Trunk - Audio Recording
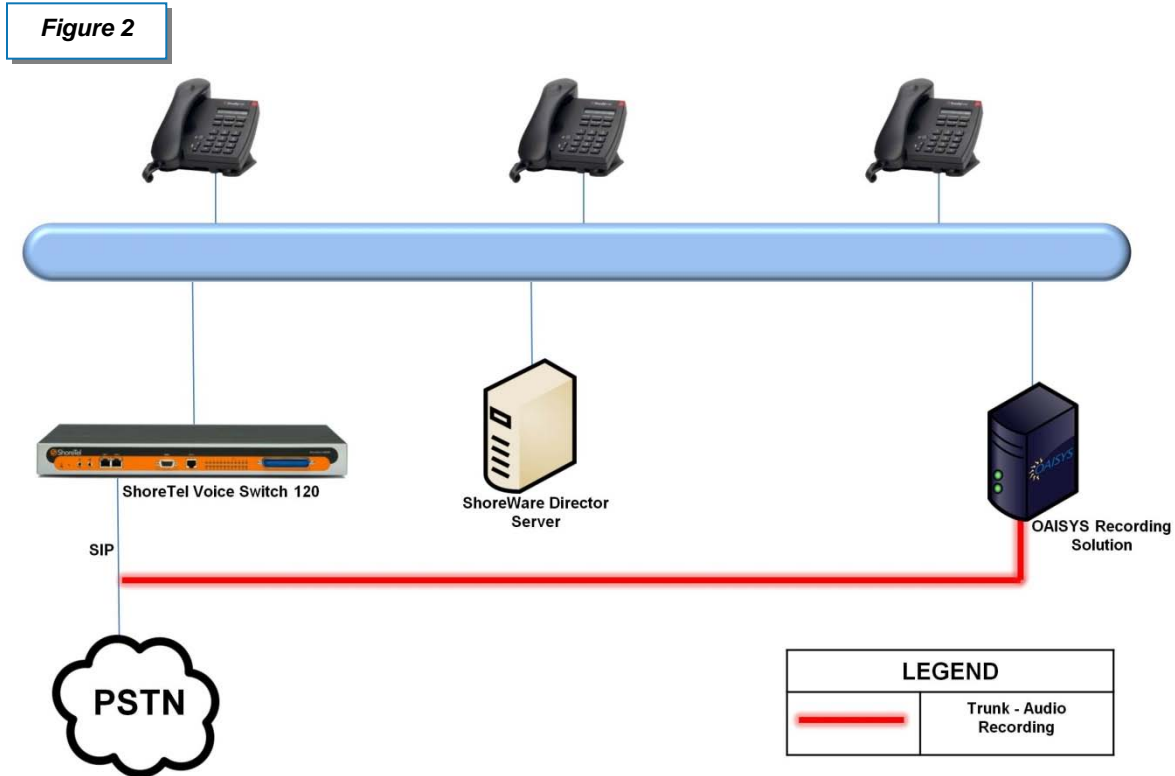
In any trunk side integrated environment, an OAISYS Recording Appliance or Server is required at each location terminating trunks on which calls will exist that should be recorded. In these environments, the OAISYS solution seamlessly networks up to 1,500 total connections providing a single image for administration and user access.

Figure 3 depicts a two location TDM trunk side integrated recording environment.

Figure 3
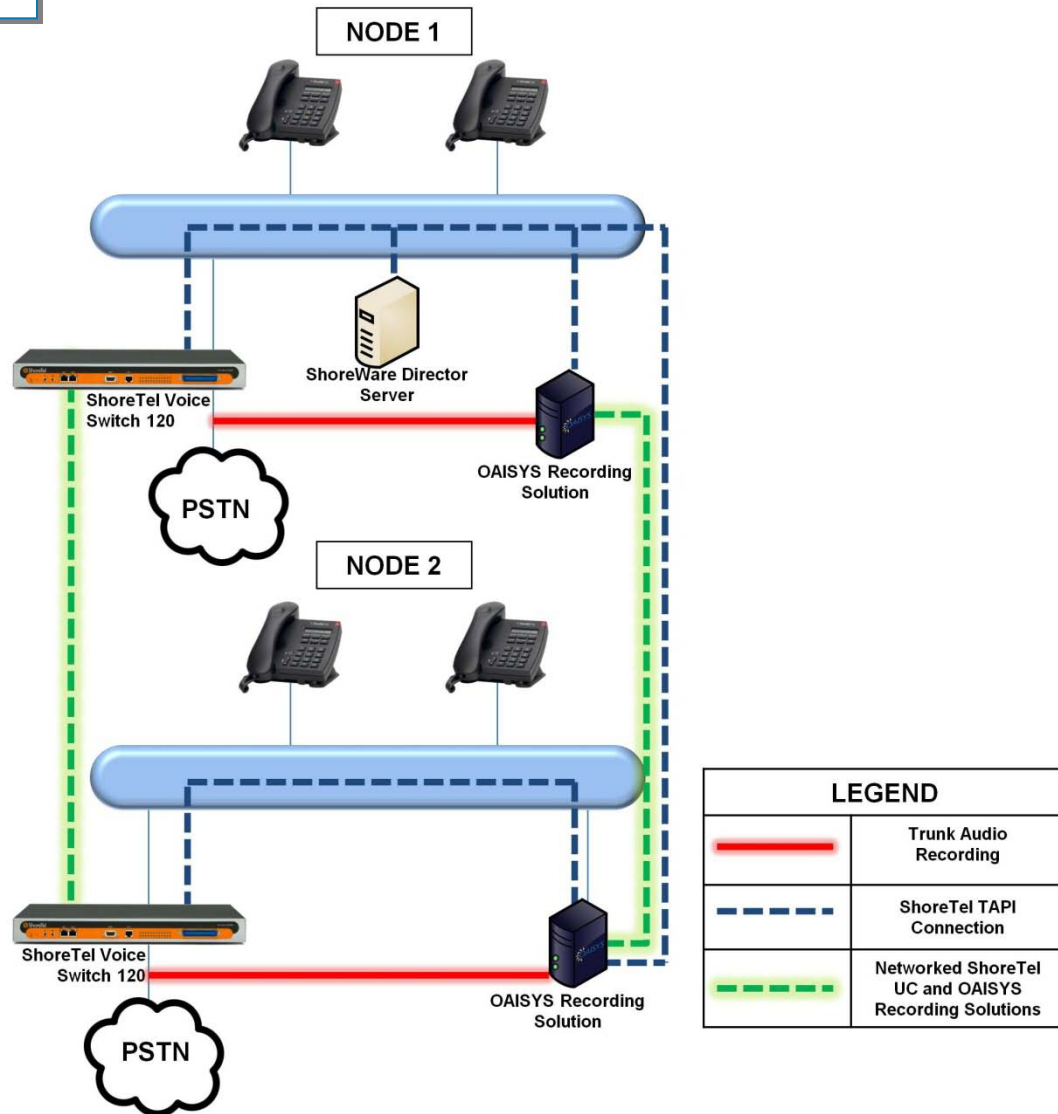
Station Side Recording

Businesses needing to record calls only while active on selected stations connected to a ShoreTel UC system can use station side recording integration. The OAISYS Talkument and Tracer solutions can connect directly to IP station traffic using passive RTP capture. This method requires the OAISYS Recording Appliance or Server be connected to an Ethernet port configured to echo all IP traffic to or from the station gateway ports of the ShoreTel UC system that manage the target stations. *This method is not supported when encrypting voice traffic on the LAN.*

All stations can be monitored using a TAPI connection to the ShoreTel UC system. In these environments, the OAISYS software will be aware of trunk delivered data including the outside party number, inbound dialed number (DID or DNIS) and call direction as well as each telephone device that joins a call and for how long. It uses this information to start or stop recording, assign access permissions, deliver search results and trigger workflow actions like live monitoring

sessions. This information is also used to enable desktop integrated capabilities such as desktop video recording, user call tagging and CRM application integration.

Figure 4 shows IP station integration between an OAISYS Recording Solution and a ShoreTel UC system in a single location.

Figure 4
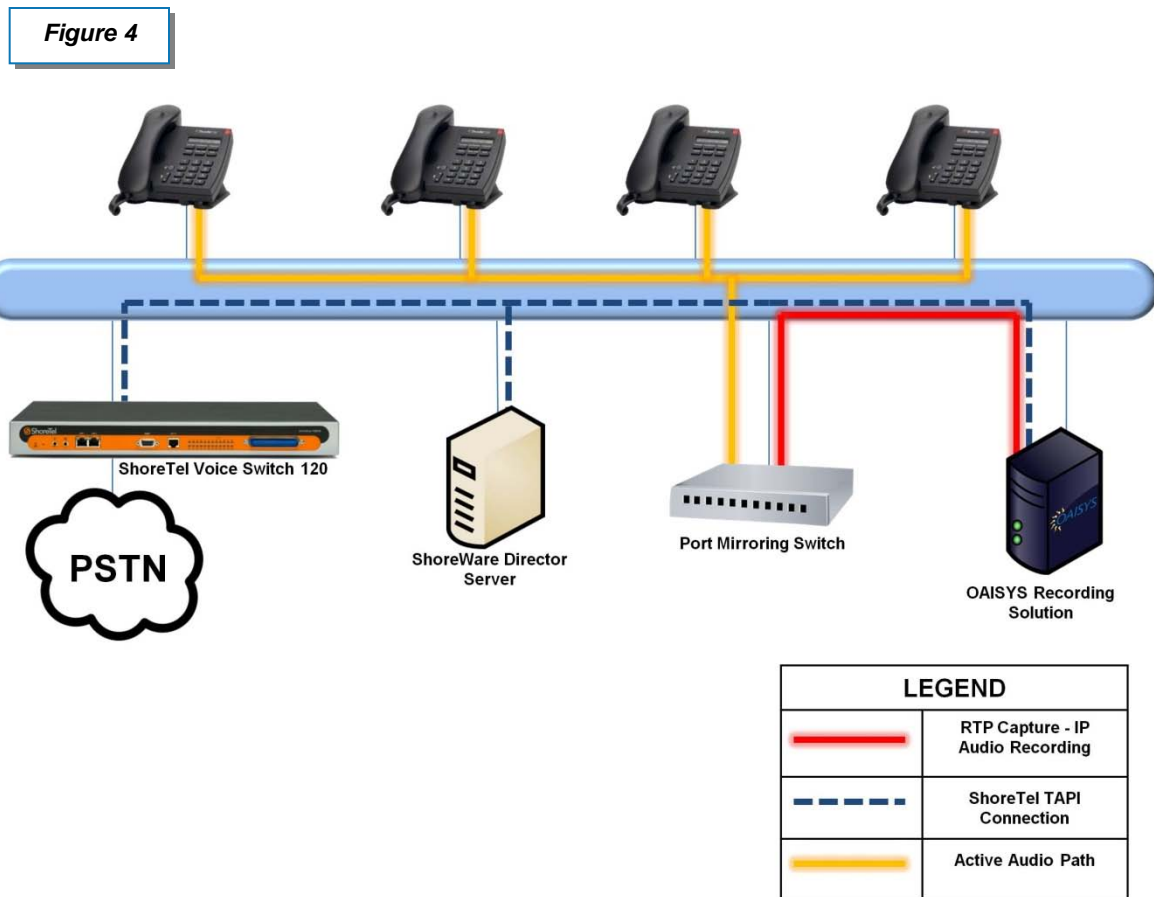
OAISYS call recording systems can be deployed using station side connectivity across a distributed ShoreTel UC network by locating an OAISYS server or appliance in each location to tap into the local IP network. In these environments, the OAISYS solution seamlessly networks up to 1,500 total connections providing a single image for administration and user access.

Figure 5 provides a diagram of a two site ShoreTel network with an OAISYS Recording Solution connected via RTP capture.

Figure 5
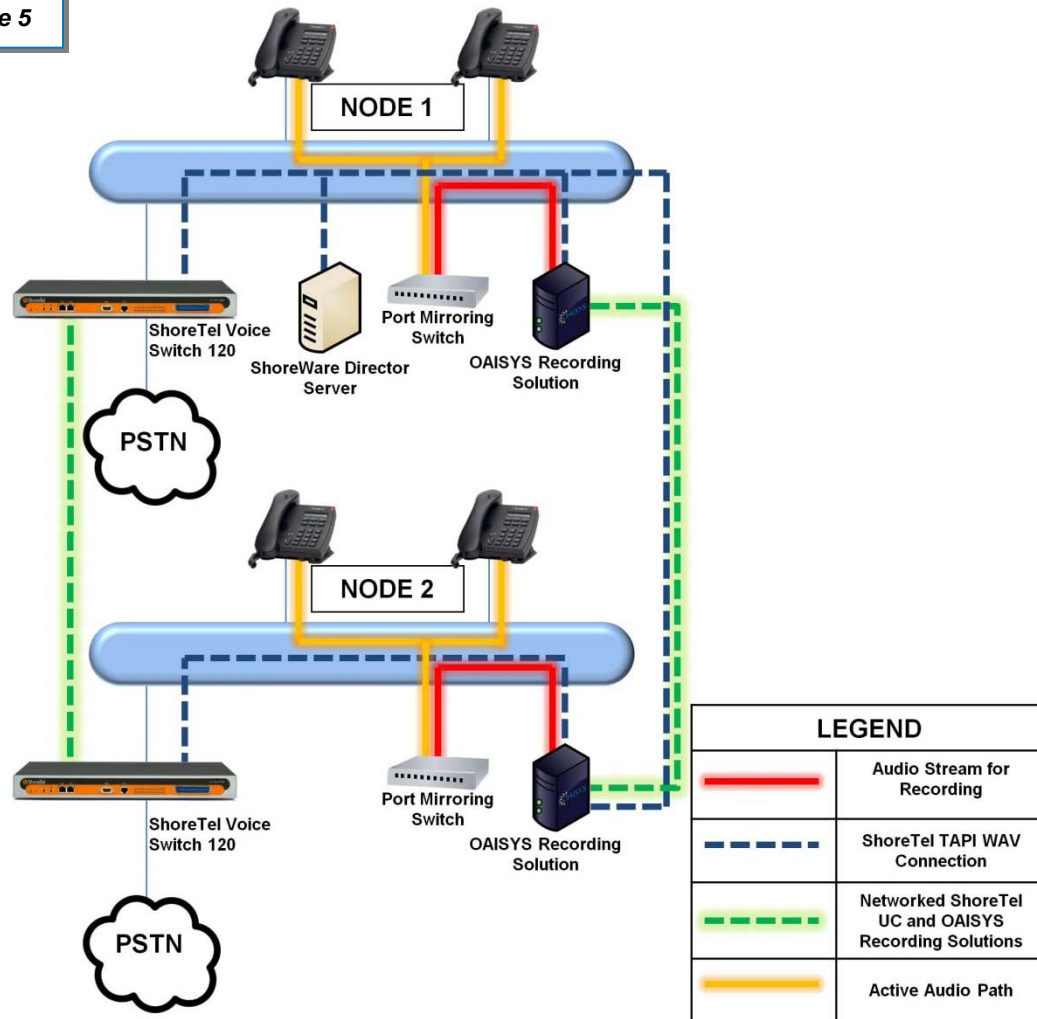
Active TAPI-WAV Recording

Organizations needing to record calls connected to designated telephone stations can take advantage of the ShoreTel UC system's active TAPI-WAV feature. This allows OAISYS call recording software to request a copy of the audio media for any given call direct from the ShoreTel trunk gateway, eliminating the need for special IP network configurations (e.g. port mirroring) and enabling seamless interoperability with encrypted voice communications.

All stations **must** be monitored using a TAPI connection to the ShoreTel UC system. The only notification to the OAISYS software that a call is in progress in a TAPI-WAV integrated environment is the TAPI CTI connection. Any disruption to TAPI service will disrupt call recording services.

In this environment, the OAISYS software will be aware of trunk delivered data including the outside party number, inbound dialed number (DID or DNIS) and call direction as well as each telephone device that joins a call and for how long. It uses this information to start or stop recording, assign access permissions, deliver search results and trigger workflow actions like live monitoring sessions. This information is also used to enable desktop integrated capabilities such as desktop video recording, user call tagging and CRM application integration.
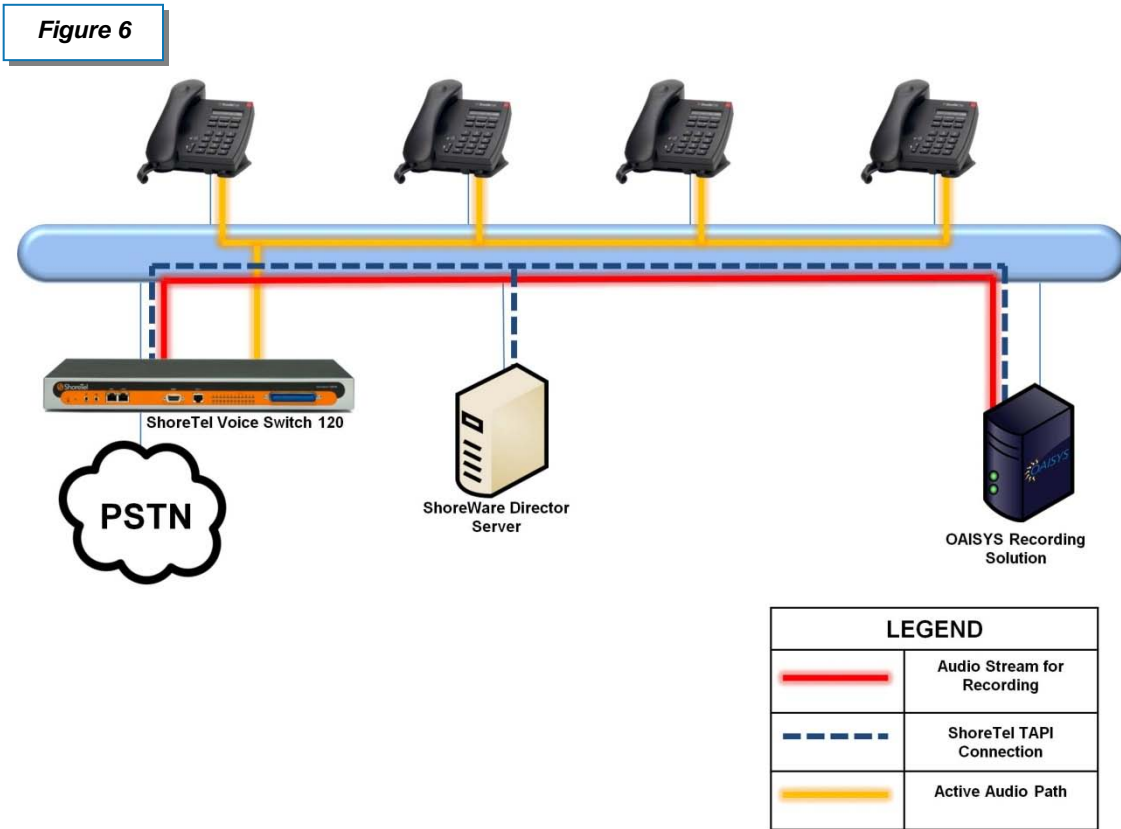
Figure 6 shows TAPI-WAV integration between an OAISYS Recording Solution and a ShoreTel UC system in a single location.

Figure 6

A single OAISYS software solution can be deployed to record calls via active TAPI-WAV integration in a distributed ShoreTel network. OAISYS solutions are available with capacity up to 200 total connections in a single server. The ShoreTel UC system uses route points to deliver TAPI-WAV audio streams. Each route point has a maximum capacity of 200 active audio streams.

Figure 7 displays a two site ShoreTel UC network using a single OAISYS server to record calls network wide.

Figure 7

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——— (red)	Audio Stream for Recording
– – – (blue dashed)	ShoreTel TAPI WAV Connection
– – – (green dashed)	Networked ShoreTel UC and OAISYS Recording Solutions
——— (orange)	Active Audio Path
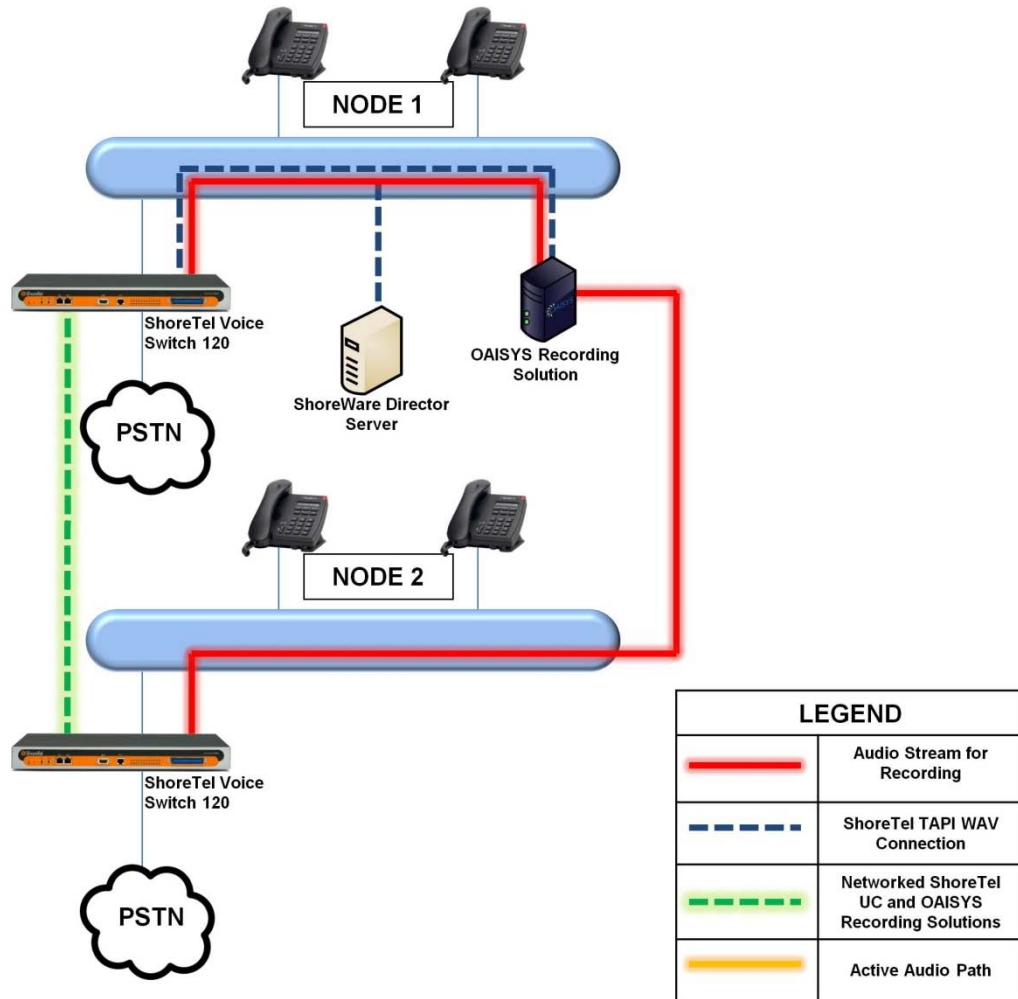
OAISYS Recording Solution Networking

When recording is required for multiple locations, OAISYS recording systems can be seamlessly networked to provide a single image for live and auto call monitoring functionality as well as for call recording search, playback and sharing. In addition, all administrative tasks for networked OAISYS solutions can be performed through a single interface, and this does not require any special licensing from OAISYS. Recordings from each location can be stored locally at each site, at one central location or on a common network-attached storage (NAS) unit or storage area network (SAN).

OAISYS Hardware Configurations and Performance

The Tracer and Talkument applications are deployed via recording base systems, which include off-the-shelf OAISYS Recording Appliances and built-to-order OAISYS Recording Servers. This full range of hardware configuration options ensures an appropriate solution deployment for any ShoreTel customer, whether a small-to medium sized business or multi-site large enterprise.

The following section outlines the various OAISYS hardware configurations available, their respective call storage and connection capacities and associated resource profile testing and results. This information will prove useful for identifying the appropriate OAISYS recording solution configuration to meet the unique requirements of any organization.

OAISYS Recording Servers and Appliances can be networked to reach a maximum capacity of 1,500 ports. OAISYS hardware configurations with associated call storage and port capacities are summarized in the following table.

Call Storage and Port Capacities

OAISYS Recording Base System	Description	Port Maximums (Combination of Trunks, Stations, or IP Ports)
Appliance	PC & Windows 7 Pro OS 1U chassis with rack mount kit ~ 56,000 hours online storage	50 connections
Standard	PC & Windows 7 Pro OS DVD R/W Drive Mid-Tower Case ~ 56,000 hours online storage	50 connections
Standard with RAID 1	PC & Windows 7 Pro OS DVD R/W Drive Mid-Tower Case RAID cont. & redundant disk drives ~ 56,000 hours online storage	50 connections
Advanced	PC & Windows 7 Pro OS DVD R/W Drive Rack Mount Cabinet ~ 100,000 hours online storage	100 connections
Advanced with RAID1	PC & Windows 7 Pro OS DVD R/W Drive Rack mount cabinet RAID cont. & redundant disk drives ~ 100,000 hours online storage	100 connections
Advanced PLUS	PC & Windows 2008 Server OS DVD R/W Drive Rack Mount Cabinet Dual Power Supplies ~ 200,000 hours online storage	200 connections (100 digital stations due to PCI port density)
Advanced PLUS with RAID1	PC & Windows 2008 Server OS DVD R/W Drive Rack Mount Cabinet Dual Power Supplies RAID cont. & redundant disk drives ~ 200,000 hours online storage	200 connections (100 digital stations due to PCI port density)

**OAISYS Screen Recording Server supports up to 96 simultaneous screen recordings

OAISYS Recording Server Base Systems

Standard	Standard w/RAID 1	Advanced	Advanced w/ RAID 1	Advanced PLUS	Advanced PLUS w/ RAID 1
Dual Core CPU	Dual Core CPU	Dual Core CPU	Dual Core CPU	Dual Core CPU	Dual Core CPU
320GB SATA HDD	2 x 320GB SATA HDD	320 GB SATA HDD 500 GB SATA HDD	2 x 320 GB SATA HDD 2 x 500 GB SATA HDD	320 GB SATA HDD 1 TB SATA HDD	2 x 320 GB SATA HDD 2 x 1 TB SATA HDD
2GB RAM	2 GB RAM	2 GB RAM	2 GB RAM	4 GB RAM	4 GB RAM
Other: Windows 7 Pro OS, SQL Server 2005 Express	Other: Windows 7 Pro OS, SQL Server 2005 Express	Other: Windows 7 Pro OS, SQL Server 2005 Express	Other: Windows 7 Pro OS, SQL Server 2005 Express	Other: Windows Server 2008 OS, SQL Server 2005 Standard Edition, fault tolerant power supply	Other: Windows Server 2008 OS, SQL Server 2005 Standard Edition, fault tolerant power supply

- All Server Base Systems feature DVD+RW drives.
- Standard and Standard w/ RAID 1 are desktop servers, and all others are rack-mount servers that include rails and mounting hardware.
- All Advanced Base Systems come w/ 4 full PCI slots and 2 PCI express slots.
- Standard Base Systems come w/ 3 full PCI slots and 2 PCI express slots.
- Advanced RAID Base Systems have an Adaptec RAID controller board that takes up one of the PCI express slots.

Load Test Results

Test Configuration:
- SQL 2005
- Intel Core 2 Duo Processor 2.53 GHz
- RAM: 2GB
- SQL Memory: Approximately 1.3 GB
- Note: The test results below resulted in less than 50% consumption of CPU.

The following load tests have been deemed appropriate for non-CTI mode and CTI mode. The "Standard Load" was determined to be approximately 920 calls per hour per full T1 span of 24 channels (these calls vary in call duration between 21 and 251 seconds with 4 seconds of idle time between calls). This load test simulates an extremely busy call center environment.

The system must experience 50% or less of the maximum load time for at least one hour per day so that it can perform the maintenance cycle. If the customer cannot meet this requirement, an alternate configuration may be necessary.

- **Standard OAISYS Recording Server**: 50 ports maximum, not to exceed 1,840 calls per hour.
- **Advanced OAISYS Recording Server**: 100 ports maximum, not to exceed 3,679 calls per hour.
- **Advanced Plus OAISYS Recording Server**: 200 ports maximum, not to exceed 7,358 calls per hour.

The following table applies to the total number of ports in the system. The Tracer network can be made up of one or more Tracer systems until it reaches the maximum number of ports. The total number of ports the Tracer network can reach is 1,500 ports.

Ports	Tracer System (at least one)	Database	Dedicated SQL Server Required?	Max Call Records
1-48	Standard	SQL Express	No	1 million
49-96	Advanced	SQL Express	No	1 million
97-384	Advanced Plus	Full SQL Database	No	2 million
385-1500	Advanced Plus	Full SQL Database	**Yes**	2 million

About OAISYS

OAISYS is a leading developer of call recording and contact center management solutions for a wide range of organizations, from small- to medium-sized businesses to multi-site large enterprises. The OAISYS voice documentation and interaction management solutions help companies within a variety of industries—including healthcare, automotive dealerships, financial services, and the public sector—attract and retain customers by digitally capturing phone-based interactions for simple retrieval, playback and management. Compatible with leading business communications systems, OAISYS Tracer and Talkument applications help companies improve risk management, quality assurance, customer retention, dispute resolution, regulatory compliance and other critical business concerns. OAISYS is headquartered in Tempe, Arizona, and OAISYS Limited is located in Cambridge, England.

To learn more about OAISYS, Tracer and Talkument, please visit our website at www.oaisys.com. To schedule a live demonstration, please email se@oaisys.com or call us at 888.496.9040.