

uReach Oryx

Support and Offerings from ZT Technology Solutions

Our select team of engineers was handpicked by our ZT staff to provide our customers with the absolute highest level of 24/7/365 software and hardware support. The team consists of highly seasoned software sustaining, hardware sustaining, and TAC employees with each over 10 years of Oryx support experience. We have material in stock and ready to ship overnight and maintenance plans available for every size system and budget. We offer on site assistance and Tier 2 support training.

Platform

ORYX™ is an open standards-based platform that integrates service logic, voice resources, and programmable switching into a reliable network solution. At the time of deployment, it utilized some of the industry's most advanced programmable protocol tools that offered the best time-to-market advantage for SS7 and R2 networks, as well as networks such as 3G and GPRS.

Built upon a scalable and highly reliable architecture, the ORYX™ platform integrated seamlessly into any communications network, such as central office, wireless telephone network, IP network and with existing point solutions such as voice mail, fax mail and e-mail. ORYX™ offers the widest variety of intelligent applications that enable carriers to create leading calling and messaging services-all on a single platform. Some of the benefits of the platform included but is not limited to the following:

- ◆ Open architecture for scalability to millions of subscribers
- ◆ Multiple application support on a single platform for flexibility and differentiation
- ◆ Multiple user interfaces for ease of use and customer satisfaction
- ◆ Real-time call-rating for superior system performance

ORYX is a complete system that provided digital switching with advanced voice processing technologies in a distributed environment. Its high-end architecture is:

- ◆ Scalable from 2 to 96 spans in a single switching matrix
- ◆ Based on distributed resource processing (multi host)
- ◆ Supports global SS7 variants and ISDN Signaling
- ◆ Supports optional shared database server
- ◆ Voice, fax, and data storage with different levels of redundancy
- ◆ Open interfaces supporting billing, network management, and provisioning

Architecture

The architecture of the ORYX™ platform incorporates components that are off-the-shelf implementations of existing technologies from leading industry vendors. Original designers created value by writing all of the application software and integrating and supporting all of the hardware suppliers' components. All of the applications can be implemented on the same platform with simple configuration changes. The system also enjoys traditional benefits of integrated switching such as least cost routing and fault tolerance. Combined, these capabilities reduce the cost of operations by eliminating redundant hardware and allowing centralized network management.

Hardware and Software

The hardware in the ORYX™ platform was designed for the highest level of reliability and serviceability with many hot swappable, redundant components. These highly available options provide a complete fallback for critical system components in the event of a hardware or software failure. ORYX™ provides the high availability you need to sustain the level of service that your subscribers demand.

The ORYX™ software can be centralized or distributed to manage services and to access stored data. Standard with the platform is a resident database supporting millions of subscribers designed to grow to a global network of databases and ORYX™ servers. This clustering architecture allows for standardized, global services which are accessible from any device anytime anywhere in the world.

Applications

The ORYX family of applications offered an extensive set of intelligent interactive features that could be deployed quickly, increasing revenue from new offerings and attracting new customers. Service providers could create their own unique prepaid calling, enhanced messaging, and unified communications, all on a single platform, and accomplish flexibility, differentiation, customer-friendly services, as well as reach new niche markets.

With the ORYX solution, service providers could simply build upon existing services to create new and profitable customized calling and enhanced messaging services. The available applications allowed for many innovative ways of packaging offerings for different target markets. Calling features may be added to basic messaging services, prepaid calling may be combined with SMS and voice messaging, or calling cards may be used for inbound and outbound calling. These are only a few examples from a multitude of creative solutions that not only meet the demands of our customers' current subscribers, but will also attract new subscribers.

Some of the services that carriers can create with ORYX:

Enhanced Calling

- Debit and prepaid calling cards
- Prepaid wireless and residential calling
- Conferencing on the fly
- International calling
- VPN calling

Enhanced Messaging

- Voice messaging
- Fax messaging
- Group messaging
- Automated attendant

Unified Communications

- Unified messaging with call back
- Message conversion and notifications
- Personal assistant
- Web-based message management

Web-based Message Management

This unique ORYX™ web-based user interface enables subscribers to manage calls and messages from any web-enabled device, such as PC or PDA, anytime, anywhere. With a simple mouse-click, subscribers can listen to voice messages, view and print faxes, place calls, manage speed dial lists, change their telephone numbers as well as their availability, and send voice or fax messages as e-mail attachments to any Internet-based e-mail address.

*** – ZT Technology Solutions is an independent company and has no affiliation with Genband uReach Oryx™.**

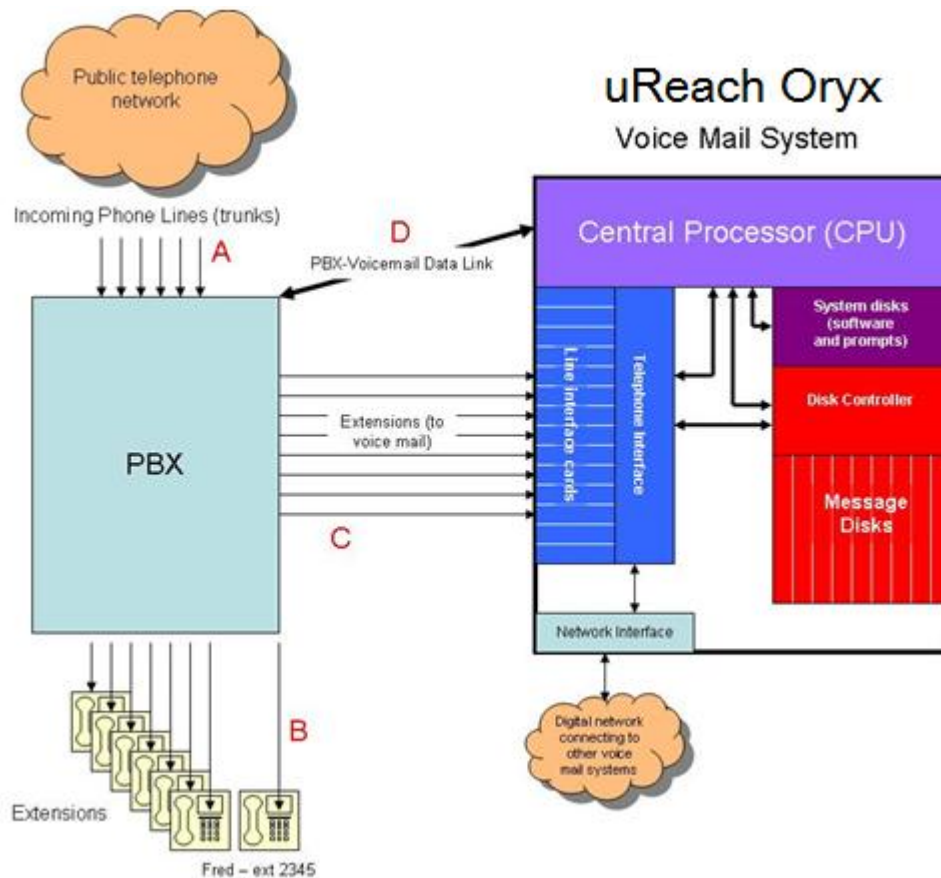
How Voicemail Works

This section describes how the original style, standalone, voicemail system worked with a corporate PBX. The principle is the same with Central Office Switches (CO Switches) or Mobile Telephone Switching Office (MTSO). More modern voice-mail systems work on the same principle, but some of the components may be shared with other systems, such as email systems.

Voicemail systems contain several elements shown in the figure below:

- A central processor (CPU) which runs the operating system and a program (software) that gives the system the look-and-feel of a voicemail system. This software includes thousands of pre-recorded prompts that "speak" to the users as they interact with the system;
- Disk controller and multiple disk drives for message storage;
- System disks which not only include the software above, but also contain a complete directory of all users with pertinent data about each (name, extension number, voice-mail preferences, and pointers to each of the messages stored on the message disk that belong to them);
- Telephone interface system that enables many phone lines to be connected to it.

The drawing below shows how the voicemail system interacts with the PBX. Suppose an outside caller is calling Fred's extension 2345. The incoming call comes in from the public network (A) and comes into the PBX. The call is routed to Fred's extension (B), but Fred doesn't answer. After a certain number of rings, the PBX stops ringing Fred's extension and forwards the call to an extension connected to the voicemail system (C). It does this because PBXs are generally programmed to forward busy or unanswered calls to another extension. Simultaneously the PBX tells the voicemail system (through signaling link D) that the call is forwarding to voice-mail is for Fred at extension 2345. In this way, the voicemail system can answer the call with Fred's greeting.



*Reference from [Wikipedia](https://en.wikipedia.org/wiki/Voice_mail)

There are many microprocessors throughout the system since the system must handle large amounts of data and it is unacceptable to have any wait times (for example, when the system is recording or playing your message, it's unacceptable if the system stops recording momentarily like computers often do while accessing large files).

When Fred's extension forwards to the voicemail system, the Telephone Interface detects ringing. It signals to the Central Processor (CPU) that a call is coming in. The CPU simultaneously receives a signal on the PBX-Voicemail Data Link (D) telling it that extension 2345 is being forwarded on ring-no-answer to the specific extension that is now ringing. The CPU directs the Telephone Interface (which controls the line interface cards) to answer the call. The CPU's program realizes that it's a call for Fred so it looks up Fred's greeting immediately and directs the Disk Controller to start playing it to the caller. It also plays some system prompts instructing the caller what comes next (for example, "When you have finished recording, you may hang up or press '#' for more options"). All "talking" to the caller is done through prompts that are selected by the CPU according to the program stored in the voicemail system. The CPU selects the prompts in response to the keys the caller presses.

The caller's message is digitized by the Telephone Interface system and transmitted to the Disk Controller for storage onto the Message Disks. Some voicemail systems will scramble the message for further security. The CPU then stores the location of that message in the System Disk inside Fred's mailbox directory entry. After the caller hangs up and the message has been stored, the CPU sends a

signal to the PBX through the link (D) instructing the PBX to turn on the message waiting light on Fred's phone.

When Fred comes back to his desk and sees the light on his phone, he calls a designated extension number for the voicemail system (an actual extension number assigned to the lines in "C" in the figure above).

Again the Telephone Interface alerts the CPU that a call is coming in on a particular line, but this time the signaling from the PBX-Voicemail Data Link (D) indicates that Fred is calling directly, not being forwarded. The CPU directs the Telephone Interface to answer the call.

Since the CPU "knows" it is Fred (from the signaling on the Data Link D), it looks up Fred's information on the System Disk, specifically his password. The CPU then directs Disk Controller to play a log-on prompt to the user: "Please enter your password." Once the password is entered (via Touch-tones), the CPU compares it to the correct one and, if entered correctly, allows Fred to continue.

The CPU then determines (from Fred's directory entry) that Fred has a new message. The CPU then presents Fred his options (e.g., "You have a new message. To listen to your new message, press 1; to record a message, press 2" etc.) The options are presented by the CPU directing the Disk Controller to play prompts, and the CPU listens for Touch-tones from Fred. This interaction of playing prompts and responding with Touch-tones enables Fred to interact with the voicemail system easily.

If Fred presses 1 to listen to his message, the CPU looks up the location of Fred's new message in his mailbox directory (on the System Disk), and directs the Disk Controller to play that message. The Disk Controller finds the message on the Message Disks, and sends the data stream directly to the Telephone Interface. The Telephone Interface then converts the data stream to sound and plays it to Fred through the Line Interface Card which Fred is connected to.

Playback controls (like rewind, pause, fast forward, changing volume, etc.) are all input via Touch-tones, are "read" by the CPU, and the appropriate actions are taken based on the stored program in the system. For example, if Fred wants to pause message playback, he might press 2. Since the CPU is constantly listening for Touch-tones from Fred, his command causes the CPU to direct the Disk Controller to stop playing the message. A variety of playback controls and options are available on most sophisticated voice-mail systems so that users can control message playback, store messages in archives, send messages to groups, change their preferences, etc.

The better designed voicemail systems have a user-friendly interface with clear and meaningful prompts so the interaction with the voicemail system is quick and easy.