



ShoreTel RFP: Q&A

1.1 System Architecture

Question

1.1 Describe your systems VoIP Design/Architecture and list the advantages and disadvantages to this Design/Architecture (i.e. distributed vs. centralized, IP only vs. IP & TDM.) Please include any diagrams, screen shots, or illustrations that will help visualize the proposed system's architecture and user interfaces.

Answer

ShoreGear Voice Switches

The ShoreGear voice switch is the foundation on which ShoreTel's architecture rests. The ShoreGear voice switch is the PBX. It is the component of ShoreTel that sets up and tears down calls: the call manager. The ShoreGear switch is the brains, but it is also the brawn. The ShoreGear switches operate on VxWorks, a real-time, embedded operating system. This is what allows the ShoreTel system to provide 99.999% up time (also discussed in the subsequent section). This is the same operating system found in heart pace makers and the lunar module.

These ShoreGear switches come in different sizes: ShoreGear-120/24, ShoreGear-60/12, ShoreGear-40/8, ShoreGear-T1 and ShoreGear-E1. These boxes are analogous to line cards in a PBX, but unlike a PBX, there is no chassis to restrict growth, and the individual switches handle their own call control. It is the line card, chassis and call processor all in one redundant box. With the only one moving parts being the redundant fans, mean time between failure is over 100,000 hours, which is between 11 and 12 years. Call control is not dependent on a hard drive inside like with some other vendors!

Unlike a traditional line card of a PBX, the ports of the ShoreTel system can be "universal ports." Universal ports can be analog devices (phones or trunks) or IP phone ports. Thus, as an example, a ShoreGear-120/24 switch can consist of 24 analog devices and 0 IP phones, or 0 analog devices and 120 IP phones or some combination of analog devices and IP phones (or even SIP trunks). The Customer is not locked into ports that will never get used, but can change how the ports behave to suit their needs. Via software, each ShoreGear switch can be configured to support up to 5 IP phones or 5 SIP trunks per port. And using analog ports, The City can leverage non-proprietary analog sets and analog trunks to ensure key locations will have dial tone in the event of a power outage.

Each ShoreGear switch has dual Ethernet ports for redundancy and communicates with all of the other ShoreGear switches connected to any 10/100 Ethernet switch on the network. This allows the ShoreGear switches to stack and scale like network switches.

Of all the major players in the VoIP industry, ShoreTel is the only solution that was built from the ground up and from a clean slate to accomplish the most resilient architecture on the market. There is no central "head" or "brains" for the system. Rather, call control is truly distributed between the switches. Each switch contains the same mirror image, similar to a router, and performs its own call control. Therefore,

each site and every individual ShoreGear switch is remotely survivable and redundant. In the event of a WAN outage, the remote site continues to operate, and with PSTN fail-over, extension calls between sites are automatically routed across the PSTN to ensure business continues uninterrupted. With IP phone fail-over, phones will automatically be reassigned to another ShoreGear switch. With gateway fail-over, outbound calls will automatically route around the problem. And the event of a long power outage, longer than your power backup, power transfer failover can automatically connect an analog telephone to an analog trunk on each ShoreGear.

Voicemail

Voicemail requires no additional hardware, consumes no ports, and storage is limited only by the size of the server hard drive. In multi-site configurations, voicemail servers can be distributed at larger locations to save valuable WAN bandwidth and ensure continuous operation in the event of a WAN outage. Users can record personal greetings and manage their mailbox from ShoreWare software or any telephone. Messages are stored in industry-standard WAV Audio for Windows format. Workers can play saved recordings on multimedia PCs, attach them to email messages, or embed them in other documents.

Automated Attendant

Auto attendant provides 24-hour automated call answering and routing to improve service and enhance a company's image for inbound callers. Outgoing prompts can be customized and linked to time of day and/or days of the week. Departments can have their own menus with unique greetings and options. Like ShoreWare voicemail, auto-attendant consumes no physical ports and can be distributed across sites to save valuable WAN bandwidth and ensure continuous operation in the event of a WAN outage.

Get up and running quickly with a scalable system

The ShoreTel system is simple to install and expand, allowing The customer to react quickly to changing business conditions. With plug-and-play installation, active IP phones are automatically recognized and immediately configured. To expand, plug in a new ShoreGear voice switch and ShoreWare automatically discovers it and readies more telephone or trunk capacity. The system has integrated software distribution for the telephones, ShoreGear switches, server applications as well as desktop software for rapid initial installation as well as quick software updates.

Best in class management

The ShoreTel system's components interact with each other in a distributed environment. The administrative interface, ShoreWare Director, is a browser based application used to configure and manage the whole system.

Proactive network monitoring and fault notification

ShoreWare Director signals system health on one administrative screen. For fast, 24-hour response, ShoreWare Director also posts warnings through email to one or more addresses. Because ShoreTel intelligence is distributed throughout the system, if one device fails, the others automatically compensate, assuring optimal performance 24x7.

Question

1.2 Describe how your system architecture provides 5 9's system reliability. Discuss design Complexity & Costs to achieve system reliability/redundancy (i.e. number of redundant boxes and redundant connectivity/links). If necessary please submit diagram.

Answer

Reliability – The ShoreTel system provides an unusually high degree of reliability and availability. The ShoreGear voice switches are based on a real-time operating system that does not rely on spinning media such as hard disk drives. This means that the voice switches provide over 99.999% uptime – the same as or better than traditional TDM-based telephone systems. The system uses Ethernet-based IP infrastructure to provide connectivity within the organization where it can be controlled and optimized and uses the standard Public Switched Telephone Network (PSTN) to provide connectivity to outside telephones and circuits. To calculate reliability, or better said as availability, we use the following formula.

Because the ShoreTel switches are so easy to replace the MTTR is very low. In as little as three minutes a customer can have the replacement switch up and running. For the calculations below, a MTTR of 60 minutes (one hour) is used.

In addition to the each switch's five 9's of reliability, it is very easy to achieve much higher reliability still. As you add one more of each voice switch model to a site, the system reliability jumps to ten 9's of reliability. In the table below, where there are eight ShoreGear T-1 switches and five ShoreGear 120/24 switches, all needs to be done to accomplish this N+1 redundancy model is just add one more of each switch type.

Question

1.3 Describe what components in your system are Hot Swappable (i.e. "critical" components), and list any associated advantages and disadvantages.

Answer

Each switch is independent of the other switches and can be "hot-swapped" in the event of a failure without having to bring the entire system down. By merely using a standard DB9 console cable, the administrator can easily configure the same static IP address as the voice switch to be replaced. Then the administrator uses the web-based management interface to tell the system that the new voice switch is replacing the old switch. The voice switch will complete one reboot to receive the same firmware version, then reboot a second time to get its copy of the management database. These steps take just three minutes, at which time the switch is ready and functioning as the old one was before the failure.

The management server can also be replaced with a standby server with DoubleTake software loaded and preconfigured. Another option to replacing a dead management/voicemail server is to take a cleanly installed Windows Server, copy the ShoreWare server's data to the new server, run the install executable, and within 15 minutes have a fully functioning server with data and voicemail functioning it was at the time of the most recent backup.

Client phones are also easily added, managed and replaced. Again through the intuitive management interface, the phones are self-discovered on the network and can easily be associated to a user. A user can even associate a phone to him/herself by logging into voicemail then into the phone. This can be a permanent or temporary assignment as desired.

Question

1.4 Detail your system's Minimal "cold reboot" time, and list any associated advantages and disadvantages.

Answer

The ShoreTel system has a very fast relative reboot time, especially with the ShoreGear switches. For example, the SG-40/8 has been tested to cold boot within 40 seconds and warm boot within 45 seconds. The management server boot time varies depending on the POST time and hardware resources, but to boot from shutdown or power outage is typically within three to five minutes. Again, the call setup and teardown occurs on the ShoreGear switches, not on the management server.

Question

1.5 List what components failure would cause a call to be "dropped."

Answer

The way that ShoreTel has designed the call flow, including call setup and teardown, almost precludes dropped calls at the ShoreGear voice switch level where call setup occurs. The call is then handed off to the endpoints, such as the phones or the switch with the associated PSTN connection. Even if the switch

that set up the call becomes unavailable, the call maintains its state inherently. For a call to be dropped, (1) one of the endpoints would have to become unavailable, (2) the trunk line over which the call traverses would have to fail, or (3) the data network over which the call traverses would have to become unacceptable for the call. For this latter condition, one-way latency of 100 ms and less than 1% packet loss is still acceptable for the ShoreTel call.

Question

1.6 Describe your system's Scalability, and list any associated advantages and disadvantages.

Answer

As mentioned above, each ShoreGear switch has its own power and Ethernet connections. Because there is no chassis to restrict growth, the ShoreTel solution can scale from two users to ten thousand users with no breaking points or forklift upgrades that other solutions incur. Keep in mind, this is one system distributed over multiple sites, not multiple systems tied together.

Again because of its unique architecture, the components are location-independent. This means that as long as the components can communicate with each other via IP, they can reside anywhere on the network.

Question

1.7 Identify if your system uses Proprietary Protocols or Open Protocols, which protocols are used, whether they are Standards based, and list any associated advantages and disadvantages.

Answer

The ShoreTel system uses the SIP protocol for backend system communication. These devices include the server and ShoreGear switches. Communication with the ShoreGear phones is done via the MGCP protocol. Although these are open or standards-based protocols, ShoreTel has modified parts of these protocols to enhance the features that are made available through them, giving more features than what would be otherwise available via these protocols.

Question

1.8 Identify if your system has now or will have both H.323 v1 or H.323 v2 & SIP protocols, and list any associated advantages and disadvantages to each protocol. If these products are still in development, when do you foresee these protocols being integrated?

Answer

The ShoreTel system supports both MGCP and SIP signaling protocol. Session Initiation Protocol (SIP - RFC 3261) is a newer protocol that is still being fine-tuned by the IETF and that is regarded as having the potential to become the global signaling standard that will enable all switches, gateways, and phones to talk to one another. ShoreTel believes that the SIP signaling protocol is the protocol of the future and is investing heavily in SIP development to be at the forefront of SIP as the protocol becomes widely adopted. ShoreTel voice switches currently communicate with each other using SIP, and many devices (such as the Hitachi Wi-Fi handset, and the Polycom IP4000) are deployed in ShoreTel customer environments using SIP today.

ShoreTel supports the following RFCs:

- 3261 – SIP
- 2976 – SIP Info
- 3891 – SIP Replaces
- 3515 – SIP Refer
- 3892 – SIP Referred-by
- 3361 – DHCP (for IPv4)

2396 – URI
2833 – DTMF

Question

1.9 What type of VoIP prioritization does your product support? (i.e. TOS, Diffserve, 802.1p, etc). Please list advantages and disadvantage.

Answer

Prioritization of ShoreTel voice traffic can be done via various different QoS methods. For example, the phones can receive either from DHCP or manually 802.1p and 802.1q information. It is possible to also prioritize traffic via appropriate TCP and UDP port numbers that the ShoreTel system uses for call control and media streams. A highly preferred method is to have the ShoreTel system mark its voice traffic with an appropriate DiffServ code point (DSCP) number.

Each of these methods of traffic differentiation can provide the necessary networking devices, such as switches and routers, with enough information with which these devices can know how to appropriately prioritize the traffic. With each of the critical network devices correctly configured, the voice packets will be prioritized above other traffic types and less important traffic will be the first to be held or dropped at the points of congestion.

Question

1.10 Which components in your solution support DHCP? Please list advantages and disadvantages.

Answer

All of the client phones devices support DHCP and do it quite well if a particular, unique scope option is used. This is easily done, for example, with Windows DHCP services. This allows the customer to unbox and plug in mass amounts of phones with minimal manual intervention. The phones boot up with the information automatically obtained from the DHCP server, receive the latest firmware from the management server, are assigned to their respective home and failover ShoreGear switch, and are ready with dial tone for the end users.

It is recommended that the server and ShoreGear switches receive static IP assignments for management purposes. These are not difficult or time consuming to do.

Question

1.11 Describe how a client phone is activated on the network? What components are involved, DHCP, FTP, FTP & OTHERS? What's the procedure to upgrade a phone client?

Answer

The client phone uses standards-based IP addressing information that can either be assigned statically via the intuitive phone interface or via the existing DHCP server. If the latter method is used, the DHCP server needs to have option 156 added to its scope options. When the phone boots, it receives its assigned IP information (static or dynamic), contacts its assigned FTP server, and verifies if the client phone is using the appropriate firmware version. If so, the boot process continues. The client phone retrieves configuration information from its assigned ShoreTel voice switch. The voice switch provides the phone with dial tone, dial plan information, and its display.

To upgrade one or more phones on the system, the GUI management interface can be used to reboot each or all phones immediately or the next time the phone is idle. When the phone boots and determines that its firmware version differs from that of the management server, the latest firmware is downloaded to the client phone. The device automatically reboots with the new code loaded. Again, this can be done simultaneously with all phones on the system with just a few mouse clicks.

Question

1.12 Identify if your system requires an end to end QoS network to ensure QoS for voice (voice priority over data), how this is done in your system, and list any associated advantages and disadvantages

Answer

The ShoreTel solution does not require an end-to-end QoS network for toll-quality sound. The system works well on almost all of today's Ethernet hardware. ShoreTel calls are inherently tolerant to 100 ms of latency and up to 1% packet loss. Where QoS is important is at points of congestion where packets will be congested and dropped. This most commonly occurs at WAN links, such as point-to-point circuits, frame relay circuits, or site-to-site wireless bridges. Regardless of the brand, if the device at the point of egress to the congestion point (e.g., the router) can prioritize the voice traffic above all other traffic types, the phone system and voice calls work well.

Question

1.13 How much bandwidth does each phone client put into the network load?

Answer

Voice traffic payload can be adjusted by the system administrator at two different levels. The first is for intra-site calls, and the second is for inter-site calls. Calls can be configured to use the following settings with their respective payload. The actual network load, which includes the IP overhead, can be estimated at an additional 20 kbps, assuming no header compression is enabled.

CODEC PAYLOAD

G.729a 8 kbps

ADPCM 32 kbps

G.711 64 kbps

Linear 128 kbps

Linear Broadband 256 kbps

Question

1.14 Please indicate if your system has built in or add on third party billing capabilities, and list the advantages and disadvantages to your solution.

Answer

The ShoreTel system uses built-in call detail reporting (CDR). The system collects a large amount of data points at the management server. The server comes with 12 canned reports that can be used for the most common types of reporting information. The CDR database is also available via ODBC connectivity so all available data points can be queried via the customer's own tools, such as SQL or Crystal Reports.

Question

1.15 Does your solution handle the following: G.711, G723.1 & G729a compression? List any advantages or disadvantages to any particular protocol your solution utilizes.

Answer

As with other solutions, there are tradeoffs with the ShoreTel supported codec's primarily between bandwidth utilization and sound quality. IT solution provider will work with the customer to determine the codec that best suits their needs. In the end, the customer can choose the best-suited codec on the LAN and on the WAN independently. ShoreTel supports five codec's: G.711, G.729a, ADPCM, Linear, and Linear Broadband.

ShoreTel does not use G.723.1 because it is not reliable for DTMF or fax tones. First, ShoreTel doesn't see any reason to place our customers in the position of poor reliability. Second, G.723 was superseded

by ADPCM, which ShoreTel supports. To provide an outside perspective, here is what Wikipedia says about this particular codec:

G.723.1 is an audio codec for voice that compresses voice audio in chunks of 30 milliseconds. A look-ahead of 7.5 ms duration is also used. Music or tones such as DTMF or fax tones cannot be transported reliably with this codec, and thus some other method such as G.711 or out-of-band methods should be used to transport these signals (<http://en.wikipedia.org/wiki/G.723.1>).

Here is a helpful codec link:

http://www.compression-links.info/G.711_G.72x

Question

1.16 Please indicate if your solution handles IP, Analog & Digital phones or just IP & Analog sets. List the advantages and disadvantages of your solution.

Answer

The ShoreTel system handles both IP-based phones and analog phones. It does not handle TDM-based digital phones, which are considered to be proprietary to their respective phone system and will likely be phased out in the next few years by the manufacturers.

Question

1.17 Does your solution handle IP, analog & digital connectivity? (i.e. PSTN interfaces and trunks such as PRI with any DNS or Caller ID name and number.) List the advantages and disadvantages to your solution.

Answer

The ShoreTel solution natively handles two analog trunk types (analog loop start and analog DID), three digital trunk types (digital loop start, and digital wink start, and PRI), and SIP trunks, which are a standards- and IP-based trunk type. With the digital trunk types, if the telco carrier can pass DNIS and caller ID name and number, the ShoreTel system can natively and pass this information as well and route calls according to the DNIS information.

Question

1.18 Does your solution have the ability to use other vendor IP phones to reduce set costs?

Answer

Currently the ShoreTel system can work with almost any analog phone model. The system can also leverage the use of standards-based SIP phones. As standards-based SIP stands today, functionality is limited to basic phone set features, such as dial tone, DTMF and MWI.

Question

1.19 Does your solution have Wireless capability? Is there a unique implementation necessary which would enable this particular feature? List the advantages and disadvantages to your solution.

Answer

Yes, ShoreTel supports Wireless in many different forms to provide customers with the solutions that best fit their needs. Most common wireless solutions include a SIP WiFi phone, and various other wireless solutions such as 900MHz handsets.

In addition, ShoreTel will soon offer the Mobile Call Manager client on popular cellular devices such as the Blackberry, Motorola Razr, and the Treo. This feature will give customers the ability to take their corporate extension wherever they go and extend the call control and functionality of the desktop based

Personal Call Manager to the cellular phone.

Question

1.20 Identify the maximum number of audio conferencing participants (both internal and external) available in your design and describe your audio conferencing design solution (i.e. separate audio bridge, built in audio bridge, separate audio conferencing server, etc.) List the strengths and weaknesses of your solution.

Answer

The ShoreTel system can handle three-party conferencing out of the box and up to six-party conferencing with the appropriate ShoreGear switch resources are dedicated to doing so. Using these conferencing tools is a snap with the client's Call Manager software. Gone are the days of the up-front apology, "I am going to try to conference you in. Call me back if I lose you." Users can easily set up, control and terminate the calls as they wish.

ShoreTel also offers a full-featured in-house conference bridge, ShoreTel Converged Conferencing fully integrates with the phone system delivering scheduled audio conferences as well as web collaboration or data sharing. Converged Conferencing ends dependency on high-cost hosted services. Gone are the per-user cost barriers that prevent the entire organization from improving communications through audio and web conferencing.

Knowledge workers spend less energy setting up and managing collaborations and more time working on business results. An intuitive interface makes it simple to schedule a call, extend a new invitation, or add a missing party without wasting time waiting. Conferences can also be set up from inside a users Outlook calendar and the Converged Conference solution comes with IM capabilities.

Spend less time implementing and managing conferencing. Converged Conferencing fits smoothly into existing IT infrastructures, extending the advantage of collaborative tools without additional administrative penalties. Full IP integration eliminates complex connections and expensive interfaces. You want to add video no problem; ShoreTel integrates easily with 3rd party video products like Polycom. The Converged Conference solution supports any number of conferences with 12 to 96 simultaneous participants.

Question

1.21 Does your solution have the ability to handle Web Conferencing & Collaboration? Please indicate your strengths and weaknesses in this area.

Answer

ShoreTel offers a very full-featured web and audio conferencing bridge for collaboration. Below is a list of just some of its key features and benefits:

In-House Conferencing Appliance As an internal system inside your network, you don't have to worry with external services bills or risk having your confidential information sitting in some service provider's network.

Integrated Web Collaboration By combining audio conferencing, document sharing, application/desktop sharing into a single platform, Converged Conferencing delivers a complete collaboration solution.

Dial-Out Capability Eliminate the dead time waiting for parties to join the conference at the appointed time by simply dialing out and proactively bringing them into the meeting. In addition, the web-based interfaces lets customers and foreign employees request a call-back.

Secure Audio and Web Conferencing Passwords and SSL streaming keep documents secure while secure pass codes, locked conferencing, and a visual display of who's on the call keep the audio calls safe as well **Side Bars** Create separate Instant Messaging ("IM") conversations with one or multiple parties on the call to confer off-line before voicing a answer to the entire group **IM Integration** A single solution that combines audio and web collaboration with safe, enterprise instant messaging to give

enterprise the benefits of instant communications and presence without the need to trust public IM systems or invest in a separate enterprise system.

Conference Recording Multimedia recordings store the audio from the call, along with the documents presented to keep an archive of the event or to enable the distribution of the information to a broad audience without having to repeat the session over and over again.

File Cabinet Standing meetings can store uploaded documents providing the participants easy access to the latest information during each and every meeting Outlook Integration Schedule your audio and web conference right inside your Outlook appointment by simply clicking "Yes" to conferencing and having the software automatically assign your access codes and paste them into your meeting invitation. Application, Web Based Solution A reliable, Linux based appliance that is fully web-based to eliminate the need for employees or remote meeting participants to install software on their desk to collaborate.

Question

1.22 Does your solution have the ability to handle Video Conferencing? Please indicate your strengths and weaknesses in this area. If it is still in development, when do you foresee it general availability?

Answer

ShoreTel's next version of the conference bridge, targeted for the summer of 2007, is planned to include video conferencing as part of its offering.

Also, the next version of Call Manager is planned to have video conferencing, slated in version 8, due December of 2007. ShoreTel also has an OEM agreement with LifeSize Communications (www.lifesize.com), the provider of one of the best video conferencing solutions on the market. This solution is much less expensive, higher quality and has less bandwidth requirements than the Cisco comparable offering.

IT solution provider can also offer the Polycom video conferencing.

Question

1.23 Does your solution have the ability to handle Audio Streaming? Please indicate your strengths and weaknesses in this area. If it is still in development, when do you foresee it general availability?

Answer

It is not clearly understood what is meant by the above request to handle Audio Streaming. Audio Streaming in many cases refers to the ability to stream audio across the network, in which case the network infrastructure handles this task, and most standards based networks handle audio streaming without issue. ShoreTel also uses Audio Streaming on Voice Mail playback.

Question

1.24 Does your solution have the ability to handle video streaming? Please indicate your strengths and weaknesses in this area. If it is still in development, when do you foresee it general availability?

Answer

It is not clearly understood what is meant by the above request to handle Video Streaming. Video Streaming in many cases refers to the ability to stream video across the network, in which case the network infrastructure handles this task, and most standards based networks handle packet streaming without issue.

Question

1.25 Does your solution have any future capabilities that you would like to present here? If so, when are they due to be integrated into your product and what advantages will they serve?

Answer

Many new ShoreTel features are planned in the coming year. Here are just a few....

Mobile Call Manager - ShoreTel will soon offer the Mobile Call Manager client on popular cellular devices such as the Blackberry, Motorola Razr, and the Treo. This feature will give customers the ability to take their corporate extension wherever they go and extend the call control and functionality of the desktop based Personal Call Manager to the cellular phone.

Greatly expanded SIP capability through SIP extensions

Integrated Video in both the conference bridge and the Personal Call Manager

Conference room phone

Workgroup and call center enhancements

Customer Ring Tones

Programmable Tool Bars in the Personal Call Manager

Voice Mail enhancements such as Auto Find Me and Escalation Notification

WiFi phone enhancements

Question

1.26 If emergency-911 municipal services are mandated for commercial systems, is our proposed system in compliance today? What is the longest identifiable distance?

Answer

ShoreTel is already compliant to the E-911 requirements.

Question

1.27 Please detail your E911 capabilities. Is it dynamic in nature (i.e. plug and automatic register of telephone move or does it require notification to an administrator?).

Answer

The ShoreTel system handles the E911 services very well, making it easy to configure and manage. The administrator is able to predefine the Caller's Emergency Service Identification (CESID) number at the site level, at the user's particular voice switch, to an IP address range, or a specific IP address. With the correct configuration of the ShoreTel system in advance, phones that use DHCP to receive their IP information will automatically be assigned the appropriate CESID number as they come onto the network.

An additional pay-for option is a ShoreTel package called the E911 Notification Application supplements the native E911 support built into the ShoreTel system. This application provides site administrators with an extra level of oversight and security by automatically alerting them with audible desktop screen pops and by placing notification calls to all configured phone numbers when a 911 event is detected on the ShoreTel system. (See the E911 Notification Application datasheet in the Appendix).

Question

1.28 Please discuss the security aspects of your solution. (i.e. preventing unauthorized administrative

access to applications, voice and data transmission security, etc.)

Answer

The ShoreTel system allows for several levels of security. For one, the system can provide several distinct administrative permissions per ShoreTel system administrator. Second, the call traffic within the ShoreTel system can be encrypted. Third, all client software configurations require the user's unique username and password to appropriately connect to the rest of the ShoreTel system.

Question

1.29 Does your solution support pass-through a firewall?

Answer

The ShoreTel solution does not permit or support traffic to pass through a NAT device, which is the understood question here. ShoreTel and IT solution provider recommend that all voice traffic be secured through private connections, site-to-site VPN tunnels, or client-based VPN tunnels.

1.2 System Installation/Configuration/Programming & Cutover

Question

2.1 Describe the complexity of what's involved with your system's Installation, and list any associated advantages and disadvantages.

Answer

In relation to the other phone systems available in the market currently, the ShoreTel solution is quite easy to plan for, install and manage. The list of equipment required for the installation is short: phones, voice switches and server. To install the voice switches, each one is powered on and given IP address info via a serial-based console cable, then racked with Power and Ethernet (PoE) connectivity.

The server build begins as a typical installation of Windows Server 2012 with all current service packs and critical updates. Then a handful of Windows Components are installed. Once this is completed, the ShoreTel installation wizard is started. After answering a few basic questions, the server reboots and is ready to receive its web-based ShoreTel configuration settings.

Where a traditional TDM system currently exists, the ShoreTel phones can be deployed well in advance of the cutover, as it uses the data cabling infrastructure and not the current phone wiring infrastructure.

Typically, users are created in the system with extensions, mailboxes and other common settings happening simultaneously and easily. The ShoreTel phones automatically register themselves into the system and can readily be assigned to users either from the management interface by their MAC addresses or the users can be instructed to login into the phones at the time they first set up their voicemail box, which is also an easy process.

The administrator will also go through the left-pane menu structure from a bottom-up approach and fill in the necessary and desired information, such as sites, IP ranges, area codes, local prefix lists, CESID numbers, etc. The switches can be automatically discovered on the network and configured with a few clicks, pull-downs and fill-in-the-blanks, as is common throughout the ShoreTel management interface. Another advantage to the management interface is the always-available help file from every configuration page in the upper right-hand corner. The ShoreTel system comes with some predefined user groups for class of service permissions. These can be modified or copied, or the administrator can create new groups from scratch. Trunks and trunk groups are easily created and defined as well, along with any DID assignments. The optional settings, such as hunt groups, route points, auto attendants and workgroups, are available through intuitive interfaces again.

Below is a screenshot of the browser-based management interface from with the administrator uses for

installation and day-to-day processes.

The users are also licensed to receive the ShoreTel Call Manager (PCM) client software, which can even be rolled out in the first phase via a pre-built .msi installer package. The software is then configured per each user's Windows profile with that user's credentials and settings.

Because of the large amount of productivity-enhancing features available to the end-users, IT solution provider recommends that end-user training be broken up in two stages. The first usually occurs just before the cutover date with the intent to give the users basic instructions of what will happen and when, how to use the phone, along with a light introduction to the PCM software. The second phase is usually scheduled for 2-4 days after the transition with the purpose of reviewing basic phone functionality, providing further PCM training, and permitting the users to come back with any additional questions.

When the cutover time arrives, the telco lines are plugged into the system, tested and ready to go.

Administrators are also given hours of instructions, usually along the time of the installation, as the IT solution provider engineers work side-by-side with the customer's administrator. After the installation, IT solution provider will also review all the settings made, which permits the administrator to better understand how the pieces fit together.

Question

2.2 Describe how your company licenses the use of the system. Please list all services that require a license such as user extensions, voice mail, hunt group extension, auto attendant, pickup group, conferencing, etc. Also describe how the licensing of those services impact maintenance costs.

Answer

Below is the list of all available ShoreTel licenses:

- Extension license: to ring a device (e.g., IP phone, analog phone, and fax machine).
- Mailbox license: to permit a user to receive voicemail on their extension or for a generic mailbox.
- Operator Call Manager license: required for users to use the Extension Monitor (the software version of the attendant console).
- Agent Call Manager license: required for the members of a ShoreTel workgroup that want to use the Queue Monitor and be able to log themselves in and out of the workgroup.
- Supervisor Call Manager license: for the users that want to monitor the agents in their workgroup and perform functions such as monitor the agent's call status and information, silent monitor, whisper paging, barge in, as well as change agents' status for logged-in, logged-out, and call wrap-up. Supervisors can also record the calls of their agents.
- Additional language license: used if prompts for mailboxes, auto attendants, etc. are to be in anything besides U.S. English.
- Softphone license: if a user wants to use software on a PC instead of a hard phone. Note: IT solution provider still recommends the user uses a USB-based handset or headset for optimal DSP processing.
- SIP trunk license: required for each SIP trunk tied into the system.
- Additional Site license: required for each site defined in the ShoreTel system beyond the first site.
- Distributed Voice Services: required for each additional distributed voicemail server on the system.
- Conference bridge ports (audio and web): these are purchased with a ShoreTel conference bridge and are licensed on a concurrent, per-user basis. Web and audio licensed can be purchased separately if desired.
- Additional, add-on applications from ShoreTel, none of which is quoted in this solution but each can be added:
 - o E911 Notification Application (explained in the response for 2.1.28)
 - o Salesforce.com™ Integration Application: not an apparent fit for the Customer at this time.
 - o ShoreTel Web Dialer Application: dial browser-displayed telephone numbers with the click of a mouse with ShoreTel Web Dialer.
 - Phone numbers are automatically highlighted on the web page
 - One mouse click dials the number

- Application runs transparently until it is turned off
- Application provides support for a variety of number formats including International numbers

After the initial purchase of the licenses, ShoreTel requires a certain level of software support. Therefore, maintenance costs related to licenses will be directly proportional to the number of software licenses that have been deployed and that fall under the support contract.

Question

2.3 Describe how your system will function on a network utilizing Xtreme Networks Black Diamond switching equipment at the core. Please specify any features that will not work with this equipment and describe any work-a-rounds and performance issues.

Answer

Fortunately, the ShoreTel solution will integrate very well with the Black Diamond switching equipment that The Customer already has. In fact, the ShoreTel system was built from ground up to work well with any standards-based networking equipment.

Question

2.4 What are the requirements for soft phone installation? (i.e. OS requirements, hardware requirements, etc.)

Answer

Advantageously, the ShoreTel softphone is installed as part of the ShoreTel Personal Call Manager software. From the administrator's interface, as user is permitted to use a softphone by merely clicking a single checkbox. Within seconds, the user then is able to see the new menu option to turn on the softphone. Again, it is not a not a new or additional installation of software. The standard PCM software comes with this and other additional software installed. The administrator turns the features on and off from the web-based management interface.

The client platform has minimum requirements of 500 MHz Pentium II, 256 MB RAM, USB headset (recommended), and Microsoft Windows 2000 or XP.

Because a softphone's call traverses the Internet, the call is subject to the variable latency, jitter, and bandwidth availability that can change from second to second on the Internet. The ShoreTel solution offers a very advantageous alternative to the softphone called Office Anywhere. Office Anywhere extends the power of the ShoreTel system to remote workers without relying on the internet for voice quality. Remote users have all the power and productivity of all their Personal Call Manager delivered over their internet connection yet have the confidence of toll quality voice since the phone call uses the PSTN. Users simply assign their extension to their home phone, cell phone, etc. depending on their location. When they place calls from the Personal Call Manager, their home phone rings and the ShoreTel system places the call. For inbound calls, the Personal Call Manager will pop and display the inbound information while their home phone rings. Once they answer, users have complete control of the call including transfer and conference using the Personal Call Manager. The user requires a private IP connection to the ShoreTel system. IT solution provider and ShoreTel view this option for many cases as a far superior solution to the typical softphone solution.

Question

2.5 If the software integrates with microcomputer hardware, what are the minimum hardware system requirements for your solution? Also describe any software and OS requirements on the server if applicable.

Answer

The ShoreTel solution includes a very powerful, yet easy-to-use software client called ShoreTel Personal Call Manager with many features and benefits for the end user. Below is a list of the hardware and software requirements for this software on the client:

Client hardware: 266 MHz Pentium II, 256 MB RAM, 100 MB Disk space requirement
Client software: Microsoft Windows 2000 Professional, SP4; Windows XP Professional, SP1 and SP2

The client also has very tight and helpful integration with Microsoft Outlook for Contacts, Calendar and Inbox. If such integration is desired, the following Outlook versions are supported: Microsoft Outlook 2000 SP2, 2002/XP SP2, and Outlook 2003 SP2.

And to top it off, the client is also fully compliant with Microsoft Terminal Services and Citrix Presentation Server in the following versions: Microsoft Windows 2000 Terminal Server SP4, Citrix MetaFrame XP, and Citrix Presentation Server R 3.0.

Question

2.6 If your system support 803.3AF power over Ethernet standards, describe how you accomplish this and the associated advantages and disadvantages. Please indicate If your system does not support 803.3AF.

Answer

The ShoreTel telephones are fully compliant to the 802.3af Power over Ethernet (PoE) standard. They are a Class 2 device, which specifies up to 7 watts of power. In most cases, they use somewhere between 3 and 5 watts.

Question

2.7 Describe what Configuration reports are available, who typically would use these reports, and list any associated advantages and disadvantages.

Answer

ShoreTel is so easy and intuitive to configure, it is not considered necessary to output all the configurations in a report. Also the configuration itself is stored in a flat file structure that can be copied off and backed up at any given time for restoration purposes. Along with the configuration, all other information stored in the management server, including voicemail messages, can also be backed up by merely copying a single directory with its contents. As such, disaster recovery solutions are relatively simple and cost effective because of the nature of this configuration format.

1.3 End User Experience

Question

3.1 Describe your system's Basic Feature Capabilities and list any associated advantages and disadvantages.

Answer

As mentioned above, the end user is permitted—but not required—to used the client software package Personal Call Manager on the desktop. The software allows for very feature-rich, real-time call visibility and call control, along with very functional call handling options.

Below is a summary list of features available in the software:

Customized Views: Compact view, Docked view (top or bottom), Detailed view

- Call Control (Make Call): New call, Redial, Speed dial, Dial by name, Dial vanity numbers, Intercom, Leave a message, Page, Pickup, Pickup night bell, Silent monitor, Barge in, Whisper page
- Dial by Name: Outlook contacts, System directory, Personal directory
- Call Presentation: Calling name, Calling number, Current call state, Call duration, Hold duration, Trunk group or DNIS, Routing slip, Call note, Play sound, Bring to front, Call stack (16 calls), Matching contact name
- Call Management: Answer, Transfer, Record, Send to voice mail, Send to auto-attendant, Join to conference, Add-on conference, Park, Hold, Hang up
- History Viewer: Caller ID name and number, Matching contact name display, Date, time and duration,

Trunk group or DNIS, Detailed routing slip, Call note, One-click call back, Create / edit contact from caller ID

- Redial List: Dialed calls, Missed calls
- Directory Viewer: Export directory, Import directory, Open a text page, View personal directory, View system directory
- Personal Options: Handsfree operation, Select personal assistant, Disable call-waiting tones, Record greeting, Record name, Select default trunk access, Manage passwords, Configure sounds, Selectable "hot key" to quickly launch the client, Play messages on the phone, Play messages on the computer

Question

3.2 Describe your system's Enhanced Feature & Application Capability (i.e. IVR, Unified Messaging, ACD, Voicemail, CTI). Please indicate whether the Enhanced Feature or Application is built in to your system at no additional cost, is a standalone device, or a 3rd party solution. List the advantages and disadvantages.

Answer

There are very many features of the software that other vendors might consider as enhanced that are come with the base package. Another advantage is that there is no additional back-end hardware or software required for these features—the services are handled from the already existing management server. Below is a list of some of these more advanced features (still part of the base package):

- Voice Mail Outlook Inbox Integration: Caller ID name and number, Call back, Compose, Date, time and duration, Delete, Forward, Forward via e-mail, Move backward, Move forward, Play, Reply, Reply all, Save, Sort with folders
- Outlook Contact Integration: QuickDial by name, Personal contacts, Public contacts, Selectable contact folders, Matching contact name display, Local contact caching, Matching contact screen pop, Create / edit matching contact
- Outlook Calendar Integration: Calendar call routing
- SoftPhone: Reassign extension to cell phone, Reassign extension to home phone, Turn PC to a phone, Use with PC headsets, Number pad for DTMF entry
- Find Me Call Handling: Forward to any two numbers, Caller ID delivered on Find Me, Announce callers on Find Me, Answer call with key press, Send to voice mail with key press
- Call Handling Modes: Five call handling modes (Standard, In a meeting, Out of the office, Extended absence, Custom), Call forward (always, no answer, busy), Customized greetings by mode, Call handling note for operator/administrative assistant
- Message Notification: Notify on any, urgent or never, Notify at an extension, Notify at an external number, Notify to a pager, Notify via an e-mail, E-mail message header, E-mail full message (wave file), Configurable re-try options
- Office Anywhere Extension Assignment: Assign number to internal numbers, Assign number to external telephones (cell, home, etc.), Assign number to PC based softphone, Return number back to desktop telephone
- Voice Mail Viewer: Caller ID name and number, Call back, Compose, Date, time and duration, Delete, Export, Forward, Move backwards, Move forwards, Play, Reply, Reply all, Save, Matching contact name display
- Integrated Conferencing: Up to six parties on conference, Add / share documents, Move pages forward, Move pages backward
- Integrated Presence: Display call status, Display call handling mode, View call handling note

Please note that none of these features in this question or in the preceding question are additional; they come standard for each user.

ShoreTel offers three levels of ACD functionality. The first is built into the quoted system and merely requires licensing to use the features (with a trial period of these features available). The two additional levels of ACD functionality would tie into the existing ShoreTel solution, but they are ShoreTel-branded products and are supported by ShoreTel. The most advanced of these packages also offers very well designed IVR solution options.

Of the information requested within this section, Unified Messaging, Voicemail and CTI are also built into the system and available to every user with no additional costs.

As mentioned previously in the response for section 2.2.2, ShoreTel also offers the Web Dialer Application, allowing a user to dial automatically discovered phone numbers from web pages with a single click.

Question

3.3 Describe how your system handles the following existing special applications: 1) Music-On-Hold 2) Overhead Paging via phone 3) Door entrance intercom & buzz-in via phone 4) Chimes, Bells and Beehives and 5) Alarm ring-down circuits. Please indicate if your system cannot interface with the existing applications or provides a similar application as part of this solution.

Answer

Music on hold: the audio source is injected into the system via a standard 3.5mm headset jack available on every ShoreTel voice switch. The administrator then defines which switch is then responsible for receiving this audio source for all of the calls within a ShoreTel site that traverse an outside trunk (digital or analog).

Overhead paging via the phones: ShoreTel is able to define multiple paging groups (or zones) through the ShoreTel phones with up to 60 phones in a paging zone and in a ShoreTel site. These zones are not mutually exclusive, meaning that any phone can be a member of multiple paging zones. ShoreTel also integrates with most major manufacturers of overhead paging systems, including those with multiple paging zones.

ShoreTel offers a custom application for ring-down functionality that would be considered an additional fee.

As for the remaining items mentioned above, ShoreTel integrates with analog-based devices such as door entry, door intercom or similar devices. In summary, the ShoreTel voice switches can terminate Central Office (CO) trunks and analog lines and devices.

Question

3.4 Describe how you have designed your phone & your softphone for Ease of use. List any particular strengths and weaknesses in your design.

Answer

ShoreTel spent years and hundreds of thousands of dollars in designing and developing the company's own phones. They are specifically engineered for the user in mind. The LCD display is tilted up to prevent the user from having to hover over the phone to read the display. However, the keypad lies more flat, so that the user does not have to kink the wrist to use the buttons. These otherwise conflicting angles are achieved through a unique concave face.

The phones also have programmable buttons that are labeled via the LCD display, thereby eliminating the traditional paper labels. They also have 1 or 3 colors within the adjoining buttons, allowing for a more information to be represented visibly. The soft keys also enhance the button options, as they dynamically change according to the call status of that phone.

The speakers in the ShoreTel phones are the best in the industry. Together with the rest of the phone system, the phones are capable of handling up to seven octaves of sound, which is more than an audio CD. The microphones are placed on the bottom and face 360 degrees with the specific intent of making the sound capture direction-agnostic.

The LCD display also shows the time, user name, extension number, currently call handling mode. For incoming calls, it shows name and number caller ID. The IP560 will also show the company banner and

the user's DID number.

Question

3.5 Describe how your Unified Messaging solution is easier to use than other Unified Messaging solutions. Indicate the strengths and weakness of your solution.

Answer

The unified messaging component of ShoreTel is one of the easiest to use in the industry, which is proven by multiple awards and third-party surveys. The user can easily configure the software to be seen in several different modes or places (docked top or bottom, detailed view, or floating view). The user can even choose to have the application closed altogether and can be manually brought to view with a programmable hot-key sequence. By default, the software pops up on any incoming call, but does not steal the focus of the key strokes, so as to not interfere with the user's flow of typing. As with most powerful Windows applications, there is more than one way to accomplish the same task. For example, the user can select hard coded or programmable buttons for specific tasks, use the menu structure, press a predefined function key for the most common tasks, or choose a keystroke combination for these tasks as well (e.g., Control – A to answer an incoming call).

Question

3.6 Describe how your Console Attendant Call Handling capabilities on a PC is unique or superior to other solution. List any associated advantages and disadvantages. Direct comparisons are encouraged.

Answer

The ShoreTel console attendant is called the Extension Monitor. As with the softphone, it is installed with the Personal Call Manager and is enabled by the administrator merely changing the status of the call manager version (Operator versus Personal or Advanced). It can be run in Restore view, Maximized view, or docked top, bottom, left or right. The monitored stations can be shown in detailed, list or large icon view. The operator can quickly drag and drop a call to the desired recipient, or by using the right-click to drag the call, the operator can select from many different options, such as transfer to mailbox, consultative transfer, intercom, park, park and page, park and intercom, conference, consultative conference, and other options.

The operator is also given visibility to see not only if the user is on the phone, but with how many parties, if the call is a conference call, with whom the user is on the phone, how long the call has lasted, the call handling mode the user is currently in, and any call handling note the user has defined for that mode. The operator can even be restricted to something less than this visibility for security or privacy reasons.

Question

3.7 Describe how your solution makes it transparent to users when call processing failover occurs. List your strengths and weaknesses in this area. Please also indicate if your system does not provide this capability.

Answer

As described previously, the ShoreTel solution has automatic failover and redundancy unmatched in the market, especially where cost for building these benefits is considered. The most basic building blocks of the ShoreTel system are the ShoreGear switches. These switches are solid state with the only moving parts being the redundant fans. They use flash memory and run a real-time operating system called vxWorks. The ShoreGear switches are broken into two categories: terminating digital PSTN circuits (T1 and E1) and the all-other category (analog trunks, analog devices, IP phones, SIP trunks and conferencing ports). The latter category is comprised of the voice switches (handling the call setup and teardown for the end devices). To build redundancy into the system, the ShoreTel solution only requires one more of largest capacity voice switches for that particular ShoreTel-defined site.

For example, if the The customer headquarters has three ShoreGear 60/12 switches (each capable of handling 60 IP phones) The customer would only need one more of this model. When any one of the ShoreGear voice switches becomes unavailable to the IP phones it is servicing, these IP phones will

automatically failover (or register itself) with another switch that has available resources at that site. The phones are sending out a heartbeat to their respectively registered ShoreGear voice switch every 60 seconds. If two consecutive heartbeats are missed, then the phone fails over to another switch. Therefore, the average time to fail over is approximately 90 seconds.

As for how ShoreTel failover works in multi-site environments, consider how the customer has many sites tied together with private WAN circuits and multiple PSTN paths. If the phone lines get dug up at one site, calls from that site get automatically routed to PSTN lines at another site—without the user knowing or caring. Even if digit manipulation is required, the ShoreTel system will handle this automatically. When users dial from one site to another (extension to extension) and the WAN circuit is not available—or if the circuit will exceed the previously defined amount of ShoreTel bandwidth—the call can automatically route out locally available PSTN lines and back into another. If the recipient has a DID number, the call will automatically route directly to the destined extension without the caller even knowing that a route-around has occurred. Again, the ShoreTel system automatically prepends all necessary digits (including the trunk code, area code and prefix if necessary).

Question

3.8 Describe how your system makes Call Routing selection transparent to Users (i.e. no reduced voice quality, echo, clipping, delay when going from IP to Circuit switched routes due to bandwidth constraints/call traffic). List the strengths and weaknesses of your solution.

Answer

One of the most common reasons why some IP-related telephony systems on the market are subject to reduced voice quality when converting from IP to circuit-switched processing, or vice-versa, is because the system's resources are oversubscribed. When too much processing occurs on the system, the call quality is diminished and becomes unacceptable.

ShoreTel does not oversubscribe its call processing resources, unlike some of its competitors. Because of the unique ShoreTel architecture, the potential problems mentioned above will not be an issue. It is not possible to oversubscribe call processing resources as can be the case with other VoIP solutions.

Question

3.9 Does your system design and migration plan allow for users to keep existing phone numbers? (note that The Customer utilizes 4 digit dialing).

Answer

The ShoreTel solution allows for the same extension numbers and internal dial plan that the current Avaya system does for the City.

Question

3.10 How does your system provide consistent voice quality which is acceptable to users and what tools do you have (built in or add ons) to monitor this.

Answer

Calls made on the ShoreTel system across the network can tolerate up to 100 milliseconds of latency one way. That is equivalent to a 200 ms ping time (i.e., there and back). The call setup and teardown on the ShoreGear voice switches are of the fastest in the industry as well. IT solution provider also provides valuable insights as to where problems might arise in the network to preclude problems from arising in the first place. Common considerations are at the congestion points, such as switch stack uplinks, inter-stack uplinks (e.g., between switch closets), WAN links, and wireless bridges.

Monitoring these parts of the network can be done with most preexisting network monitoring tools. ShoreTel also offers a very robust and helpful package called the ShoreWare System Monitor. Some of its advantages include:

- Easily locates bottlenecks and performance-robbing errors no matter where they lie

- Vigilantly alerts you of performance problems no matter where they occur
- Proactively notifies you of your network's health via the e-mailed Daily Network Weather Reports
- Accessible anywhere via web browser, PDA or cell phone
- Rapidly tracks down problems while calls are in progress
- Painlessly finds VoIP problems
- Automatically locates all ShoreTel telephones and ShoreGear voice switches on the network

Question

3.11 What type of end user training does your solution provide for users? (i.e. web training, online training, hard copy, hands on, etc.).

Answer

ShoreTel offers a wide variety of high-quality training and documentation, much of which is free and always accessible to the users. For starters, User Guides are free and plentiful from the ShoreTel website. They cover ShoreWare Call Manager, ShorePhone IP Telephones, ShoreGear Voice Switches, Converged Conferencing, and Contact Center.
(http://support.shoretel.com/user_guides)

ShoreTel offers several free, self-contained computer-based trainings (CBTs) focusing on the various Call Manager versions and the ShoreTel Voice Mail Viewer. These can be downloaded for free and run from a Windows computer for self-training purposes.
(http://www.shoretel.com/training/end_user/tutorials)

As part of the training offerings, ShoreTel has very helpful Learning Management System (LMS) on the Web. Registration to the site is free, as are many of the end-user courses available within the catalog. Free courses include more CBTs on the client software packages and on the installation and use of the various ShoreTel phones. From the LMS site, customers can also register for the fee-based System Administrator trainings, Installation and Configuration trainings, and other ShoreTel-related trainings. Some of these trainings are live, web-based courses, while others are instructor-led, hands-on courses at various locations.
(<http://www.shoretel.com/training/login.html>)

Admin Guides and several User Guides are also available directly from the management interface in PDF format and are updated automatically with each minor or major software release.

In conjunction with ShoreTel, IT solution provider offers a wide variety of end-user training. The most common training model is to gather the users in a conference room with a projector, a PC on the network with the PCM loaded, and three to four phones out on display. IT solution provider typically recommends that end-user training be provided just prior to the implementation cutover and again soon thereafter to give the users time to absorb what was taught previously and to come back with additional questions.

Question

3.12 Does your solution provide Call Accounting and Billing for administration and managers? Please identify if this is built in or add on third party system and list the advantages and disadvantages.

Answer

Built into the solution is the Call Detail Reporting (CDR) system that tracks all calls that are made or received by the system. The CDR system also comes with some canned report templates from which the customer can generate some of the most common reporting information.

To enable the customer further, the Administrator documentation also provides full table structure to the CDR database, which is ODBC-compliant. In essence, the customer can retrieve any available data point in the CDR database and with custom report writing can generate a myriad of custom reports.

Because the system comes already built for account code collections, the customer can also lock down calls per user and/or use the account codes for cost center accounting purposes.

Question

3.13 Does your solution provide user Documentation (hard copy, softcopy/on-line etc.).

Answer

Along with the plethora of soft copy documentation mentioned in section 2.3.11 above, ShoreTel also offers hard copy documentation for an additional price. These documents cover all the current ShoreTel phones in both Quick Reference and User Guide formats, along with the Voice Mail Quick Reference.

1.4 System Management, Maintenance & Administration

Question

4.1 Describe how your system provides Ease of Maintenance, and list any associated advantages and disadvantages (i.e. patch installation, hardware/software upgrades, maintenance schedules, backup and restore procedure, preventative maintenance).

Answer

Another one of ShoreTel's greatest strengths in relation to its competition is the ease of management. ShoreTel continues to win awards and receive high marks from industry analysts for this benefit. For example, the process to upgrade a complete system, including management server, voicemail, voice switches and phones can be done intuitively, by the customer (if desired), in less than 30 minutes. Because the upgrade process is so easy and quick, patch management is absolved with periodic updates to the whole system—something quite rare in the industry.

As described in the response for section 2.2.7, the backup process is exceptionally easy to perform. Restoration can come in two forms. The first one is an in-place restore, where all ShoreTel services are stopped (one-click, by the way). The database (and optionally the rest of the ShoreTel data) is copied back into place, the ShoreTel server software is reinstalled, the management server is rebooted, and the system is again functional as before.

The second form of restore is if the server or its operating system has become inoperable. The system is restored by first reinstalling the operating system and its required Windows components, placing the previously backed-up data folder to the new server, and installing the software again. This last process will automatically discover the data folder on the server and restore the server to its previously configured state.

Question

4.2 Describe how your system provides Ease of MAC (Moves, Adds & Changes), and list any associated advantages and disadvantages.

Answer

With the ShoreTel solution, MACs are incredibly easy and quick. From the screenshot below, you can see how changing user settings is both intuitive and simple. The ShoreTel management interface is made up of checkboxes, pull-down boxes and fill-in-the-blanks. In the upper right-hand corner of every screen is the Help link, which will automatically open up the chapter in the Administrators Guide related to this screen. Clear, easy to understand explanations and definitions are given, facilitating easy navigation and understanding of the system.

Moving the user can be done in one of two ways. First, the user can take his phone with him and plug the phone back into the network, as the phone is still associated to that user. Second, the administrator can choose to simply reassign the phone by choosing a different phone in the IP Phones pull-down box. The phones can be identified with the default method of their unique Ethernet MAC address, or the administrator can choose to name the phone to anything else.

Adding a user can be as simple as typing the first name, last name and clicking Save. The user automatically receives the next available extension, has a mailbox created with a password, is associated to a site and language, is assigned the client software user ID and password, and so forth—any of these settings of which can be changed quickly and easily at any time.

Changing settings is a cinch with this interface, whether it is for users, switches, sites, call routing options, etc. Change conflicts are automatically warned about from within the interface. For example, if the administrator attempts to change an extension to a number that has been already assigned elsewhere, the software immediately notifies the administrator of that conflict. An interface to know where and how all extensions are assigned is also provided.

Changes in one part of the system are automatically propagated to all of the references to that resource. For example, if the administrator decides to change the extension number or name for any resource, such as an auto attendant, the references to that resource are automatically changed throughout the entire configuration.

Accessing the management interface is as simple as pointing the Web browser to the management server. This allows administration from any where the administrator has IP connectivity to the management server, which could include through a firewall or VPN.

Question

4.3 Please provide information on how your company provides Technician & Administrator Training. Indicate if this training includes certification.

Answer

As part of the ShoreTel installation and training package, IT solution provider provides hours of administrator and technician training. This is done in two different phases. The first is at the time of the initial configuration of the system with IT solution provider engineer working with the the customer phone administrators as both parties work together to optimize first part of the solution. The second phase is done soon after the installation and cutover. The IT solution provider engineer will work with administrators to review the configurations thus far along with suggestions and tips of best practices going forward.

For an additional cost, IT solution provider can also arrange for the four-day instructor-led administration training provided by ShoreTel, typically at an out-of-state premise. This training is very valuable and provides the participants with certification to configure and install the solution.

Question

4.4 How does your Management/Admin/Maintenance Interface compare to your competitors? What are the strengths to your solution? What is its weakness?

Answer

Some of the ShoreTel competition does not provide web-based management interfaces, rather ASCII-based telnet options or client-server management applications at best. The others that do provide a web-based management interfaces are typically performing only a subset of the full management commands, especially where redundant components are involved. ShoreTel is the only vendor on the market that provides a true single-image throughout the system. The same information is duplicated to all the ShoreGear switches throughout the entire ShoreTel system at the customer site, including with redundancy option.

Question

4.5 Does your solution provide direct access to Manufacturing Technical Support for trouble resolution?

What are your support structure and escalation procedures?

Answer

Yes

Question

4.6 Does your solution provide Real-time Call Monitoring?

Answer

Real-time call monitoring is available very easily through the Operator Call Manager and Supervisor Call Manager clients. The software can show real-time what users are on the phone, with how many parties, whether it is a regular call or a conference call, the caller ID name and number of whom the user is on the phone with, how long the call is, in what call handling mode the user is currently, and any call handling note the user has defined for that call handling mode. Permissions can also be restricted by user so as to reduce how much information the Operator or Supervisor can see via the software.

Question

4.7 What kinds of diagnostic and troubleshooting tools and Reports are built into your solution and list the advantages and disadvantages.

Answer

One of the best diagnostic tools the ShoreTel system offers is the Quick Look page of the management interface. It shows the overall health of the system with hyperlinks that can drill down into the details of the system. This Quick Look page is the default landing page of the administrator after authentication. Seeing this page at the beginning of each management session allows the administrator to get a glance of the system quickly and to find out specifically what is wrong, if anything. Below is a screenshot of the Quick Look page.

The management interface also comes with the Switch Connectivity tool, which can be extremely helpful when attempting to find what ShoreTel devices can see each other and the management server. This can be extremely helpful to help determine network connectivity between sites and devices. Below is a screenshot of that page.

The management server also receives the Trunk Test Tool as part of the installation. This tool shows the health of each trunk in the system, regardless of location or type, its current status, and even digits being passed through that trunk. Below is a screenshot of that tool.

Question

4.8 Describe your system's Error log capability and how its terminology lends itself to interpretation?

Answer

The ShoreTel system's error logs are integrated with the Windows Server event logs, which lends to helpful understanding of what the errors really mean. If the customer uses server monitoring systems, the ShoreTel management server can be monitored as a typical Windows Server can be.

Question

4.9 Are your Event Alarms configurable and do they provide visual, audible, paging or email notifications?

Answer

The system can also be configured to automatically email notifications of different severities through what ShoreTel calls the Event Filters maintenance tool. Below is a screenshot of a typical event filter

configuration:

Question

4.10 Does your solution provide Management/Admin/Maintenance documentation and identify the media format (hard copy, softcopy/on-line etc.).

Answer

Very helpful documentation is provided for Planning and Installation as well as for Administration. As mentioned previously, this documentation is in PDF format, which can easily be stored, retrieved, printed and searched on. It is also updated with each major or minor software update to the system. These PDF files can be access from the management interface at all times or can be retrieved by using the hyperlink directly.

Question

4.11 List any other unique tools that your solution provides and the associated advantages and disadvantages.

Answer

ShoreTel offers the best combination of management visibility and simplicity on the market, thus rendering additional maintenance tools less important