

# ShoreGear Voice Switches



Enabling business-critical unified communications with high performance and high reliability



## BENEFITS

- Pure IP unified communications delivers exceptional quality
- Highly scalable switch solutions meet the needs of small and midsize businesses, and large multisite enterprises
- 99.999% system availability for mission-critical voice calls and voicemail access exceeds stringent enterprise standards
- One system spans multiple locations
- Centralized management simplifies administration
- RoHS/WEEE compliant

ShoreTel® ShoreGear® Voice Switches deliver unified communications (UC) to organizations of every size—from large enterprises to small and medium businesses. Highly reliable and intelligent, these ShoreGear devices unify communications across multiple enterprise locations, supporting IP phones, analog devices, and a variety of trunk interfaces.

### Business-critical reliability

Voice communications are the foundation of any business, demanding the utmost in system availability. ShoreGear Voice Switches exceed today's most stringent enterprise IT requirements, delivering 99.999 percent (five-nines) availability. For maximum reliability, the processors that power ShoreGear Voice Switches do not require or use mechanical disk drives, eliminating the single most common point of system failure.

ShoreGear Voice Switches use an embedded, real-time operating system and unique call control architecture, enabling them to communicate with each other and distribute call processing in the network. Unlike other solutions, servers can be disconnected from the ShoreTel UC system and the switches will continue to process calls and voice messages.

The ShoreGear voicemail switch models offer integrated voice messaging and automated attendant capabilities. As with voice calls, ShoreTel's distributed architecture ensures that access to voicemail is not interrupted in the event of a WAN failure.

If a ShoreGear Voice Switch fails or is isolated by a network fault, the phones supported by that switch automatically fail over to another voice switch at the site. This "N + 1" form of redundancy is simple, cost-effective and extremely reliable. Even higher redundancy can be achieved by simply adding voice switches.

### Smooth migration and seamless scalability

With 15 stackable, space-efficient designs, ShoreTel offers a wide range of voice switches for any size organization. The system scales seamlessly across multiple sites simply by adding switches, and does

not require any forklift upgrades. Enterprises can also migrate to IP telephony over time using the ShoreGear Primary Rate Interface (PRI) options to provide tandem trunking and coordinated dialing with existing PBXs.

### Lower total cost of ownership

ShoreGear Voice Switches are easy to install and can be managed centrally from any Web browser. New ports and users are added simply by connecting switches to the network. The ShoreWare® Director management software then automatically discovers the new switches and adds them to the system. This exceptional ease of management helps lower ongoing maintenance and operating expenditures, and reduces the system's total cost of ownership.

Designed for power efficiency and independently tested<sup>1</sup>, ShoreGear Voice Switches also help lower energy consumption and further corporate green initiatives.

### Exceptional voice quality

In independent rankings<sup>2</sup>, ShoreTel consistently earns top marks for superior IP telephony technology. ShoreTel's technology leadership in dynamic echo cancellation, jitter buffering and lost packet handling, result in low latency and toll-quality voice communications for calls, and voicemail access.

### Eliminate communication boundaries

ShoreTel delivers breakthrough UC solutions that help organizations realize significant productivity gains, as employees spend less time interacting with disparate voice systems and more time collaborating. The ShoreTel UC system enables flexible dialing across the enterprise, seamless call transfer, Web conferencing, video conferencing, call handling, and intercom between sites, as well as easy access to distributed voicemail. With ShoreGear Voice Switches as a platform for growth, productivity rises and customer satisfaction increases as everyone connects with the right people, faster.

<sup>1</sup> ShoreTel, Inc. Unified Communications Systems Evaluation of Power Consumption vs. Cisco Unified Communications Systems, The Tolly Group, October 2008






<sup>2</sup> Unified Communications and Collaboration: Top VoIP Providers, Nemertes Research, July 2008



MODEL	ShoreGear 120	ShoreGear 90/ ShoreGear 90V	ShoreGear 90BRI/ <sup>†</sup> ShoreGear 90BRIV <sup>†</sup>	ShoreGear 50/ ShoreGear 50V	ShoreGear 30	ShoreGear 30BRI <sup>†</sup>
<b>Telephones</b>						
IP phones	120	90	90	50	30	30
Analog phones	24	4	4	2	2	2
<b>Analog Ports</b>						
Loop start trunks	8*	8	–	4	2	–
DID trunks*	8*	4	–	2	2	–
Extensions (telephones)	24	4	4	2	2	2
<b>Digital Trunks</b>						
Digital trunk channels			8 BRI Channels			2 BRI Channels
Integrated CSU						
Line and payload loopbacks						
Facilities data link						
<b>Voicemail</b>						
Voicemail storage		- / 56 hours	- / 56 hours	- / 22 hours		
Mailboxes		- / 90	- / 90	- / 50		
<b>Conference</b>						
Make Me Conference Ports	24	12	4	6	-	-
<b>System Capacity</b>						
Port capacity	10,000 ports	10,000 ports	10,000 ports	10,000 ports	10,000 ports	10,000 ports
Switch capacity	500 switches	500/100 switches	500/100 switches	500/100 switches	500 switches	500 switches
<b>Front Panel</b>						
10M/100M Ethernet (RJ-45)	2	2	2	2	2	2
Analog	RJ-21X	RJ-21X	RJ-21X	RJ-21X	RJ-21X	RJ-21X
Audio input and output (mini)	•	•	•	•	•	•
T1 / E1 (RJ-48C)						
T1 / E1 monitor (RJ-48C)						
Maintenance (DB-9)	•	•	•	•	•	•
<b>Mechanical</b>						
19" rack mount	•	•	•	•	•	•
Dimensions	17.2 x 1.7 x 14.3 in. 43.6 x 4.4 x 36.3 cm	8.4 x 1.7 x 14.9 in. 21.3 x 4.3 x 37.8 cm	8.4 x 1.7 x 14.9 in. 21.3 x 4.3 x 37.8 cm	8.4 x 1.7 x 14.9 in. 21.3 x 4.3 x 37.8 cm	8.4 x 1.7 x 14.9 in. 21.3 x 4.3 x 37.8 cm	8.4 x 1.7 x 14.9 in. 21.3 x 4.3 x 37.8 cm
Weight	9 lb (4.1 kg)	5.3 lb (2.4 kg)	5.3 lb (2.4 kg)	5.3 lb (2.4 kg)	5.3 lb (2.4 kg)	5.3 lb (2.4 kg)
<b>Power</b>						
Input voltage, frequency	100-240 VAC, 50-60 Hz	100-240 VAC, 50-60 Hz	100-240 VAC, 50-60 Hz	100-240 VAC, 50-60 Hz	100-240 VAC, 50-60 Hz	100-240 VAC, 50-60 Hz
Input current	2A max.	1A max.	1A max.	1A max.	1A max.	1A max.
Consumption / dissipation	63 W max.	31/33 W max.	23/25 W max.	23/25 W max.	23 W max.	22 W max.
<b>Environmental</b>						
Operating temperature	0° to 50° C	0° to 50° C	0° to 50° C	0° to 50° C	0° to 50° C	0° to 50° C
Operating humidity	0-90% non-condensing	0-90% non-condensing	0-90% non-condensing	0-90% non-condensing	0-90% non-condensing	0-90% non-condensing
Storage temperature	-30° to 70° C	-30° to 70° C	-30° to 70° C	-30° to 70° C	-30° to 70° C	-30° to 70° C

<sup>†</sup> Availability varies based on geography. Please contact your local ShoreTel Representative for availability information.

\* Loop start trunks on ShoreGear 120 and DID trunks on all switches are supported in the US and Canada only.

				
ShoreGear 24A	ShoreGear T1k	ShoreGear 220T1/ ShoreGear 220T1A	ShoreGear E1k	ShoreGear 220E1
		220		220
24		- / 4		
-	-	- / 2	-	-
-	-	- / 4	-	-
24	-	- / 4	-	-
	24/23B+D	24/23B+D	30B+D+F	30B+D+F
	•	•	•	•
	•	•	•	•
	•	•	•	•
24	-	- / 6	-	-
10,000 ports	10,000 ports	10,000 ports	10,000 ports	10,000 ports
500 switches	500 switches	500 switches	500 switches	500 switches
2	2	2	2	2
RJ-21X		-/RJ-21X		
•	•	•	•	•
	•	•	•	•
	•	•	•	•
•	•	•	•	•
•	•	•	•	•
17.2 x 1.7 x 14.3 in. 43.6 x 4.4 x 36.3 cm	8.4 x 1.7 x 14.9 in. 21.3 x 4.3 x 37.8 cm	8.4 x 1.7 x 14.9 in. 21.3 x 4.3 x 37.8 cm	8.4 x 1.7 x 14.9 in. 21.3 x 4.3 x 37.8 cm	8.4 x 1.7 x 14.9 in. 21.3 x 4.3 x 37.8 cm
9 lb (4.1 kg)	5.3 lb (2.4 kg)	5.3 lb (2.4 kg)	5.3 lb (2.4 kg)	5.3 lb (2.4 kg)
100-240 VAC, 50-60 Hz	100-240 VAC, 50-60 Hz	100-240 VAC, 50-60 Hz	100-240 VAC, 50-60 Hz	100-240 VAC, 50-60 Hz
2A max.	1A max.	1A max.	1A max.	1A max.
63 W max.	18 W max.	18/29 W max.	18 W max.	18 W max.
0° to 50° C	0° to 50° C	0° to 50° C	0° to 50° C	0° to 50° C
0-90% non-condensing	0-90% non-condensing	0-90% non-condensing	0-90% non-condensing	0-90% non-condensing
-30° to 70° C	-30° to 70° C	-30° to 70° C	-30° to 70° C	-30° to 70° C-30

## ShoreGear Voice Switches Features\*:

### Telephone Features

500 switches per system  
 Answer  
 Bridged Call Appearance  
 Call barge in  
 Call forward, busy  
 Call forward, external  
 Call forward, no answer  
 Call hold  
 Call join  
 Call park/unpark  
 Call pickup extension  
 Call pickup group  
 Call recording  
 Call stack (1-16 calls)  
 Call redirect  
 Call transfer, blind  
 Call transfer, consultative  
 Call transfer, intercom  
 Call transfer, mailbox  
 Call transfer whisper  
 Call waiting  
 Caller ID name  
 Caller ID number  
 Caller ID blocking  
 Conference (6-party)  
 Conference blind  
 Conference consultative  
 Conference intercom  
 Dial number (speed dial)  
 Directory dialing  
 Distinctive dial tone  
 Distinctive ringing  
 E911  
 Group paging  
 Handsfree  
 Hang up  
 Hold  
 Hot key pad  
 Huntgroups  
 InstaDial  
 Intercom  
 Night bell  
 Message waiting  
 Missed call  
 Multiple emergency numbers  
 Multiple line appearance  
 Music-on-hold  
 Operator ("0")  
 On hold reminder ring  
 Office Anywhere  
 Outbound caller ID  
 Paging  
 Park and Page  
 Paging extension in paging group  
 Pick up night bell  
 Redial  
 Ringdown  
 Ring tone selection  
 Ring tone personalization  
 Send digits over call  
 Silent monitor  
 SIP  
 Voice mail ("#")  
 Whisper page  
 Whisper page mute

### Trunk types

Analog loop start  
 Analog wink start  
 TBR 21 support  
 T1 loop start  
 T1 wink start  
 T1 PRI  
 • N12  
 • 4ESS  
 • 5ESS  
 • DMS 100  
 • QSIG master  
 • QSIG slave  
 • CAS  
 E1 PRI  
 EURO-ISDN  
 • QSIG  
 • Hong Kong Variant  
 • QSIG Basic Call  
 E1 PRI  
 • EURO-ISDN  
 • New Zealand Telecom  
 • QSIG Basic Call  
 SIP  
 • RFC 3261 - SIP  
 • RFC 2976 - SIP INFO  
 • RFC 3891 - SIP Replace  
 • RFC 3515 - SIP Refer  
 • RFC 2396 - URI  
 • RFC 2388 - DTMF

### Trunk Features

ANI  
 Automatic trunk maintenance  
 Caller ID name  
 Caller ID number  
 Caller ID blocking  
 Centrex flash  
 Dial-in prefix  
 Dial-out prefix  
 DID  
 Digit translation  
 DNIS  
 Network call routing  
 Network/User side PRI  
 Off-system extensions  
 SIP  
 Tandem trunking  
 Trunk groups

### IP phone support

MGCP  
 VLAN (DHCP)  
 SIP (RFC 2833)  
 ToS/Diff Derv  
 UDP 5004 (patent pending)  
 Wideband codec  
 G.711uLaw  
 G.729A  
 BV-16 codec  
 BV-32 codec  
 802.3af PoE  
 G.722 codec  
 10/100/1000 switch  
 Headset compatible (built-in  
 electronic headset lifter)  
 Hearing-aid compatible  
 Programmable buttons  
 Speaker phone (full duplex)  
 Custom ring tones  
 Phone API

### DSP features

Dynamic echo cancellation  
 Dynamic jitter buffering  
 Lost packet handling  
 Voice compression  
 • Wideband  
 • BV-16 codec  
 • BV-32 codec  
 • Linear  
 • G.711  
 • ADPCM  
 • G.722  
 • G.729a

### System features

Account codes  
 ACD (workgroups)  
 Admission control  
 AMIS  
 Auto attendant  
 Backup auto-attendant  
 Bridge call appearance  
 Call permissions  
 Extension length (3-5 digits)  
 Fax redirection  
 Feature permissions  
 Integrated voicemail  
 IP phone failover  
 Media encryption  
 Office Anywhere (on-net)  
 Office Anywhere  
 (external assignment)  
 On-net dialing (1-7 digits)  
 Power fail transfer  
 PSTN failover  
 SMDI  
 SNMP

### Hunt groups

Simultaneous hunt  
 Top down hunt  
 Single or multiple calls  
 per extension  
 Busy out group  
 Busy out extension  
 16 extensions max. per switch  
 5 groups max. per switch  
 Call forward busy  
 Call forward no answer  
 Scheduled modes

\*Not all features in this list are supported by every switch. Please contact your ShoreTel representative for more details.

Note: Caller ID and Message Waiting on analog ports use FSK signalling.

## About ShoreTel

ShoreTel is a leading provider of *Pure IP* unified communications solutions that enable companies of any size to seamlessly integrate voice, video, messaging and data with their business processes. Independent of device or location, ShoreTel's unique distributed software architecture eliminates the traditional costs, complexity and reliability issues inherent in other solutions. Founded in 1996, ShoreTel has achieved broad industry recognition for this proven technology, and continues to deliver the highest levels of customer satisfaction, ease of use and manageability while driving down the overall total cost of ownership. For more information, visit [www.shoretel.com](http://www.shoretel.com).



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## Choices to meet every need

ShoreGear Voice Switches support up to 120, 90, 50 and 30 IP telephones or combinations of analog devices, providing a full range of solutions for enterprise headquarters, regional offices and small to midsize businesses. A power-fail transfer port on all switches ensures dial tone during power outages.

### Voicemail options

**ShoreGear 50V, ShoreGear 90V, and ShoreGear 90BRIV** provide distributed and survivable voicemail and auto-attendant features at a remote office or site. These switches offer an integrated voicemail alternative to server-based voicemail solutions.

### High-density analog option

**The ShoreGear 24A (analog)** for high-density analog phone environments is a perfect complement to other ShoreGear switches. ShoreGear 24A provides 24 analog extension ports at sites that require a high analog handset density. Trunks and IP phones are not supported.

### Digital trunk options

**The ShoreGear 220T1, ShoreGear 220T1A and ShoreGear 220E1** support digital trunks combined with up to 220 IP telephones, within a 1U half-width chassis. ShoreGear 220T1A also supports four analog extensions and two loop start trunks. All three switches provide an audio input port for music-on-hold, an audio output port for overhead paging, and night bell services.

**ShoreGear T1k, ShoreGear 220T1 and ShoreGear 220T1A** provide a T1 interface for high-density trunking to a central office. ShoreGear T1 options support loop start, wink start and PRI signaling.

**ShoreGear E1k and ShoreGear 220E1** provide an E1 interface for high-density trunking to a central office. ShoreGear E1 options support Euro-ISDN and Q-Sig PRI signaling.

All ShoreGear switches with a T1 or E1 interface can also function as a Voice over IP (VoIP) gateway to PBX installations—bridging the ShoreTel UC system to legacy systems and easing migration to IP telephony.

**ShoreGear 90BRI\* and ShoreGear 30BRI\*** deliver up to eight and two simultaneous communication channels to the central office, and support up to 90 and 30 IP telephones respectively. These switches also support Euro ISDN signaling over BRI interfaces.

## Key features and capabilities

### Embedded call control

ShoreGear Voice Switches use embedded Linux and VxWorks, leading real-time operating systems, making them immune from the attacks and viruses associated with other solutions. Embedded call control helps ensure that your organization's communications are delivered by ShoreTel's reliable, robust platform.

### Distributed call control

Call control on the ShoreTel UC system eliminates any single point of failure. In the unlikely event a ShoreGear Voice Switch fails or becomes isolated by a network fault, the other switches on the network continue to operate without being affected.

### SIP Support

ShoreGear Voice Switches support both SIP trunks as well as SIP devices that may be defined as user extensions. If configured, the voice switch will act as a SIP proxy enabling SIP telephones to become a part of the overall ShoreTel solution.

### IP telephone failover

A single additional ShoreGear Voice Switch helps ensure maximum reliability. If a ShoreGear Voice Switch supporting IP phones fails or is isolated by a network fault, the phones will automatically failover to the additional voice switch. This "N + 1" form of redundancy is simple, cost effective and incredibly reliable.

### Gateway failover

If a ShoreGear Voice Switch connected to the Public Switched Telephone Network (PSTN) fails or is isolated by a network fault, the system will automatically route calls through an alternative switch.

### PSTN failover

If the Wide Area Network (WAN) is down, or if admission control for WAN voice traffic is reached, extension-to-extension calls between sites can automatically route over the PSTN, ensuring seamless communication.

### Ethernet port failover

ShoreGear Voice Switches feature redundant network uplinks. If the upstream network device fails, voice switches will automatically fail over to the redundant link, helping to ensure continuous operation.

### Power failover

Every ShoreGear Voice Switch features power fail transfer. If a complete power outage exceeds reserve power duration, one analog trunk on the ShoreGear Voice Switch will automatically connect to one analog telephone, providing emergency dial tone.

\* Availability varies based on geography. Please contact your local ShoreTel representative for availability information.