

# ShoreGear Voice Switches



Enabling business-critical  
Unified Communications  
with high performance  
and high reliability



ShoreTel® ShoreGear® Voice Switches deliver unified communications 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 both IP phones and analog devices.

### *Eliminate communication boundaries*

ShoreTel delivers breakthrough unified communications to help organizations realize significant productivity gains, as employees spend less time interacting with disparate voice systems and more time communicating with each other. ShoreTel's Pure IP unified communications (UC) solutions enable flexible dialing across the enterprise, and seamless transfer, conference, pick up, park and intercom between sites.

ShoreTel's UC system also reduces "phone tag" with features designed for efficiency, including the Office Anywhere feature that lets users assign their extensions to any internal or external telephone. Productivity rises and customer satisfaction increases as calling parties connect with the right people, faster.

### *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 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 place and receive calls.

If a ShoreGear Voice Switch supporting IP phones fails or is isolated by a network fault, the phones will automatically failover to another voice switch at the site. Second-, third- and fourth- level redundancy can be configured by simply adding additional voice switches. This "N + 1" form of redundancy is simple, cost effective and extremely reliable.

### *Smooth migration and seamless scalability*

With 15 stackable, space-efficient designs, ShoreTel offers a wide range of solutions for organizations of any size. Growing companies can simply add ShoreGear Voice Switches; the system scales geometrically and seamlessly. 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*

The exceptional ease of installation, ease of use and centralized management help lower ongoing maintenance and operating expenditures of ShoreTel's UC system. New ports and users can be added by simply connecting switches to the network. ShoreWare® Director management software automatically discovers new switches and adds them to the ShoreTel UC system. Designed for power efficiency, ShoreGear Voice Switches also help lower energy consumption and further corporate green initiatives.

### *Exceptional voice quality*

In independent rankings\*, 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.

## BENEFITS

- Pure IP unified communications delivers exceptional quality
- Highly scalable switch solutions meet the needs of enterprises, and small and medium businesses
- 99.999% system availability exceeds stringent enterprise standards
- One system spans multiple locations
- Centralized management helps reduce installation
- RoHS/WEEE compliant

\*"Unified Communications and Collaboration: Top VoIP Providers," Nemertes Research, July 2008.



MODEL	ShoreGear 120	ShoreGear 90	ShoreGear 90BRI †	ShoreGear 50	ShoreGear 30	ShoreGear 30BRI †
<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>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 switches	500 switches	500 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)
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 W max.	23 W max.	23 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

† 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 Voice Switches Features:

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
	•	•	•	•
	•	•	•	•
	•	•	•	•
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

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

### 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  
 Voicemail ("#")  
 Whisper page  
 Whisper page mute

### Trunk types

Analog loop start  
 Analog wink start  
 TBR 21 support  
 T1 loop start  
 T1 wink start  
 T1 PRI  
 • NI2  
 • 4ESS  
 • SESS  
 • 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 buffer  
 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  
 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

## 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).

## 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 that are ideal for enterprise headquarters, regional offices and small to midsize businesses. A power-fail transfer port on all switches ensures dial tone during power outages.

### 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 the switches provide an audio input port for music-on-hold, plus 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 or 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 pre-existing 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 the Euro ISDN signaling over BRI interfaces.

## Key features and capabilities

### Embedded call control

ShoreGear Voice Switches use the VxWorks leading real-time operating system, 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 the most reliable, robust platform on the market.

### 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 at the site. 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 voice traffic on WAN 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 failover 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 the duration of the reserve power, 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.



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