



# Sprint Direct Connect *Capability Guide*

## Introduction

Avtec's Scout VoIP Console system integrates seamlessly with Sprint® Direct Connect® AdvanceBridge and brings the features of the Sprint Direct Connect network to a dispatcher's console.

Direct Connect is Sprint's VoIP PTT service over its 3G cellular network and is the successor to the iDEN network used by Nextel devices.

## Capabilities-at-a-Glance

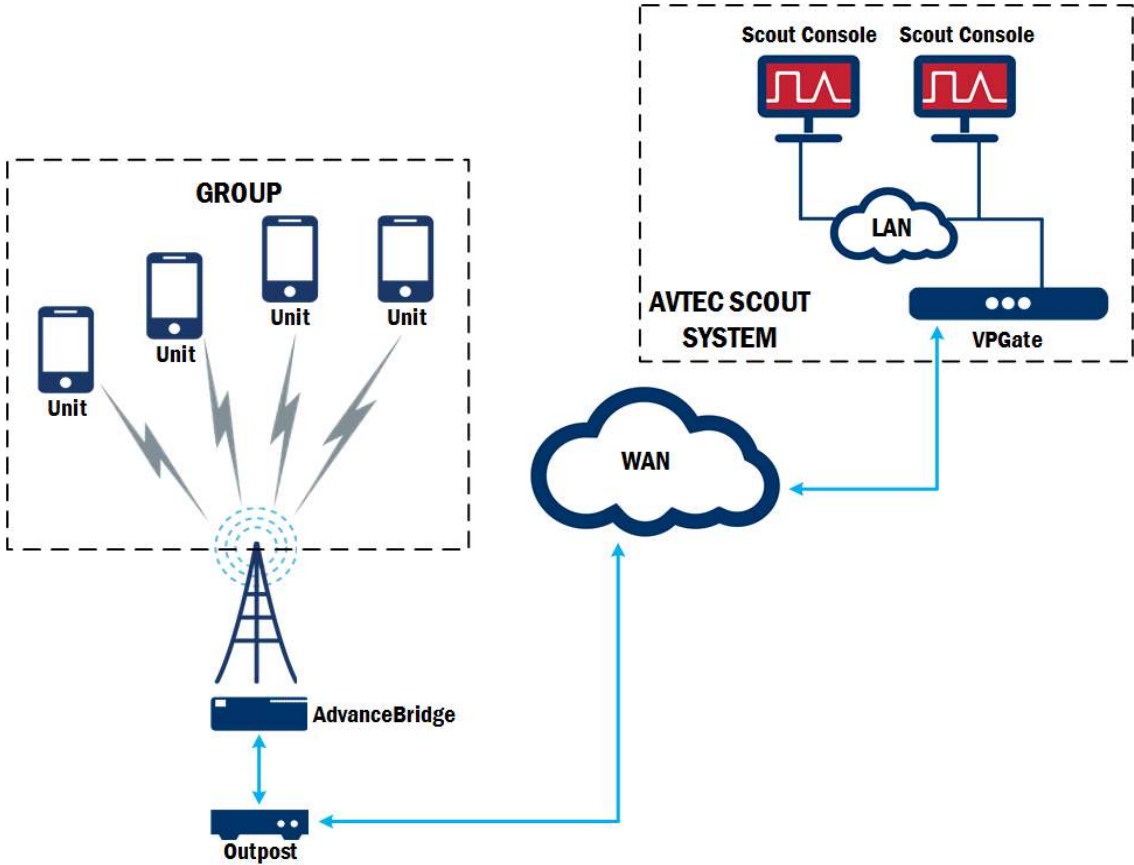
Capability (Avtec term)	Direct Connect Capability Term (if different)	Description
Activity History with integrated Instant Recall Recorder (IRR)		Activity History and IRR are Scout tools that allow the dispatcher to see a history of past conversations or to replay audio from past conversations for analysis or clarification.  <b>Note:</b> Instant Recall Recorder is an optional feature of Scout.
Call Alert		A call alert contacts either the dispatcher or a subscriber. If the person was away from the console or vehicle, the alert leaves an indication that someone tried to make contact.
Caller Preemption		The Scout System Administrator gives certain radios priority in the Sprint system so that their calls preempt other calls in the group.

Capability (Avtec term)	Direct Connect Capability Term (if different)	Description
Group Call	Group Connect® TeamDC	Group calls let a Scout Console affiliate with a group of subscriber radios for the purpose of establishing voice communication between the dispatcher and the group of subscribers.  Sprint TeamDC can communicate simultaneously with up to 200 Direct Connect subscribers.
Patch		Patching allows the dispatcher to connect a group or unit to other radio or telephone endpoints to allow subscriber units to communicate with subscriber units of other radio technologies. The console position establishes a communication path between two or more radio or telephone endpoints that are normally unable to communicate with each other.  <b>Note:</b> Scout patching does not use dynamic regrouping.
PTT ID with Alias (ANI)	ANI	PTT ID displays the subscriber unit ID of the person speaking on the display in the associated talkgroup channel icon and in Activity History. PTT ID Alias changes the PTT ID from a numerical ID to an alphanumeric string. For example, PTT ID 2527 can be named "Fire Engine 27" as the alias.
Unit Call Private Call	Individual Call	A unit-to-unit call establishes a private voice call between the dispatcher and an individual subscriber unit. Scout can send and receive calls to and from individual Direct Connect subscriber units.

### Connections

Scout's Sprint Direct Connect interface operates through an Outpost connection to the AdvanceBridge™ from AdvanceTec™.

Refer to Avtec's *Installing and Configuring Sprint Direct Connect* for more information.



*Scout Consoles can communicate with any Sprint Direct Connect subscriber within the Sprint network through the Outpost interface with an AdvanceBridge.*

*Scalability*

Each AdvanceBridge is paired with an Outpost. Therefore the scalability is the same as for Outpost. Refer to the *Outpost User Guide* for further information.

*Licensing*

All Scout software is licensed and requires acceptance of the Terms and Conditions for the software during the installation process. In addition to this acceptance, certain components also require a special license key provided on either a dongle or through the software.

Avtec does not charge a separate licensing fee for the Sprint Direct Connect driver.

For detailed licensing information, contact your Avtec sales representative.

Each Sprint Direct Connect endpoint requires an Outpost (OUTPOST-2R) and an Outpost cable kit (OUTPOST-SDC) which includes a software license. Cable is included at no charge.



*VPGate License*

The base VPGate license size represents the maximum number of endpoints that can be active at any one time on a single VPGate. The base license is available in several sizes: 24, 40, 80, or 160 endpoints. To use more endpoints, you need additional VPGate licenses.

VPGate License Model Number	Total Category A&B Endpoints	Maximum SIP Endpoints (Category B)	Redundant
SFW-VPG-L0-NR SFW-VPG-L0-NR-SK	24	12	No
SFW-VPG-L0 SFW-VPG-L0-SK	24	12	Yes
SFW-VPG-L1 SFW-VPG-L1-SK	40	20	Yes
SFW-VPG-L2 SFW-VPG-L2-SK	80	40	Yes
SFW-VPG-L3 SFW-VPG-L3-SK	160	100	Yes

*Network Requirements*

The Scout Console requires an IP network to interconnect all of the elements, from the consoles, to the VPGate gateway, to Outposts, and to the endpoints. The minimum requirement is a 100 Mbps switched Ethernet network that is compatible with, and configured to recognize, DiffServ Code Point (DSCP) tagged packets. DiffServe tags ensure the proper Quality of Service (QoS) for the VoIP packets. All LAN segments must support multicast.

Each Scout console requires a minimum of either one or two Ethernet connections. If using the Hardware Media Workstation, two Ethernet connections are required, one for the console PC and one for the media workstation. If using the Software Media Workstation, only one for the console PC is required. More are required when implementing redundant networks. Each VPGate requires one Ethernet port.

**NOTE**  
Outpost requires only one Ethernet port even though it supports two audio connections.

For more information on the topics presented in this section, see the *VPGate Network Architecture and Networking Design Considerations* document.

**Jitter and Latency**

The main contributors to latency are the sum of the network transit time and the jitter buffer size. For both Outpost and the Scout media workstations (hardware media workstation and software media workstation), the jitter buffer can be configured on a per device basis. Scout supports variable packet sizes down to 20 milliseconds (ms), which allows the buffer to be set at 60 ms. Generally, a goal of less than 150 ms end-to-end latency is preferred.

Scout allows for jitter ranging from 60 ms to 2.5 seconds.



## Bandwidth

### NOTE

Outpost requires only one Ethernet port even though it supports two audio connections.

Sufficient bandwidth must be available on the IP network. A typical Outpost-to-VPGate IP connection for one simplex radio can consume 24 kbps to 80 kbps for audio transmission during activity, depending on codec choice. A fully populated repeater network can require more than 700 kbps during normal activity.

For Voice Over Internet Protocol (VoIP) recording (IP recording), Scout can handle all audio from the Scout Console which includes Select and Unselect audio, plus all endpoint audio (Outpost endpoints and all others). The audio packets sent to the recorder are standard RTP packets. When using IP recording, verify that the network includes enough bandwidth to support IP recording. The required bandwidth can vary from 30 kbps to 85 kbps, depending upon the audio codec in use.

## QoS (Quality of Service)

Avtec's minimum requirements are 100 Mbps switched Ethernet and that is compatible with, and configured to recognize, DSCP tagged packets to ensure the proper Quality of Service. LAN segments must support multicast.

## Addresses and Ports

For efficiency on the LAN, VPGate uses multicast to forward the unicast packets from Outpost and other endpoints to the Scout consoles. Whenever an endpoint is active and transmitting its audio to VPGate, the audio is automatically forwarded to one or more consoles that have the endpoint selected or monitored.

The material in this document is for information only and is subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, Avtec, LLC assumes no liability resulting from errors or omissions in this document, or from the use of the information contained herein. Avtec, LLC reserves the right to make changes in the product design without reservation and without notification to its users. Avtec updates capability guides as changes occur. A capability guide could be the most current yet reflect a prior Scout release number if changes were not necessary at each release.

Scout™, VPGate™, Frontier™, Audio Bridge™, Avtec SIP Proxy™, ScoutLink™, CommScape™, and Outpost™ are trademarks of Avtec, LLC.

© Avtec, LLC 2019.

