



Scout with Frontier *Capability* *Guide*

Introduction

Scout with Frontier allows sites to share endpoints. It makes efficient access to geographically diverse endpoints a reality. A Frontier-enabled Scout system reduces wide area network (WAN) use and provides seamless access to endpoints located anywhere Frontier software exists.

At startup, Frontier-enabled Scout locations advertise their local endpoints to other Frontier peers and identify the remote endpoints in which they have interest. This discovery process allows Frontier to learn how to access remote endpoints. However, for network efficiency, they do not pass audio or most status updates across the WAN until a console position actually wants to use a remote endpoint. When using a remote endpoint, the local console places the endpoint in Select and the local Frontier passes the information over the WAN, via unicast communication, to the remote Frontier. The remote Frontier, now using multicast communication, gathers all call information through its local VPGate. This information then passes back across the WAN, once again using unicast, to the local console through the local Frontier. When in this active state on a console, this remote endpoint displays and reacts no differently than local endpoints. To the dispatcher, the difference is unnoticeable and full operational capability is supported.

A Frontier-enabled Scout location can be composed of a fully deployed Scout system or as little as a Frontier computer and one or more remote Scout consoles. In addition, Frontier can be installed to communicate with its local Scout console using either a multicast configuration or a direct, localhost connection. In any configuration, a Scout system with Frontier provides seamless interaction with all endpoints, both those homed to a local instance of VPGate and those homed to an instance of VPGate located in a site across the WAN.

Beginning with Scout Version 4.0, report data from Frontier sites is rolled up and included in the reports data for the entire Scout system. Scout Central Distributor (SCD) gathers alarms, events, dispatcher activity, endpoint activity, and call activity from all Frontier-enabled sites to include in the Scout system reports.

Frontier is licensed and controlled via a Frontier-enabled VPGate license key. Licenses allow for redundant implementation to prevent a single point of failure. Frontier software operates on a Windows 10, Windows Server 2012 R2 Update 1, Windows Server 2016, or Windows Server 2019 platform. It requires Scout Version 2.4 or later and Frontier-enabled VPGate Version 2.4 or later.

Capabilities-at-a-Glance

Scout Frontier offers capability to the Scout marketplace that is unparalleled in its ability to eliminate multicast traffic across a Wide Area Network (WAN) yet provide full endpoint capability. The following tables provide a high level description of Frontier's capabilities and iterate many of the Scout console capabilities that Frontier supports.

Frontier	
Capability	Description
Enterprise Endpoint Access	Frontier provides Scout consoles the capability to access any endpoint at any Frontier-enabled site, regardless of geographic location. The connection is seamless, allowing the dispatcher access to endpoints in other networks throughout the enterprise.
Reduced WAN Requirements	<p>Frontier receives multicast messages from VPGate that it communicates to configured and connected Frontier peers across the WAN. To do this efficiently, with reduced WAN needs, Frontier packages the LAN-based multicast messages into unicast messages to "tunnel" the messages across the WAN. The receiving Frontier peer unpacks the messages and sends them to the interested Scout consoles.</p> <p>In addition, Frontier reduces the number of messages sent by sending signals as needed. For example, VOX indications do not display for a remote endpoint until the endpoint is in a Select or Unselect state. ANI indications are only sent to inactive endpoints when the feature is enabled on the Frontier Configuration webpage. Similarly, if multiple consoles request the same endpoint from across the WAN, Frontier sends the remote endpoint information once to other Frontier peers instead of sending the information for each interested Scout console. The receiving Frontier peer distributes the information to all interested Scout consoles.</p>
Redundancy	To prevent a single point of failure for endpoints, Frontier can be installed on two different computers to provide redundancy. These computers can be on a single subnet or multiple subnets to provide redundancy automatically at the Frontier level or even at the network level. One instance of Frontier is the active instance, used for day-to-day activity. The other is the backup Frontier instance, used for standby. Avtec offers Frontier-enabled VPGate licenses in redundant pairs to provide the capability to install the system on two computers for endpoint redundancy.
Endpoint Consistency Across Sites	To support project consistency for autonomous Frontier-enabled Scout sites, VPGate issues diagnostic events when an endpoint is added, deleted, or has a name change. The events, viewed through Scout Central Distributor (SCD) or an SNMP manager, alert the Scout System Administrator to endpoint updates so that the administrator can keep the shared endpoint names in sync by making the necessary changes to the projects.
Multiple Frontier Peer Connections	Frontier supports up to 200 Frontier-to-Frontier peer connections, regardless of the number of endpoints at each location.

Frontier supports the tried and true Scout console capabilities that lie at the center of Scout's usability. The table that follows identifies some of Scout's capabilities.

Scout Console	
Capability	Description
Configurable Navigation and Design	Scout's configurability lets a company create a system to meet its exact needs. Many controls can be customized with color and text. The console design itself is user-defined and allows for controls, windows, tabs, links, and other elements to meet a customer's needs.
User Interface Controls	The Scout Console User Interface offers a variety of standard controls that give the dispatcher the tools to operate the Scout console effectively. Some of these include Volume Control, VU Meter, PTT Indicator, Dispatcher Messages, Frequency Control, Time/Date Display, and CTCSS Disable. Additional function pads, endpoint pads, endpoint pad extenders, and action buttons provide access to endpoints, information, and functions necessary to operate the Scout console.
Advanced Radio Features	Frontier supports the advanced radio features for Scout-supported radios that use them. The features include Unit Check, Unit Monitor, Unit Stun, Unit Kill, and Unit Revive.
Standard Call States	All of the standard call states that the Scout console supports – Select, Unselect, Mute, Hold, All Mute – are also supported for remote endpoints over Frontier.
Call Activity and Call History	Endpoints over Frontier can use Scout's call and activity tracking controls such as Scout Instant Recall Recording (IRR), Activity History, and Dispatcher Message History.
Contact Control	Scout systems using Frontier maintain the contact control that is an integral component of a Scout system. A single Scout system can support up to 1,000 contact groups and 10,000 contact devices.
Transmit Options	Dispatchers using endpoints over Frontier maintain Scout's ease-of-transmit options for calling through a variety of controls. One touch transmit via endpoint pads, Instant Transmit pads, Call Queue options, Auto Contact pads, and the Contact Dialer is available for local endpoints as well as Frontier endpoints from across the WAN.
Multi-Endpoint Interactions	Frontier supports the multi-endpoint interactions available in Scout such as patching, simul-select, and call transfer.
Paging Support	Paging, whether for locally homed endpoints or for endpoints homed across the WAN, operates identically. The paging tools such as the Paging Dialer, Paging Status Display, and Instant Transmit support all endpoints.
Emergency Call and Emergency State Support	All endpoints within a Scout Frontier system can support emergency calls and emergency states. An Emergency Call is a call with a higher priority level than a regular call. An Emergency State alerts the dispatcher of an emergency declaration from a subscriber unit on the associated talkgroup icon. Other Scout features such as the Emergency Clear function pad, Channel Marker, and the NENA E911 Radio / Telephone Headset Interface also provide emergency support functions.

Scout Console	
Capability	Description
Supervisory Support	Endpoints homed across the WAN and available through Frontier use many of the same features available to local endpoints for supervisory support, for example Headset Monitor and Workstation Relays.
Call Indications	<p>Endpoints homed across the WAN provide indications to the dispatcher when the endpoint is in an active state such as Unselect or Select. These include VOX, PTT, cross indications, in-use indications, Frequency, Encryption, and ANI.</p> <p>Remote endpoints in Disconnect state, however, conserve WAN activity by limiting indications to call indications, PTT cross indications, and state cross indications. Once the endpoint goes active, it supports the full range of call indications.</p>
Diagnostics	Scout provides diagnostic information for a Scout Frontier site as with any other Scout site. SCD receives alarm information from the site to include in the Scout system alarm reports and diagnostic statistics to include in reports regarding call activity, endpoint activity, and dispatcher activity.

NOTE

At this time, Scout Frontier does not support auxiliary input/output endpoints including VoIP endpoints with any auxiliary input/output driver, or Supervisor Takeover.

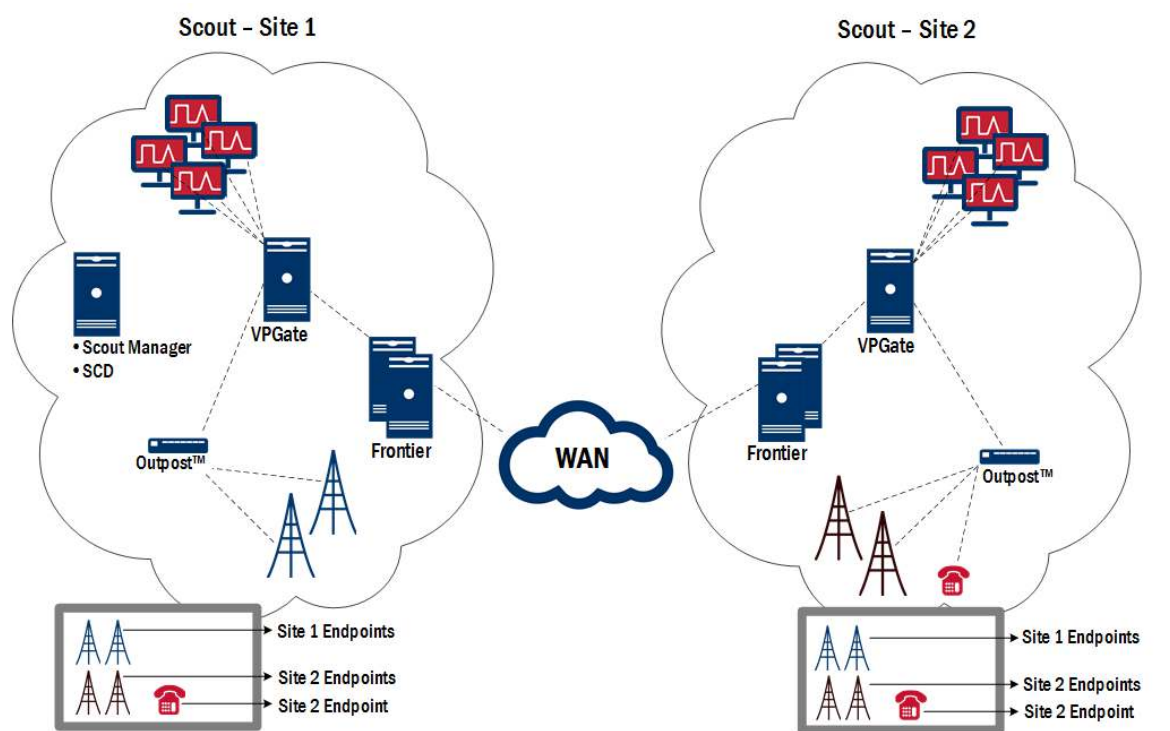
NOTE

Avtec does not recommend monitoring more than 50 endpoints on a single console over Frontier.

Configurations

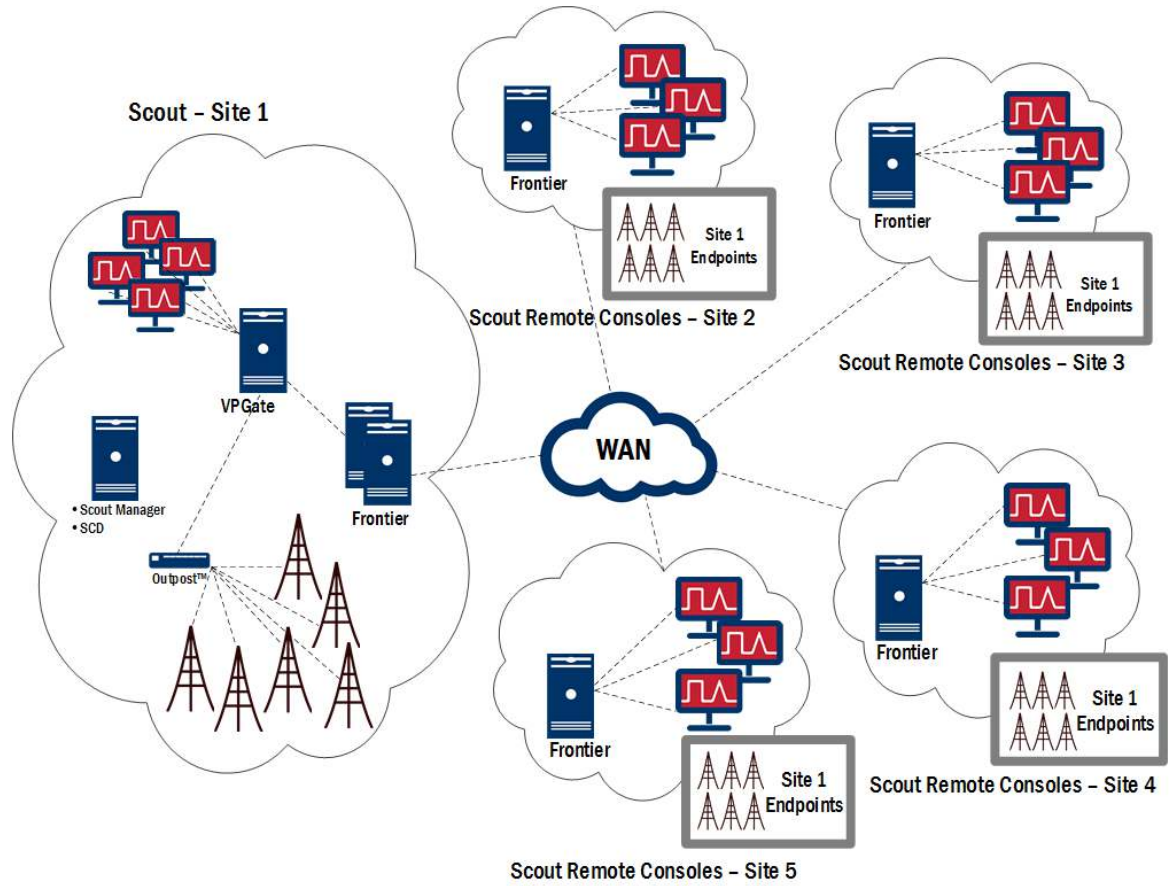
Scout with Frontier facilitates communication among various Scout sites and, at the same time, reduces multicast bandwidth requirements for traffic that traverses the Wide Area Network (WAN). The diagrams that follow provide examples for Frontier configuration in a total Scout system.

Site-to-Site



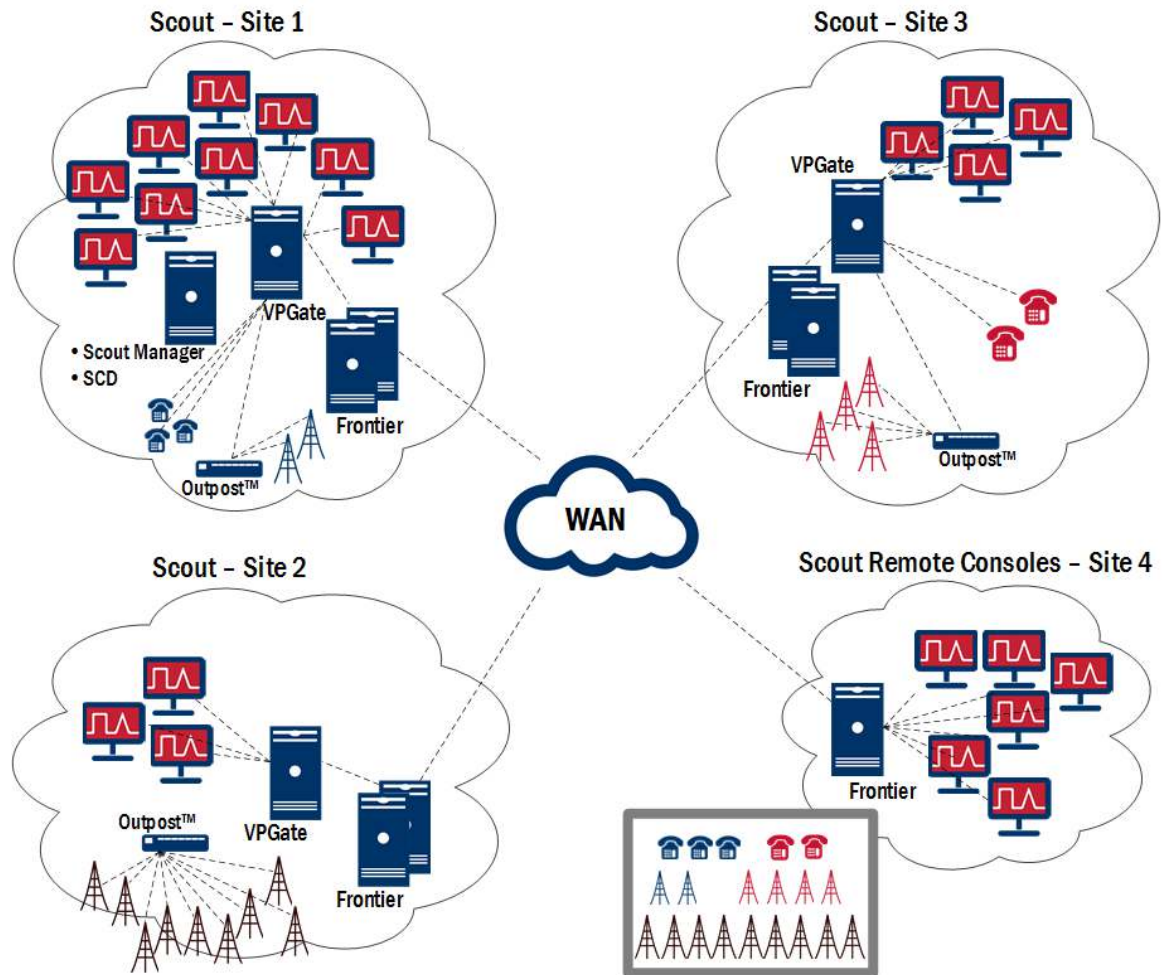
This illustration depicts two fully deployed Scout sites connected via Frontier using redundancy. The consoles in each site not only connect to their local endpoints, but Frontier allows them to also connect seamlessly to the remote endpoints from the other Scout site.

Many-to-One



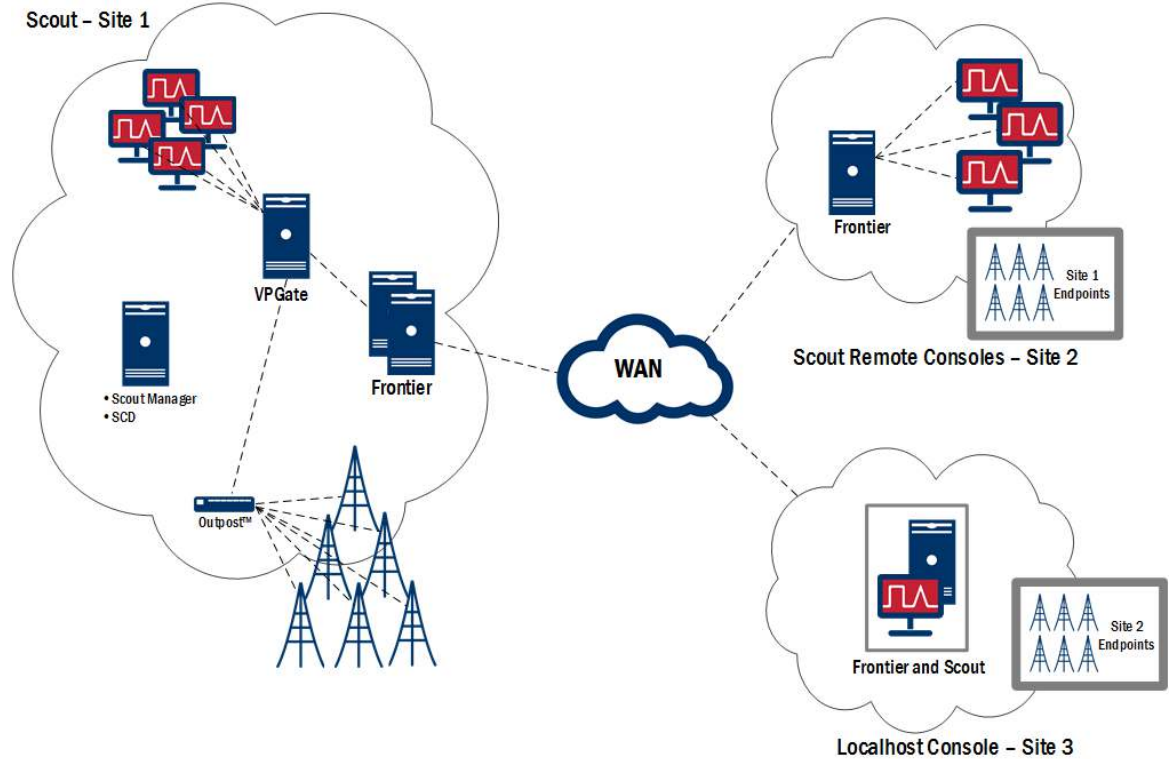
This illustration shows several console-only sites connected to one fully deployed Scout site (Site 1) which includes all endpoints for the business. The consoles in Sites 2 through 5 access the endpoints in Site 1 seamlessly via Frontier.

Sites to
Master Consoles



This illustration demonstrates how consoles in Site 4 can serve as a command center with access to all endpoints from a multitude of Scout sites. Scout consoles at Site 1, Site 2, and Site 3 each interact with the endpoints within their own LANs, while the Scout consoles at Site 4 interact via Frontier with all endpoints from the three other sites.

Localhost Console



This illustration shows a fully deployed Scout site connected with a Localhost Console site and a Scout Remote Console site. This Scout system includes:

Site 1 – Fully deployed Scout Frontier site with VP Gate hosting local endpoints.

Site 2 – A Scout console-only site where three local Scout consoles communicate via multicast with the local Frontier to register endpoints from Site 1.

Site 3 – A Localhost Console site where the Scout console and Frontier reside on the same computer and communicate with one another via the localhost ports. The Frontier registers all needed endpoints from Site 1.

NOTE

Frontier is approved for use on MOTOTRBO™ Connect Plus and Multi-Site Capacity Plus in localhost console deployments with a single multicast domain only. Frontier is not currently approved on MOTOTRBO™ Connect Plus and Multi-Site Capacity Plus with any of the multi-site console system deployments described.

Frontier Licensing

Frontier software is controlled through VPGate license keys provided on either a dongle or through the software. Customers purchase a Frontier-enabled VPGate license key to allow these endpoints to be shared with other Frontier-enabled Scout sites. Licenses are sold on a redundant basis like standard VPGate licenses. License sizes mirror those of the VPGate licenses that are not Frontier-enabled.

Model numbers ending with -SK indicate software license keys. Model numbers without -SK indicate that license keys are provided on a dongle.

Frontier-Enabled Standard VPGate Base Software License Capacity			
Avtec Model Number	Total Endpoints	Category B Endpoints	Redundant
SFW-VPG-L0-NR-FTR SFW-VPG-L0-NR-FTR-SK	24	12	No
SFW-VPG-L0-FTR SFW-VPG-L0-FTR-SK	24	12	Yes
SFW-VPG-L1-FTR SFW-VPG-L1-FTR-SK	40	20	Yes
SFW-VPG-L2-FTR SFW-VPG-L2-FTR-SK	80	40	Yes
SFW-VPG-L3-FTR SFW-VPG-L3-FTR-SK	160	100	Yes

Upgrading to Frontier

Existing Scout customers can take advantage of Frontier's capabilities by upgrading to Scout Version 2.4 or later and to a Frontier-enabled VPGate system. For more information, contact your Avtec sales representative.

Recommended System Requirements

Refer to the Scout System Requirements document for minimum and recommended system requirements.

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