

NAV Series Pro AV over IP Systems Ports and Licenses

This guide contains information about network port requirements and third-party software packages used for Extron NAV® Pro AV over IP Series of products. The diagram below and the tables on the following pages show the network ports and protocols that are required for communication between the NAVigator, NAV encoders, NAV decoders, and Extron tools and controls. Consult your network administrator to confirm the connectivity for the network ports mentioned in this guide.

Network (AV LAN) Port Requirements for Configuration, Maintenance, and Control

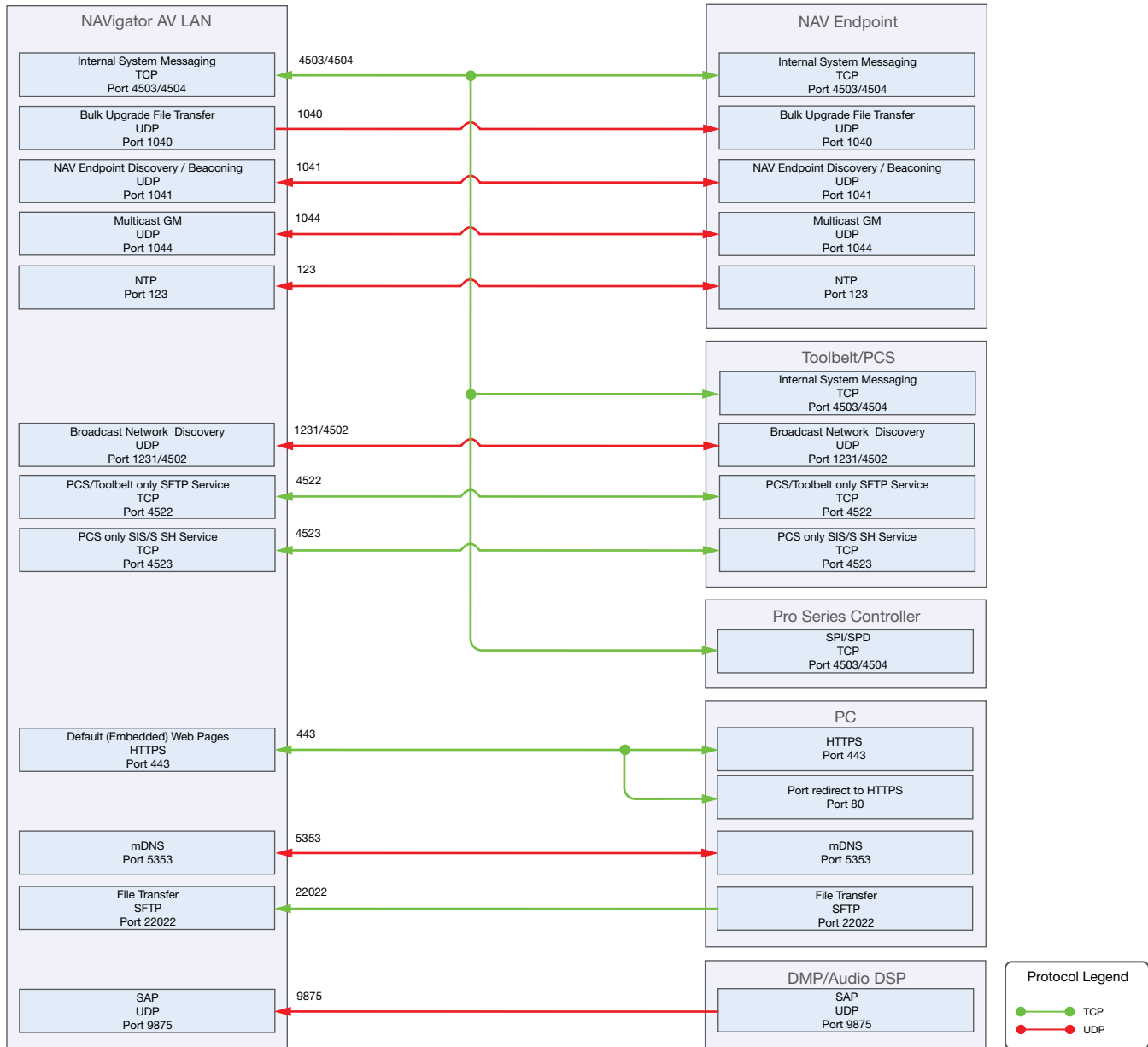


Figure 1. Network Port Map for NAVigator AV LAN Port

NAV Series Pro AV Ports and Licenses Guide (Continued)

NAV Pro AV Configuration, Maintenance, and Control Table

The following table provides network port information for network planning and troubleshooting.

Table 1. Ports and Protocols for navigator AV LAN Interface

Port	Protocol	Service	Description	Default address
80	TCP	HTTP	Redirects to TCP 443	
443	TCP	HTTPS / SSL	Secure device web page	
4522	TCP	SFTP	PCS / Toolbelt only SFTP service	
4523	TCP	SSH / SIS	PCS only SIS / SSH service	
1231 / 4502	UDP	BCAST	Broadcast mode listener for Toolbelt and PCS	
4503 / 4504	TCP	GM	Inter-device communication	
1040	UDP	BULKXFER	Multicast bulk upgrade file transfer	239.255.255.249
1041	UDP	IGMP	NAV endpoint discovery and beaconing	239.255.255.254
1044	UDP	IGMP EP2EP	Multi-cast inter-device communication for ID pairing	239.255.255.254
5353	UDP	mDNS	Multicast DNS service for Dante controller discovery	224.0.0.251
34419	UDP	AVAHI	Zero-Conf (Link-Local address)	
9875	UDP	SAP	Session announcement protocol for AES67	239.255.255.255
67 / 68	UDP	DHCP	Dynamic host configuration protocol	
123	UDP	NTP	Network time protocol	
22022	TCP	SFTP	Secure file transfer	

Out of Band (OOB) Port Requirements for Configuration, Maintenance, and Control

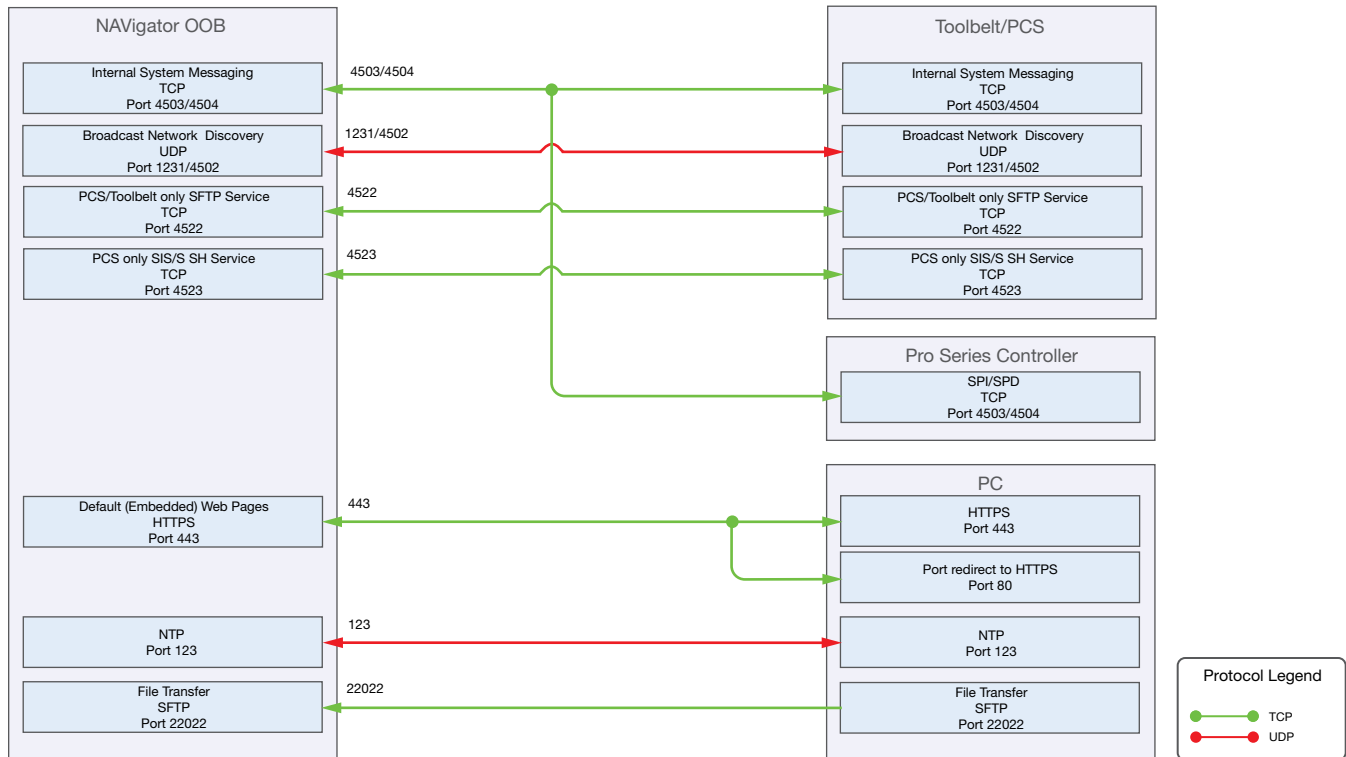


Figure 2. Network Port Map for NAVigator OOB Port

NAV Pro AV Configuration, Maintenance, and Control Table

The following table provides network port information for network planning and troubleshooting.

Table 2. Ports and Protocols for NAVigator OOB Interface

Port	Protocol	Service	Description
80	TCP	HTTP	Redirects to TCP 443
443	TCP	HTTPS / SSL	Secure device web page
4522	TCP	SFTP	PCS / Toolbelt only SFTP service
4523	TCP	SSH / SIS	PCS only SIS / SSH service
1231 / 4502	UDP	BCAST	Broadcast mode listener for Toolbelt and PCS
4503 / 4504	TCP	GM	Inter-device communication
67 / 68	UDP	DHCP	Dynamic host configuration protocol
123	UDP	NTP	Network time protocol
22022	TCP	SFTP	Secure file transfer

NAV Series Pro AV Ports and Licenses Guide (Continued)

Encoder Port Requirements for Configuration, Maintenance, Control, and Streaming

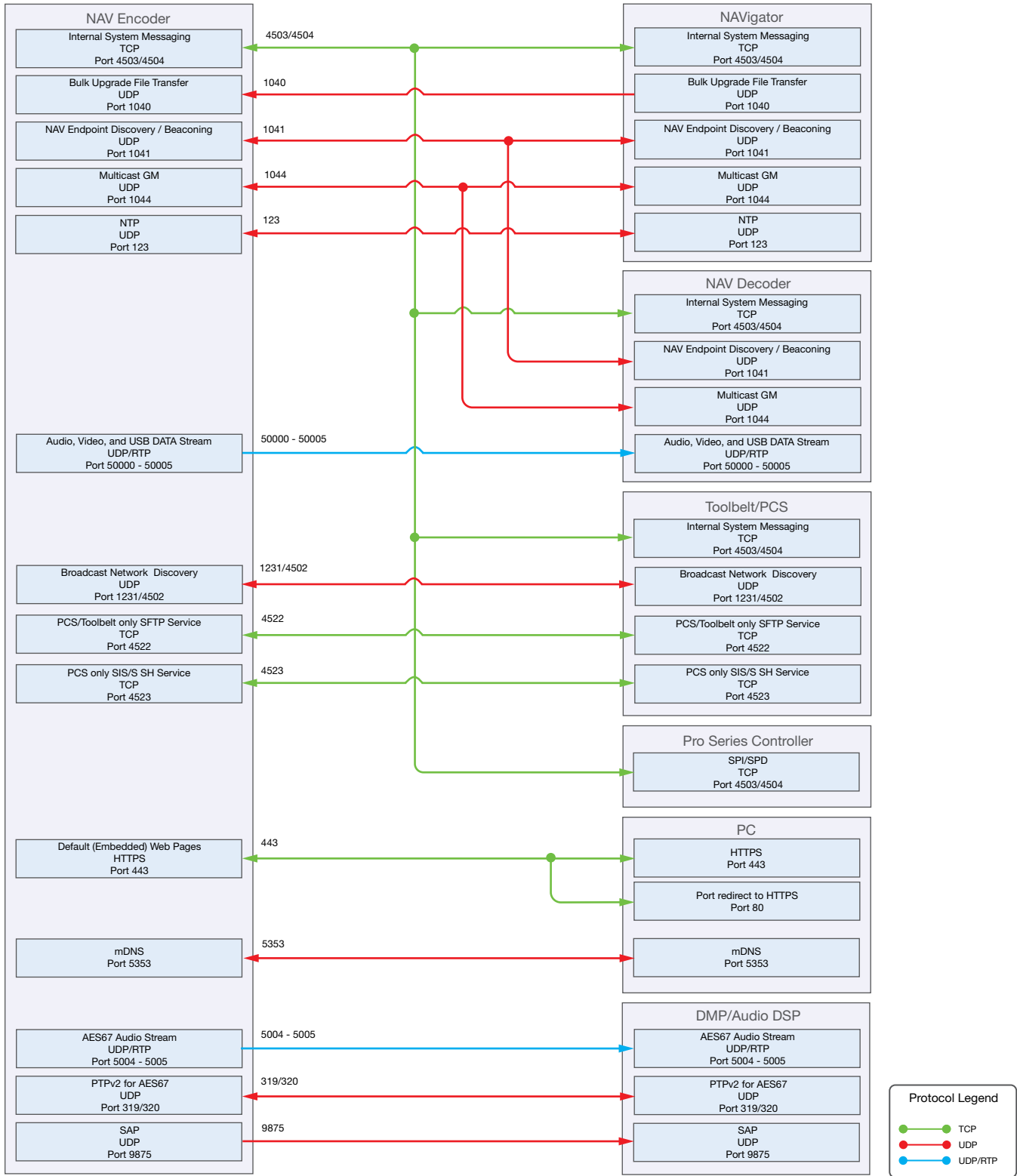


Figure 3. Network port map for NAV Encoders

NAV Pro AV Configuration, Maintenance, Control, and Streaming Table

The following table provides network port information for network planning and troubleshooting.

Table 3. Ports and Protocols for NAV Encoder

Port	Protocol	Service	Description	Default address
80	TCP	HTTP	Redirects to TCP 443	
443	TCP	HTTPS / SSL	Secure device web page	
4522	TCP	SFTP	PCS / Toolbelt only SFTP service	
4523	TCP	SSH / SIS	PCS only SIS / SSH service	
1231 / 4502	UDP	BCAST	Broadcast mode listener for Toolbelt/PCS	
4503 / 4504	TCP	GM	Inter-device communication	
1040	UDP	BULKXFER	Multicast bulk upgrade file transfer	239.255.255.249
1041	UDP	IGMP	NAV endpoint discovery and beaconing	239.255.255.254
1044	UDP	IGMP EP2EP	Multi-cast inter-device communication for ID pairing	239.255.255.254
5353	UDP	mDNS	Multicast DNS service for Dante controller discovery	224.0.0.251
34419	UDP	AVAHI	Zero-Conf (Link-Local address)	
9875	UDP	SAP	Session announcement protocol for AES67	239.255.255.255
319/320	UDP	PTP	Precision Time Protocol for AES67	224.0.1.129
123	UDP	NTP	Network time protocol	
50000-50005	UDP	Data stream	Video, audio, and USB streams	V: 239.1.xxx.xxx A: 239.0.xxx.xxx USB: 239.2.xxx.xxx
5004 - 5005	UDP	AES67	AES67 audio stream	239.69.0.0. — 239.69.255.255
67 / 68	UDP	DHCP	Dynamic host configuration protocol	

NAV Series Pro AV Ports and Licenses Guide (Continued)

Decoder Port Requirements for Configuration, Maintenance, Control, and Streaming

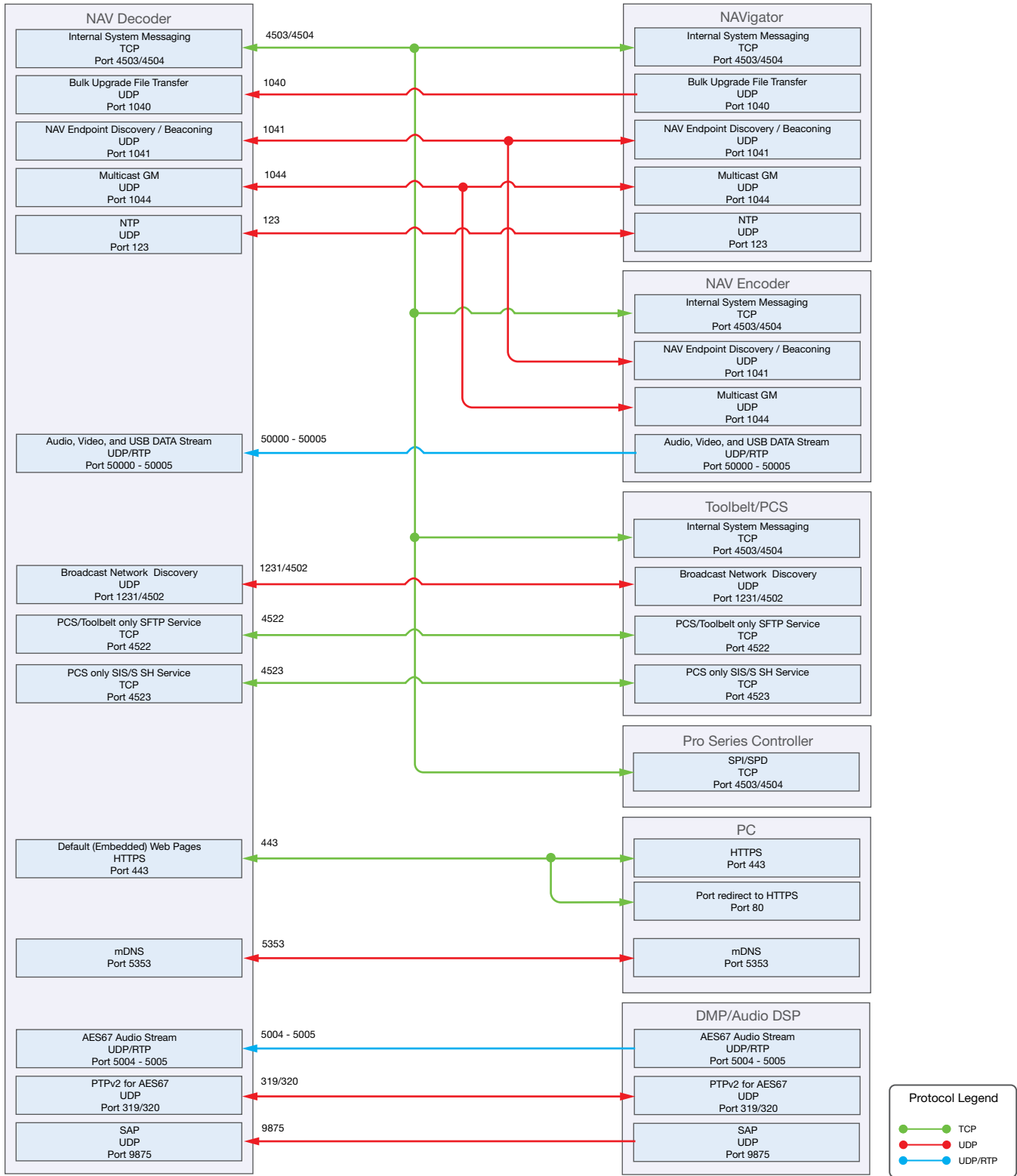


Figure 4. Network port map for NAV Decoders

NAV Pro AV Configuration, Maintenance, Control, and Streaming Table

The following table provides network port information for network planning and troubleshooting.

Table 4. Ports and Protocols for NAV Decoder

Port	Protocol	Service	Description	Default address
80	TCP	HTTP	Redirects to TCP 443	
443	TCP	HTTPS / SSL	Secure device web page	
4522	TCP	SFTP	PCS / Toolbelt only SFTP service	
4523	TCP	SSH / SIS	PCS only SIS / SSH service	
1231 / 4502	UDP	BCAST	Broadcast mode listener for Toolbelt/PCS	
4503 / 4504	TCP	GM	Inter-device communication	
1040	UDP	BULKXFER	Multicast bulk upgrade file transfer	239.255.255.249
1041	UDP	IGMP	NAV endpoint discovery and beaconing	239.255.255.254
1044	UDP	IGMP EP2EP	Multi-cast inter-device communication for ID pairing	239.255.255.254
5353	UDP	mDNS	Multicast DNS service for Dante controller discovery	224.0.0.251
34419	UDP	AVAHI	Zero-Conf (Link-Local address)	
9875	UDP	SAP	Session announcement protocol for AES67	239.255.255.255
319/320	UDP	PTP	Precision Time Protocol for AES67	224.0.1.129
123	UDP	NTP	Network time protocol	
50000-50005	UDP	Data stream	Video, audio, and USB streams	V: 239.1.xxx.xxx A: 239.0.xxx.xxx USB: 239.2.xxx.xxx
5004 - 5005	UDP	AES67	AES67 audio stream	239.69.0.0. — 239.69.255.255
67 / 68	UDP	DHCP	Dynamic host configuration protocol	

License Information

The following table lists the third-party software packages and software licenses used by all NAV Pro AV Series control products.

NOTE: Third-party software is subject to change without notice. This guide was prepared for NAV firmware 1.00.0009-b023.

Third-party Software and Licenses					
Package	License	Version	Package	License	Version
aufs2-util	GNU LGPL v2		Libnss	MPL v2.0	3.33
avahi	GNU LGPL v2.1	0.7	Libcap	BSD-3c	1.9.1
bstrlib	BSD	5122010	Libpng	libpng	1.5.28
busybox	GNU LGPL v2	1.25.1	Libsocketcan	GNU LGPL v2.1	0.0.10
bzip2	BSD	1.0.6	libssh2	BSD	1.9.0
can-utils	GNU LGPL v2	c3305fdd51564153d20199db232b6124bc962c0	libusb	GNU LGPL v2.1	1.0.21
cjson	MIT	58	libxml2	MIT	2.9.10
cracklib	LGPL v2.1+	2.9.6	libxslt	MIT	1.1.32
devmem2	GNU LGPL v2	1	linux	GNU LGPL v2	65b1c68c63f974d72610db38dfae49861117cae2
ecryptfs-utils	GNU LGPL v2	111	linux-pam	BSD-3c	1.3.0
ethtool	GNU LGPL v2	4.13	linuxptp	GNU GPL v2+	2
eudev	GPL v2+ / LGPL v2.1+	3.2.5	minicom	GNU LGPL v2+	2.7.1
expat	MIT	2.2.7	mROUTED	BSD-3c	3.9.7
fbdump	GNU LGPL v2	0.4.2	mtD	GNU LGPL v2	2.0.1
flex	FLEX	2.6.4	ncurses	MIT	6
freetype	Free Type License	2.8.1	netcat	GNU LGPL v2	0.7.1
gnupg	GNU LGPL v2	1.4.7	netsnmp	BSD	5.7.3
gptfdisk	GNU LGPL v2	1.0.3	nginx	BSD-2c	1.16.1
heirloom-mailx	GNU LGPL v2	12.5	ntp	MIT	4.2.8p14
hwdata	GNU LGPL v2	0.308	openssh	BSD	8.0p1
i2c-tools	GNU LGPL v2	4	openssl	OpenSSL	1.0.2r
ifplugd	GNU LGPL v2	0.28	pcre	BSD	8.41
iftop	GNU LGPL v2	1.0pre4	popt	MIT	1.16
iperf	iperf	3.1.7	psmisc	GNU LGPL v2	23.1
iproute2	GNU LGPL v2	4.14.1	ptpd2	BSD-2	ptpd-2.3.1
iptables	GNU LGPL v2	1.6.1	python3	PSF	3.6.3
jq	MIT	a97638713ad30653d424f136018098c4b0e5c71b	python-lxml	BSD	4.0.0
keyutils	GPL v2+ / LGPL v2.1+	1.5.10	python-serial	PSF	3.1
kmod	GNU LGPL v2	24	qjson	GNU LGPL v2.1	0.9.0
libassuan	GNU LGPL v2	2.5.1	qy	GNU LGPL v2	4.8.7
libcgicc	GNU LGPL v2	3.2.3	rapidjson	MIT	v1.1.10
libcurl	ICS	7.65.1	socat	GNU LGPL v2	1.7.3.2
libdaemon	GNU LGPL v2.1	0.14	spawn-fcgi	BSD	1.6.4
libdnet	BSD	1.11	sqlite	Public domain	3310100
libevent	BSD-3c / OpenBSD	2.1.8-stable	strace	BSD-3	4.2
libfcgi	OML	2.4.0	tcpdump	BSD	4.9.2
libffi	MIT	3.2.1	tzdata	Public domain	2018c
libgpg-error	GNU LGPL v2.1	1.29	uboot	GNU LGPL v2	2018.01
libgpgme	GNU LGPL v2.1	1.7.1	util-linux	GNU LGPL v2	2.31.1
libnl	GNU LGPL v2.1	3.4.0	xinetd	custom	2.3.15
libnspr	MPL v2.0	4.17	zlib	zlib	a17fefa147942wdbf80ab22a16bcbc2419def12d