Release Notes

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1 Revision History

Ensure you have the latest release of this document before relying on this information.

Table 1, Revision History

Version	Revision	Date
1.0	Previous untracked releases	February 18, 2006 - SWJ
1.1	Updates per Build 323	March 8, 2006 – SWJ
1.2	Updated per Build 324	March 14, 2006 – SWJ
1.3	Added section for /usepmtimer switch; Reformatted document.	March 21, 2006 – SWJ
1.4	Build 324	March 23, 2006 - SWJ
1.5	Build 325	April 4, 2006 – SWJ
1.6	Added hyper threading notes.	April 19, 2006 – SWJ
1.7	Added installation notes	April 22, 2006 – SWJ
1.8	Build 327	April 25, 2006 – SWJ
1.9	Build 328	May 9, 2006 – SWJ
1.10	Build 329	May 14, 2006 – SWJ
1.11	Build 330	May 18, 2006 – SWJ
1.12	Build 331	May 30, 2006 – SWJ
1.13	Build 332	July 18, 2006 – SWJ
1.14	Build 333	July 28, 2006 – SWJ
1.15	Build 334	July 31, 2006 – SWJ
1.16	Build 335	August 21, 2006 – SWJ
1.17	Internal Release Build 337	September 11, 2006 – SWJ
1.18	Build 338	October 10, 2006 – SWJ
1.19	Build 339	January 9, 2007 – SWJ
1.20	Build 340	January 13, 2007 – SWJ
1.21	Build 341	January 30, 2007 – SWJ
1.22	Build 342	February 18, 2007 – SWJ
1.23	Build 343	February 27, 2007 – SWJ
1.24	Build 344 (Skipped 345)	March 14, 2007 – SWJ
1.25	Build 346, Added Cautionary Notes section	April 8, 2007 – SWJ
1.26	Build 347, Fixed a problem with network configuration IP addresses in VComm.	April 10, 2007 – SWJ
1.27	Build 348 (Skipped 349)	April 30, 2007 – SWJ
1.28	Build 350, Added additional info	August 28, 2007 – SWJ
1.29	Build 351, Beta 1	August 29, 2007 – SWJ
1.30	Build 352	January 23, 2008 – SWJ
1.31	Build 353	June 8, 2008 – SWJ
1.32	Build 354	July 8, 2008 – SWJ
1.33	Build 355	January 5, 2009 – SWJ
1.34	Build 356	January 21, 2009 – SWJ
1.35	Build 357	2009-02-29 – SWJ
1.36	Build 358	2009-03-16 – SWJ
1.37	Build 359	2009-07-08 – SWJ
1.38	Build 360	2009-09-04 – SWJ
1.39	Build 361	2009-09-25 – SWJ

1.40	Build 362 Beta 1,2,3,4 and Release	2009-11-01 – SWJ
1.41	Build 363 Updated VComm User Manual	2009-11-07 – SWJ
1.42	Build 364 Fixed a problem with Updating radios with exercise ID's of zero.	2010-01-09 – SWJ
1.43	Build 365 Beta 1 – Sent to Customer for Testing	2010-01-23 – SWJ
1.44	Build 365 Beta 2 – Contains Vdx I/O Device	2010-01-24 – SWJ
1.45	Build 365 Beta 3 through 5, Updated VComm to fix a HLA dynamic join issue and updated the Vdx I/O Device to prepare for the Vdx to come shortly.	2010-02-07 – SWJ
1.46	Formal Release of Previous beta Software	2010-02-21 – SWJ
1.47	More work on Build 366, Beta 3	2010-07-24 – SWJ
1.48	Additional Modifications to Build 366, Beta 4 (SWJ)	2010-08-18 – SWJ
1.49	Add statement to Build 363 to indicate that design file format has changed. Add statement to Build 366 to indicate that vne file format has changed.	2010-09-09 – SWJ
1.50	Build 366 Released	2010-09-11 – SWJ
1.51	Build 367 Released	2010-09-30 – SWJ
1.52	Build 368 Beta 1, 2	2010-10-16 – SWJ
1.53	Build 368 Release	2011-02-14 – SWJ
1.54	Added Network Port section	2011-03-04 – SWJ
1.55	Build 369 Beta 1	2011-04-04 – SWJ
1.56	Build 369 Beta 2 (SWJ)	2011-04-30 – SWJ
1.57	Build 369 Release, Modified Flash I/O Device to transmit on port 5543 instead of 4345	2011-06-03 – SWJ
1.58	Build 370 Beta 1	2011-06-08 – SWJ
1.59	Build 370 Beta 2	2011-06-27 – SWJ
1.60	Build 370 Beta 3	2011-08-23 – SWJ
1.61	Build 370 Beta 4	2011-09-29 – SWJ
1.62	Build 370 Release	2011-10-05 – SWJ
1.63	Build 371 Beta 1	2011-11-11 – SWJ
1.64	Build 371 Beta 2	2011-12-14 – SWJ
1.65	Build 371 Release	2012-01-05 – SWJ
1.66	Build 372 Release	2012-02-16 – SWJ
1.67	Build 373 Beta 1	2012-04-07 – SWJ
1.68	Build 373 beta 2	2012-08-22 – SWJ
1.69	Build 500 Beta 1 (Windows 7 Beta 1)	2012-09-17 – SWJ
1.70	Build 374	2012-11-19 – SWJ
1.71	Build 500 Beta 2 (Windows 7 Beta 2)	2013-02-07 – SWJ
1.72	Build 500 Beta 3 (Windows 7 Beta 3)	2013-03-07 – SWJ
1.73	Build 500 Beta 6 (Windows 7 Beta 6)	2013-03-31 – SWJ
1.74	Build 500 Beta 10 (Windows 7 Beta 10)	2013-04-11 – SWJ
1.75	Build 500 (Windows 7)	2013-04-13 – SWJ
1.76	Build 501 Beta 1	2013-05-11 – SWJ
1.77	Build 501 Beta 2	2013-05-10 – SWJ
1.78	Build 502 Beta 2	2013-05-24 – SWJ

1.78.1	Build 502 beta 2.2 Added logfile enable registry entry. Previous Windows 7 versions did not have the log file enabled.	2013-05-29 – SWJ
1.80	Build 503	2013-08-04 – SWJ
1.83	Build 506 Disabled V+ object graphics rotate, mirror and flip transforms as the graphics would not transform fonts well. Add hotkeys and other things. See release note for this version.	2013-08-23 – SWJ
1.84	Build 507 Added hot key to start and stop execution.	2013-10-26 – SWJ
1.85	Build 508	2013-11-21 – SWJ
1.86	Build 509 (Windows 7)	2014-01-13 – SWJ
1.87	Build 375 (Windows XP)	2014-01-14 – SWJ
1.88	Build 511 (Windows 7)	2014-04-11 – SWJ
1.89	Build 512 (Windows 7)	2014-04-13 – SWJ
1.90	Build 513 (Windows 7)	2014-04-14 – SWJ
1.91	Build 514 (Windows 7)	2014-04-16 – SWJ
1.92	Build 515 (Windows 7)	2014-04-18 – SWJ
1.93	Build 516 (Windows 7)	2014-04-21 – SWJ
1.94	Build 517 (Windows 7)	2014-04-27- SWJ
1.95	Build 376 (Windows XP)	2014-04-28 - SWJ
1.96	Build 377 (Windows XP)	2014-05-11 – SWJ
1.97	Build 519 (Windows 7)	2014-05-28 - SWJ
1.98	Build 520 (Windows 7)	2014-06-07 – SWJ
1.99	Build 521 (Windows 7)	2014-06-23 - SWJ
1.200	Build 522 (Windows 7)	2014-07-21 - SWJ
1.201	Build 524 (Windows 7)	2014-07-28 - SWJ
1.203	Build 525 (Windows 7)	2014-07-29 - SWJ
1.204	Build 526 (Windows 7)	2014-09-02 - SWJ
1.205	Build 379 (Windows XP)	2014-09-05 - RF
1.207	Build 529 (Windows 7)	2014-11-06 – SWJ
1.208	Build 380 (Windows XP)	2014-11-10
1.209	Build 530 (Windows 7)	2014-11-17- SWJ
1.210	Build 531 (Windows 7)	2014-11-24 – SWJ
1.211	Build 532 (Windows 7)	2014-11-30 – SWJ
1.213	Build 535 (Windows 7) Build 380 (Windows XP)	2014-12-10 – SWJ
1.216	Build 536 (Windows 7) Build 381 (Windows XP)	2014-12-28 – SWJ
1.217	Build 538 (Windows 7)	2015-01-12 – SWJ
1.219	Build 540.1 Beta 1 (Windows 7)	2015-01-19 - SWJ
1.220	Build 540 (Windows 7)	2015-01-21 – SWJ
1.221	Build 541 (Windows 7)	2015-02-11 - SWJ
1.222	Build 543 (Windows 7)	2015-02-24 - SWJ
1.223	Build 544 (Windows 7)	2015-02-25 - SWJ

1.224	Build 545 (Windows 7)	2015-02-26 - SWJ
1.225	Build 547 (Windows 7)	2015-03-04 - SWJ
1.226	Build 548.1 Beta 1 (Windows 7)	2015-03-04 - SWJ
1.227	Build 549 (Windows 7)	2015-04-02 – SWJ
1.228	Build 550 (Windows 7)	2015-05-19 – SWJ
1.229	XP Build 382 (Windows XP)	2015-07-06 – RGF
1.229.1	Build 550 (Windows 7) Interim special Release(s)	2015-06-12 – SWJ
1.230	Build 551 (Windows 7)	2015-07-13 – SWJ
1.231	Build 552 (Windows 7)	2015-07-30 – SWJ
1.232	XP Build 383 (Windows XP)	2015-08-12 – RGF
1.233	Build 553 (Windows 7)	2015-09-21- SWJ
1.234	Build 554 (Windows 7)	2016-02-16 – SWJ
1.235	XP Build 384 (Windows XP)	2016-03-24 - RGF
1.236	Windows 7 Build 560 (Windows 7)	2016-06-29 – SWJ
1.237	Windows 7 Build 561 (Windows 7)	2016-08-23 – SWJ
1.238	Windows 7 Build 562	2016-08-31 – RGF
1.239	Windows 7 Build 563	2016-10-26 – SWJ
1.240	Windows 7 Build 564 and XP Build 385	2017-03-21 – RGF
1.241	Windows 7 Build 565	2017-05-05 – SWJ
1.242	Windows 7 Build 556	2017-10-08 – SWJ
1.243	Document Cleanup	2017-11-17 – SWJ
1.244	Windows 7 Build 569	2018-02-04 – SWJ
1.245	Windows 7 Build 571	2018-04-26 – RGF
1.246	Windows 7 Build 572	2018-07-12 – RGF
1.247	Windows 7//10 Build 573	2018-11-09 – RGF
1.248	Windows 7/10 Build 580.1 and XP Build 390	2019-09-03 – RGF
1.249	Windows 7/10 Build 581	2019-09-25 – RGF
1.250	Windows 7/10 Build 580.2	2019-10-15 – RGF
1.251	Windows 7/10 Build 582	2020-05-21 – RGF
1.252	Windows 7/10 Build 583	2020-06-04 – RGF
1.253	Windows 7/10 Build 584	2020-08-04 – RGF
1.254	Windows 7/10 Build 585	2020-11-17 – RGF
1.255	Windows 7/10 Build 586	2021-06-04 – RGF
1.256	Windows 7/10 Build 587	2021-07-07 – RGF
1.257	Windows 7/10 Build 588	2021-09-07 – RGF
1.258	Windows 7/10 Build 589	2021-10-06 – RGF
1.259	Windows 7/10 Build 590	2021-12-10 – RGF
1.260	Windows 7/10 Build 591	2022-05-24 – RGF
1.261	Windows 7/10 Build 592	2022-12-14 – RGF
1.262	Windows 7/10 Build 593	2023-05-08 – RGF
1.263	Windows 7/10 Build 599	2023-08-21 – RGF
1.264	Windows 7/10 Build 599.10	2024-02-05 – RGF

2 Introduction

This document provides notes for V+ Visual Programming Language releases starting at Build 320. Each release section discusses the changes made which may include new objects, objects which have been discontinued, functional improvements, graphical changes, etc. A V+ release may encompass VComm objects such as radios, intercom, and VComm support objects. It is always a good idea to keep up to date with the most current release as the product is being constantly improved. Using a visual programming language provides for easy backward compatibility and old versions will always load and if you have discontinued (also known as obsolete) objects, V+ will allow the old design to load but will not permit the old object to execute. For more information on V+ and VComm, refer to their respective user manuals found in the Program Files\VPLus\Help folder. This document was authored using Microsoft Word 2010 and may be copied freely for any purpose.

3 Pre-Installation Notes

When installing V+ over old versions, it may be necessary to remove the old version prior to new version installation. This is especially true of versions prior to Build 310. To manually uninstall V+ perform the steps below. Do not attempt this process if you are unsure of how to perform these steps or are unfamiliar with the registry editing process.

1. Delete the following folder:

    `C:\Program Files\VPLus`

2. Delete the **V+** menu item and all its sub-menus under **Start » Programs**.
3. Using **regedit**, remove the following registry key and all its sub-keys:

    `HKEY_LOCAL_MACHINE\SOFTWARE\SimPhonics`

4. Using **regedit**, remove the following registry key and all its sub-keys for each user on the machine:

    `HKEY_CURRENT_USER\Software\SimPhonics`

5. Reboot the computer.

Builds 326 and later require Windows XP service pack 2. Also, if possible, install all of the latest Windows XP updates via the Microsoft Windows Update feature.

VComm and other V+ I/O devices require the use of many Ethernet ports for operation. In order to ensure proper operation it is necessary to disable the Windows Firewall completely. Also remove or disable any virus protection system that may be installed. Once this system is working, you may then begin to enable these items and check for proper operation after each one is turned on. There have been many users reporting problems with virus protection software along with Windows firewall blocking access to the UDP/IP device, etc.

4 Cautionary Notes

The following issues are known to exist in V+ that may cause problems or unexpected results. Items in this section may be added and removed on a build-by-build basis.

4.1 Hyperthreading CPUs (does not apply to Intel CPUs manufactured after 2008

Non-Traditional Processors and Hyper Threading For some processor types, V+ can show inaccurate timing information for spare time and frame rate. When using a processor with hyper-threading enabled, a dual-core processor, a 64-bit processor, or an AMD processor, it may be necessary to add a switch to the BOOT.INI file to improve a Windows XP timing problem. The problem may also manifest itself with wavefiles playing at twice their normal speed. This change is part of the installation of V+ Build 354 and later versions for systems build by SimPhonics.

To alleviate these problems, perform the following steps:
Right-click My Computer and select Properties. Click the Advanced tab, and click the Settings button under Startup and Recovery. Click the Edit button under System startup. This will open the BOOT.INI file using the Notepad editor. Add the /usepmtimer switch to the entry in the [operating systems] section. The following is a sample BOOT.INI file after adding the /usepmtimer switch.

[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS="Microsoft Windows XP Professional"
/fastdetect /usepmtimer

Save the BOOT.INI file and close Notepad.
Close all windows opened to perform this operation.
Reboot the system.

Note that for line number 4 above beginning with multi… and ending with /usepmtimer is on a single line with no carriage returns. V+ Build 326 and later require that the /usepmtimer switch be added to the system and is installed by default.

Note: If hyper-threading is turned off in the BIOS before installation of Windows XP and the system is run and the spare time is accurate then the BIOS hyper threading is turned on and booted, and then turned back off, Windows will behave as if hyper-threading has been turned on from that point forward. This may cause spare time inaccuracies and will require the /usepmtimer switch to be added to the boot.ini file.

4.2 Saving .VNE Files With I/O Devices – Pre Build 366

There is a problem with V+ in builds prior to 366 when storing a .VNE file for use in auto-booting a design. You must perform the following steps to ensure that your .VNE file will work correctly:

1. Start the V+ Run Time System.
2. Perform any I/O device configuration.
3. Start the V+ Development System.
4. Run the design(s).
5. +Stop the V+ Development System.

6. Switch to the V+ Run Time System and save the .VNE file.
7. Close the V+ Development System and V+ Development System.
8. Reopen the V+ Development System using the .VNE file you just created.
9. Repeat the steps 3 through 6 one more time

This is the only way to save an auto-bootable .VNE file. This problem does not exist in Build 366 or later.

4.3 Starting V+ After Initial Installation

Once V+ is installed and started for the first time, Windows may attempt to block the network initialization since V+ attempts to open a number of ports. If the Development system is started first, the development system window will cover the message box in Figure 1, Security Warning, and therefore cannot be seen. Minimize the development system window and select **Unblock** as shown. Close all V+ windows and restart.

Figure 1, Security Warning

5 Build 320

A substantial house cleaning was performed for V+ Build 320, primarily in the area of the VComm networked audio objects. A lot of VComm objects have been rendered obsolete in favor of a more simplistic, less confusing approach to networked audio. Other objects not related to VComm functionality have also been sent to the ol' bit bucket either in deference to newer, better performing objects, or, better V+ design approaches. This document serves as a bridge to getting your old designs up to date with this latest build. We apologize for the inconvenience this may cause you, but we must press on with better functionality in V+ to address emerging high technology needs.

5.1 New Objects

The following table identifies and describes the new objects available in Build 320.

New Objects		
ID	Name	Description

2032	VComm Simple Intercom (DIS/HLA)	The VComm Simple Intercom (DIS/HLA) object employs the Radio Communications protocol of the DIS standard. This intercom has input pins to control the basic functionality of a full-duplex networked intercom. However, an output pin provides a handle for the intercom which can be used by several other VComm objects to enhance the run-time control of the object.

5.2 Obsolete Objects

A list of obsolete objects is provided in the table below as of this version release. Future releases may obsolete additional objects, see the individual release sections for search for obsolete beyond this section. Some of these objects were disabled in previous builds; however, we'll discuss them here for completeness.

Obsolete Objects	
ID	Name
1016	Wave Player
1027	Direct Sound Wave Player
1030	Looped Wave Player
1038	Doppler Model
1039	FXDirect
1041	VCommWin Audio Device
1042	VCommWin Audio Connection
1043	Intercommunication
1044	VCommWin Record Playback
1047	VComm Radio Object
1048	Net Playback
1050	Wavefile Recorder
1053	Mixer Device
1055	One-Shot FXDirect Player
1056	Looped FXDirect Player
1057	VComm VOX Audio Device
1058	Radio Object with Encoding
1059	Intercommunications with Encoding
1060	Wave Recorder with Encoding
1062	VOR/DME Keyer
1064	VComm Stereo Connection
1065	VComm Split Audio Device
1066	SINCGARS Radio
1072	VComm Split Audio Device with VOX
1082	Scale Input DB 0 to 1 Based on Min and Max
1083	Range Rolloff
1084	Signal PDU Filter
1086	Comm Radio with Send TO
1087	Intercom Object with Send TO
1091	Interphone
1092	ICS w/ Dynamic DIS ID
1096	VComm Intercom
1097	VComm+ARC-164 UHF Radio
1098	VComm ARC-186 VHF Radio
1099	VComm ARC-190 HF Radio
2005	VComm Split Audio Device
2033	Set TRANSMIT PDU padding1

5.2.1 Obsolete Wave Player Objects

The following wave player objects are no longer functional:

- 1016 - Wave Player
- 1027 - Direct Sound Wave Player
- 1030 - Looped Wave Player
- 1039 - FXDirect
- 1055 - One-Shot FXDirect Player
- 1056 - Looped FXDirect Player

To accomplish the same functionality use one of the following:

- 1051 - FXDirect Player, Advanced with Filename
- 1054 - FXDirect Player, Advanced
- 1067 - Looped FXDirect Player with Bal, Vol, and Freq
- 1069 - One-Shot FXDirect Player with Bal, Vol, and Freq
- 1093 - One-Shot FXDirect Player – Interruptible
- 2007 - Player - Advanced with Dynamic Filename and Play Position
- 2027 - Looped WAV Player

5.2.2 Obsolete Volume Scaling Objects

The following objects are no longer functional:

- 1038 - Doppler Model
- 1082 - Scale Input DB 0 to 1 Based on Min and Max
- 1083 - Range Roll off

5.2.3 Obsolete Audio Device Objects

The following objects are no longer functional:

- 1041 - VCommWin Audio Device
- 1042 - VCommWin Audio Connection
- 1057 - VComm VOX Audio Device
- 1064 - VComm Stereo Connection
- 1065 - VComm Split Audio Device
- 1072 - VComm Split Audio Device with VOX
- 2005 - VComm Split Audio Device

They are no longer needed since the Device and Stereo connections are imbedded within the following radio/intercom objects:

- 2026 - VComm GENERIC Radio, V8 DIS Only
- 2031 - VComm GENERIC Radio, V8 DIS/HLA
- 2032 – VComm Simple Intercom (DIS/HLA)

The objects with VOX functionality did not work properly. A future release of V+ will provide a VOX object which connects to a radio/intercom handle.

5.2.4 Obsolete Intercom Objects

The following objects are no longer functional:

- 1043 - Intercommunication
- 1059 - Intercommunications with Encoding
- 1087 - Intercom Object with Send TO
- 1091 - Interphone
- 1092 - ICS w/ Dynamic DIS ID
- 1096 - VComm Intercom

They have been replaced with the following:

- 2032 – VComm Simple Intercom (DIS/HLA)

The **Send TO** pin of object 1087 has been incorporated into the static data of the VComm Simple Intercom object.

5.2.5 Obsolete Record/Playback Objects

The following objects are no longer functional:

- 1044 - VCommWin Record Playback
- 1048 - Net Playback
- 1050 - Wavefile Recorder
- 1060 - Wave Recorder with Encoding

These objects are no longer functional. A sample design for Record/Playback is provided in the `Program Files\VPLus\VPLus Samples` area. A future release of V+ will recreate the **Net Playback** object.

5.2.6 Obsolete Mixer Object

The following object is no longer functional:

- 1053 - Mixer Device

This object is no longer functional. The Windows Audio Mixer driver in the Run Time System will expose controls for PCI and USB two channel stereo sound card devices.

5.2.7 Obsolete VOR/DME Keyer Object

The following object is no longer functional:

- 1062 - VOR/DME Keyer

This object has been replaced with the following:

- 1089 - VOR DME Keyer

5.2.8 Obsolete PDU Filter and Padding Objects

The following objects are no longer functional:

- 1084 - Signal PDU Filter
- 2033 - Set TRANSMIT PDU padding1
  - The **Set TRANSMIT PDU padding1** object has been removed due to the new upcoming DIS standard which may call for setting unused DIS PDU fields to zero. Other vendors have used these fields for a three character vendor ID string. SimPhonics used this in the same fashion for two releases prior to this build. All padding fields are now set to zero.

This **Signal PDU Filter** object has been replaced with the following:

- 2024 - VComm Entity Filter

5.2.9 Obsolete VComm Radio Objects

The following objects are no longer functional:

- 1047 - VComm Radio Object
- 1058 - Radio Object with Encoding
- 1066 - SINCGARS Radio
- 1086 - Comm Radio with Send TO
- 1097 - VComm+ARC-164 UHF Radio
- 1098 - VComm ARC-186 VHF Radio
- 1099 - VComm ARC-190 HF Radio

These objects can be replaced with either of the following:

- 2026 - VComm GENERIC Radio, V8 DIS Only
- 2031 - VComm GENERIC Radio, V8 DIS/HLA

The difference between these two radios is that the DIS/HLA radio (2031) has a "Send To Network" capability for HLA compatibility. Some of the obsolete radio objects had a **Send TO** pin which really should *not* have been a pin since this data cannot be dynamically changed. It has now been incorporated into the static data of the DIS/HLA radio.

To convert from geodetic coordinates (altitude, latitude, longitude) to the DIS geodetic coordinate system (X, Y, Z), use the following object:

2029 - ALT, LAT, LONG to Geocentric conversion

Control of transmitter power and receiver sensitivity are provided in the following object:

2039 - VComm Radio Data Advanced

If you need to convert from Watts to dBm for transmitter power, use this object:

2025 - Watts to dBm Conversion

Crypto capability of some of these objects has been replaced with a new object which attaches to either of the VComm GENERIC radios and is called:

2040 - Crypto System

Receiver signal activity can be monitored using either of these objects:

2018 - VComm Signal Strength
2030 - VComm Receiver Audio RMS Level

Transmitter signal activity can be monitored using either of these objects:

2019 - VComm Get Number of Incoming Transmitters
2020 - VComm Get Strongest Transmitter ID

Secure radio frequency hopping capability (HaveQuick, SINCGARS, etc.) is in the process of being defined for the new DIS standard. After it has been properly incorporated into the

standard, this functionality will be provided as an object which attaches to either of the VComm GENERIC radios. For the meantime, simple HAVE QUICK and SINCGARS objects are now available. See later releases.

5.3 On-Line Object Help Updated

The on-line object help system has been considerably cleaned up. It now addresses all pins and static data for objects in a comprehensive manner, describing the range and units as needed. All obsolete objects are identified, and where possible, links to replacement objects provided. There are a few object help descriptions which are still under construction, but will be provided in a future release of V+.

6 Build 321

Minor functional improvements were made within the core of VComm. Graphical changes were made to a few objects. Improved redraw rates for V+ graphics.

6.1 On-Line Object Help Updated

- On-Line Help descriptions are now available for the 3D Audio objects (numbers 2034, 2035, 2036, and 2037).
- The Emitter Audio object (number 2038) help description references the Emitter Object User's Manual, which is provided in the **C:\Program Files\VPLus\Help** directory.

7 Build 322

Note that when installing this version and all previous version of V+, you must be logged in as the Administrator. The installation process was modified in this version to make the HKEY_LOCAL_MACHINE/Software/SimPhonics key accessible to everyone on the machine. Earlier versions would not allow non Administrators (non power users) to run the software. The menu structure of the help system has been modified along with some additional shortcuts to manuals.

7.1 V+ User Manual Modified

- The manual was modified to include the administrative information above.

7.2 Microsoft Word 2003 Viewer

Most of the user information in V+ is in Microsoft Word 2003 format, and from this release forward, the Microsoft Word 2003 Viewer is installed along with V+.

8 Build 323

Build 323 was released to fix a problem with the 3D audio objects, 2034, 2035, 2036, and 2037. These objects were displaying a file loading message in the run-time window when a new file was selected on the ID pin. The display of the message caused a negative spare time (frame overrun) to occur for designs that had more than a few of these objects. The file loading message was removed form the object. Now, only error messages are displayed when a file cannot be found on the system.

Several obsolete API interface functions were deleted in the VComm interface. None of these changes affect the operation of behavior of the system since these functions were not used.

9 Build 324

This build includes the following changes:

- Updated VComm User Manual to version 1.4 for duplex mode description.

9.1 New Objects

2041 – VComm Set Radio Duplex Mode

10 Build 325

This build includes the following changes:

- Added SimPhonics USB PTT Headset serialization strings to the device names in the run-time window. The old name was "PTT Headset Adapter" and there was no way to distinguish between multiple headsets. Windows also has this problem.

- This version adds a serial number string to the end of the name such that the name is now "PTT Headset Adapter S/N: nn" where nn is the unique serial number for each headset.

- Up to five headsets wee tested in various configurations with this build. Note that when used with SMx, the input device name defaults to be at the bottom of the list instead of the top while the output device name is at the top and must be manually moved in the .vne file before each use. The .vne file can be saved for subsequent runs.

- The installation process was modified in this build to improve the launching of the Microsoft Word Viewer.

11 Build 326

This build includes the following changes:

- Completely replaced the network input system to handle much faster incoming data. This function and associated software was improved to handle multiple processors. Significant modifications were made to improve the thread safety of critical sections for update timers and network threads.

- Significantly optimized network input processing.

- This version now requires Windows XP service pack 2 or later.

11.1 Bug Fixes in this Build

Previous builds may have experienced sudden loss of incoming audio, especially with high performance systems and hyper-threading processors and or multiple CPU computers.

12 Build 327

This was in intermediate build and was not released to customers. This build included support for a temporary serialization of Plantronics USB headsets before these were modified by the OEM to include serial numbers in the friendly name of the device.

Previous build 326 did not contain the proper release DLL's and had a bug in the PTT mechanism. This was a configuration management issue. Build 327 was very short lived and was only released for a day.

13 Build 328

This build includes the following changes:

- Renamed a performance counter from "Number of Radio in Exercise" to "Number of Transmitters for First Radio" The original counter was not representing the actual number of radios in the exercise. See the VComm User Manual for more information.

- As a result of the above changes, updated the VComm User Manual to version 1.7.

- Overhauled and improved the manner in which the output buffers for radio signals were being handled.

- Added a check in VComm to not receive a signal whose transmitter is indicating "off" or whose transmit power level is equal to or less that -270 dBm. Also added checks to stop receiving signal PDUs when the associated TRANSMITTER PDU indicates that the transmitter is not transmitting. (OFF or ON and NOT TRANSMITTING)

- Added new high resolution icons for the development and run-time system file associations.

13.1 New Objects

2042 - VComm Software Sidetone

14 Build 329

This build includes the following changes:

- Added BindAdx string value functionality to the HKEY_CURRENT_USER\Software\SimPhonics\VComm\Network registry key.

- Changed Broadcast Address to Destination Address in the V+ Run Time System Networked Audio configuration page.

- Networked socket functionality was modified to accompany BindAdx and Destination Address. These socket changes now allow the user to bind the Destination Address to a specific network interface card. The Destination Address allows the user to select Unicast, Broadcast, or Multicast as the method for transmitting networked audio.

- Added a new object call Set TRANSMITTER PDU Source Field which can be attached to a VComm Radio or Intercom object which allows the user to set the Transmitter PDU source field.

14.1 New Objects

2043 – Set TRANSMITTER PDU Source Field

15 Build 330

This build includes the following changes:

- Removed BinAdx string value from the registry and added this into the V+ runtime window configuration. ***Due to this change, all previous versions of .VNE files must be re-built to use this new version.***

- Corrected problems with multicast operation in the previous builds.

16 Build 331

This build includes the following changes:

- Added terrain server capability to the run-time system.

16.1 New Objects

2043 – VComm Terrain Server Status

17 Build 332

This build includes the following changes:

- Added "V+ Runtime System Remote Control Specification" to the installation.

- Modified "VComm User Manual", to version 1.10.

- Added Federation Name to V+ run-time remote control interface.

- Corrected a problem with the network receive software for the VComm Monitor. This product will now work properly with 64 bit processors and dual processors. Before this release the VComm Monitor would occasionally stop receiving using these types of systems.

- The installation process was modified to allow installation on Windows versions 501 and later and Windows Build numbers 2264 and greater. Effectively this means that V+ will now install on the new Windows Vista as well as Windows XP.

- Corrected a problem with the user ordering of input audio devices. In earlier versions, if more than one USB device was used in conjunction with a PCI device, and the user re-ordered the inputs, the input devices would not be correct.

- Added a new registry key to the V+ Run Time System for 3D Audio called HKEY_CURRENT_USER\Software\SimPhonics\V+ Run-Time System\3DAUDIO. This key has two values called 2CHAN_TUNE_WIDTH and 4CHAN_TUNE_WIDTH. These values are used to configure the tune width on an individual user basis and will override any static data values set in the 3D Audio objects.

- Overhauled the VComm audio streaming input and output mechanisms to provide for a much greater number of streams. Fixed a problem with audio breakups under load.

- Added the "bindAdx" mechanism to the registry so that a Bind Address can be specified in the registry. This value will be used if there is not a user setting for Bind Address in the V+ Run-time Configuration dialog. (See VComm User Manual)

- HLA has been temporarily disabled in this build and will be activated again in the next release.

- Changed the way the terrain server requests are posted based on a 100 meter geocentric change.

17.1 New Objects

The following objects have been added to this build. Please review their associated object help files for detailed descriptions.

- 2045 – VComm S/W VOX
- 2047 – VComm Force Stereo RX
- 2048 – SMx Local ICS (Stereo)

18 Build 333

This build includes the following changes:

- Fixed a problem with transmitters tuning off the receiving frequency while transmitting.

- Fixed an HLA problem associated with muting the audio during transmit in spread spectrum mode.

- Optimized HLA real-time performance using the MAK RTi.

- Changed HLA processing to a single threaded mode.

- 3D audio objects that feature "Tune Width" now have a registry setting that applies to all 3D Audio objects on worksheets.

- Fixed a memory leak associated with the root object of 3D Audio objects.

- Added a squelch AGC tail effect when tuning outside of the frequency filter, and when tuning outside of the receiver's bandwidth while still within the frequency filter. This only applies to frequency filter mode.

- Added IEEE-1278.1 200X Draft 5 "Simple Intercom" to VComm DIS Monitor enumerations for major modulation type of 0.

19 Build 334

This build includes the following changes:

- Changed the 16-bit PCM compression scheme to big endian format and added a mode in the registry to select little endian format.

20 Build 335

This build includes the following changes:

- Changed the PCM codec (enumeration 4) for VComm radios to be Big Endian by default. Made this a registry programmable option.

- Added the Little Endian PCM codec (enumeration 100) for VComm radios.

- Added the Mil Standard CVSD codec (enumeration 255) for VComm radios. Adjusted the parameters of this codec for better interoperability.

- Updated the VComm User's Manual and On-Line Object Help accordingly.

21 Build 336

This build includes the following changes:

- Fixed a problem with the Shared Memory I/O Device where the device did not save the offset and name of the file mapping object properly.

22 Build 337

This build was an internal build for testing of Low Fidelity HAVEQUICK.

23 Build 338

This build includes the following changes:

- Added Low Fidelity HAVEQUICK monitoring functionality to the DIS Monitor.

- Added Low Fidelity HAVEQUICK functionality and added modulation parameter capability to VComm.

- Changed incorrect VComm Monitor display text for transmit state from "3 (XMIT)" to "2 (XMIT).

23.1 New Objects

The following object has been added to this build. Please review its associated object help file for detailed descriptions.

- 2050 – VComm HAVEQUICK

24 Build 339

This build was a temporary internal release.

25 Build 340

This build includes the following changes:

- Limited the number of UDP/IP I/O driver ports to 350. Existing applications that used more than 350 ports violated the 1500 byte maximum size for UDP/IP packets.

- VComm no longer sets the transmit power level to -270 dBm when the transmitter is off. The power remains at the same level at all times. This change was implemented due to SISO PCR179 which may be part of the new DIS IEEE-1278.1 200X standard. However, it is still compliant with the existing DIS standard.

- The "Audio Buffer Size" field in the run-time system "Network Audio" tab will now require the number to be an even number from the user in order to ensure that the signal PDU data length ends on a 16-bit boundary.

- VComm will not longer default to PCM-16 encoding if the encoding scheme is unknown. If the incoming signal PDU contains an unknown encoding scheme, the signal is not processed.

- VComm will now default to mu-law encoding instead of PCM-16 encoding if the encoding value for a radio is zero when V+ is started.

- Corrected a problem with the compression scheme of PCM-16 (enumeration of 4) using network byte order on the receiving side of VComm. Build 335 up to this build had this problem and it was manifested as noise on the received audio when receiving a network byte order signal PDU in PCM-16 format. The transmitted audio was OK. Network byte order is now the default for PCM-16 although it can be changed in the registry.

- Changed encoding so that radio static data for encoding can be changed in real-time.

- Added a new encoding scheme for the DIS enumeration of 5, 8-bit PCM.

- Changed the Radio PDU Generator output from host byte order (little endian) PCM-16 byte order to network byte order to maintain compatibility with VComm encoder changes.

- A V+ worksheet can no longer be closed while the system is executing. An error message is displayed, "V+ execution must be stopped before closing any documents." if the user attempts to close a worksheet while V+ is executing.

- A V+ worksheet can no longer be saved while the system is executing. An error message is displayed, "V+ execution must be stopped before saving any documents." if the user attempts to save a worksheet while V+ is executing.

- Execution order can no longer be edited while executing. Previous releases would allow the edit and ignore the result.

26 Build 341

This build includes the following changes:

- In previous releases, if there were no other transmitters on the network and a VComm radio was turned on and the PTT cycled on and off, the squelch would be muted until the volume was changed. This has been corrected. This circumstance would not arise often since there are usually other transmitters on the network.

- A help example was added for object 2038 – Emitter Audio. Also, an error check was added to the PRI 0 pin so as to avoid a divide by zero.

- Deleted obsolete VComm interface APIs that are no longer used.

26.1 New Objects

The following object has been added to this build. Please review its associated object help file for detailed descriptions.

- 2051 – VComm Transmit Audio Format

27 Build 342

This build includes the following changes:

- The run-time system Configure menu, Networked Audio tab, Transmit Sample Rate dialog box was changed to limit the values from 2000 Hertz to 48000 Hertz. Object 2051 limits were changed as well to match these values.

- The run-time system Configure menu, Networked Audio tab, Audio Buffer Size dialog box was changed to limit the values from 64 bytes to 1280 bytes. Object 2051 limits were changed as well to match these values.

- VComm now generates a new Transmitter PDU if any of the following values change:

  Transmit Power
  System
  Major Modulation
  Minor Modulation
  Bandwidth

28 Build 343

This build includes the following changes:

- Added a new object for increasing the gain of an incoming audio stream for VComm radios.

- Optimized the I/O Device loading process. The load now requires less than half of the original time required to load an I/O device(s).

28.1 New Objects

The following object has been added to this build. Please review its associated object help file for detailed descriptions.

- 2052 – VComm Set RX Audio Gain

29 Build 344

This build includes the following changes:

- Edited the graphics for the **1001 – Sum Float**, **1035 – Sin**, and **1036 – Cos** objects.

- Renamed object 2043 from "Set DIS TRANSMITTER PDU Source Field" to "VComm Set DIS TRANSMITTER PDU Source Field" for consistency.

- Added true HRTF 3D audio objects to V+ for stereo and headphone devices that have a left and right channel.

- Changed the Direct Sound buffer management by removing the DSBCAPS_STATIC flag when creating internal streaming and static sound buffers in V+ and VComm which dictated the use of on-board sound card memory if it was available. This is an outdated method and all buffers should be placed in PC memory.

- Added programmable digital band pass filters to VComm for filtering incoming audio streams to emulate a radio's band pass of 300 to 3000 hertz.

- Added a VComm compressor object which can normalize amplitude on incoming audio streams for VComm radios.

- Added an error reporting mechanism to the V+ run-time system for I/O devices that report a problem during pre-execution of the form, "`V+ Run-time error: I/O device, I/O Device Name, cannot start. See possible earlier I/O device error(s).`"   In previous releases when an I/O device could not start there was no indication as to which one it was that caused the problem. Some I/O devices print errors and some do not.

- Updated the creation of direct sound objects to the latest version (*DirectSoundCreate to DoirectSoundCreate8*) which enabled the use of effects on secondary buffers among other new features of the new Direct Sound COM interface.

- Updated and added informative details to error messages for VComm network initialization.

- Corrected an erroneous error message "VComm: Using bindAdx specified in registry" that was displayed even when the registry was not being used for the VComm bind address.

29.1 New Objects

The following object has been added to this build. Please review its associated object help file for detailed descriptions.

- 2053 - 3D HRTF Audio Player Looped

- 2054 - 3D HRTF Audio Database Player

- 2055 - VComm Radio Audio Emulation Filter

- 2056 – VComm Audio Compressor

30 Build 345

This build includes the following changes:

- Updated all IP address controls in the V+ run-time system, the custom socket I/O device, and the UDP/IP I/O device configuration to the new Windows XP style IP address controls. These controls have more checking for valid IP address formats and are easier to use and consistent with the operating system GUI.

- Updated the Custom Socket I/O Device to include a bind address to select a specific network adapter, handle multicast addressing, and added the ability to specify byte order as big or little endian. Also added demonstration databases and V+ worksheet examples for this device in the V+ Samples folder on the simphonics.com web site.

- Limited the number of UDP/IP I/O device output ports to 350 when using a loopback address in the range of 127.0.0.1 and 127.255.255.255 since there can be no fragmentation of packets in the protocol stack. When not in a loopback mode the number of ports has been limited to 8000.

- Any .VNE file that included any Custom Socket I/O Device or the UDP/IP I/O Device configuration data must be rebuilt even it the default values were used.

- Previous builds had the default destination address for the UDP/IP Output I/O Device to 138.0.0.1 even though the control was disabled. The address was internally set to broadcast (255.255.255.255) mode if the broadcast mode was selected. Be sure to check the destination output address if you're using the UDP/IP Output Device and set it to 255.255.255.255 if you intend to use broadcast.

- Updated the "VComm User Manual" to show the default values of the DIS Transmitter PDU subfield values for Radio Entity Kind fields. Modified the category subfield to be a default value of 1, and to ignore any incoming transmitter values greater than 1. This problem was causing crashes in some CAF DMO exercises.

- The run-time system was modified to prevent the design from executing if the user changes the run-time configuration after an auto boot from a .VNE file. The error messages are of the form: "`Can't find an input I/O Device in DTOL. (Any changes in runtime configuration requires a .VNE file rebuild.)`"

- *See the **Cautionary Notes** section in this document for how to save and load a .VNE file related to this build and prior versions*.

31 Build 346

(Intermediate internal release)

32 Build 347

This build includes the following changes:

- Corrected a user interface problem with the network configuration user interface for VComm.

33 Build 347

This build includes the following changes:

- Corrected a minor user interface problem with the Networked Audio dialog box.

- Improved error checking of .VNE files.

33.1 New Objects

The following object has been added to this build. Please review its associated object help file for detailed descriptions.

- 2057 - VComm Radio Transmitter Wave File Player

34 Build 348

This build includes the following changes:

- Corrected a problem with the installation of V+ that replaced the PATH with a single "c:\MAK…" path variable on client computers. This was a significant problem that has been in V+ installations for some time.

- Previous builds would not initialize VComm properly if there were no sound cards in the system. Now, VComm will be initialized properly but will generate an error when a device (channel) is specified for a radio of intercom object at pre-execution.

- This release addresses a problem report issued on April 27, 2007. V+ build 347 and earlier versions have a memory leak in the DIS Monitor program. The fix is simply not to run the debugger monitor while operational. It is a debugger and monitor that is not intended for this purpose, and will cause massive memory leaks during large

exercises. A message box has been added to the startup of the software to inform the user of this condition.

- Added a check on startup of the V+ run-time system to ensure that Windows XP SP2 or later version is installed. Previous releases caused crashes when installed on Windows XP without any service packs.

34.1 New Objects

The following object has been added to this build. Please review its associated object help file for detailed descriptions.

2058 - VComm Basic Fidelity SINCGARS

35 Build 350

Build 349 was an internal release and was not issued to the public. All of Build 349 release notes are in this section.

This build includes the following changes:

- The V+ development system was modified to prevented moving objects while V+ was running to reduce unintentional object movement. Often when a constant was clicked to change the value during run-time the mouse would also move the underlying object if the double-click was not timed properly.

- Removed the HLA type from the Networked Audio tab in the V+ Run-time system since this switch is no longer necessary. The VComm implementation of HLA is now DMSO and MAK independent.

- Removed the HLA heartbeat switch in the V+ Run-time system Networked Audio tab since this is no longer used. Switch to reliable HLA communications if a heartbeat is needed. This is normally done in the RTI vendors RID file.

- Improved DIS throughput processing efficiency by converting all remaining arrays of DIS radios to hash tables.

- Removed HLA DLL path environment variable that was being set to C:\MAK\2.4.2\lib. This variable is set during the vendor specific HLA RTI installation.

- Updated the Microsoft Word Viewer version that is installed with V+ which will read newer versions of Microsoft Word.

- Fixed a byte swapping problem with multiple radios receiving the same signal set to encoding scheme 4. The use of more than one radio receiving the same signal in this mode would cause noise when receiving an encoding scheme of 4. VComm can be setup to interpret encoding 4 as host or network byte order. Other vendor systems will use one or the other.

- Changed the installation conditions, so that the target machine operating system must be Windows XP SP2 or later. This replaced the condition that only required Windows XP.

- Changed the name format of the Federate to join HLA federations to VComm@<COMPUTER NAME> where COMPUTER NAME is the name of the federate computer.

- Updated the Remote Control demo application, updated the new source code on the web site and updated the Remote Control Interface Specification to Version 1.2. Version 1.1 applications will not work with the new 1.2 version, and will have to be changed slightly and recompiled. This was necessary to enable new remote control commands in the future.

- Fixed a problem with radio transmissions that caused crashes on some Intel motherboards due to a Microsoft CString memory exception.

- Updated VComm to use the new VComm HLA Extensions for the various RTI vendors.

- Updated test wave files to new low noise female voice.

- Added informative graphic icons to all message boxes to V+.

- Corrected a problem with object 2055 and 2056 with the initialization.

35.1 New Objects

The following object has been added to this build. Please review its associated object help file for detailed descriptions.

2059 – VComm Set Radio/ICS Name

36 Build 351 (Beta 1)

This build includes the following changes:

- Corrected a problem with threading for the run-time system.

- Corrected a byte swapping problem with object 2012 File Recorder.

- Updated the SMx User Manual

- Updated SMx test and SMx Miscellaneous folders to point to the correct wave file locations once installed.

- Added the **SMxICSRxTxIndependent** registry value to allow the Tx and Rx pins of the SMx Local ICS and SMx Local ICS (Stereo) objects to operate independently.

- Improved performance by 25% for the SMx Local ICS and SMx Local ICS (Stereo) objects (IDs 2023 and 2048 respectively).

- Improved performance by 5% for the OR Output Connector and OR Input Connector objects (IDs 2021 and 2022 respectively).

37 Build 352

This build includes the following changes:

- Added user editable registry based DIS heartbeat.

- Corrected a byte swapping problem with object 2012 File Recorder.

- Updated the VComm User Manual.

- Added the **SMxICSSubFrameDivisor** registry value for the SMx Local ICS objects to distribute processing over a number of frames. See the help files for object IDs 2023 and 2048 for more detailed information.

- Added Multicast functionality to the Custom Socket I/O Driver.

- Fixed a problem in VComm for multiple receivers/transmitters on a single device.

- Further optimized the network transmission system, providing even more transmissions per given environment and CPU power.

- Created a user control for setting the DIS Transmitter PDU heartbeat rate, DIS symbolic name, HBT_TRANSMITTER_PDU. The user can now set this value in the run-time system, thereby storing the value in the application specific .vne file. This was previously stored in the registry.

- Updated the remote control demo application to control heartbeat.

- Updated the connect/disconnect logic with the Remote Control Application.

- Updated the DIS relative time according to the latest DIS specification.

- Added support for absolute DIS time stamps.

- Corrected a VComm transmit problem with computers that have multiple processors. Note that hyper-threading CPUs appear as two processors to Windows XP. This problem manifested itself as an occasional crash or voice transmissions that would stop working while other parts of V+ would continue to operate normally. For best performance results in VComm, do not use hyper-threading or multiple CPUs.

37.1 New Objects

The following object has been added to this build. Please review its associated object help file for detailed descriptions.

2060 – VComm Force Stereo TX

38 Build 353

This build includes the following changes:

- Removed all references to HOST ID and changed to APPLICATION ID in VComm User Manual, VComm object graphics and help files. The DIS standard uses APPLICATION ID in the place of the legacy HOST ID and that is now the standard for VComm.

- Object 2059, "Set Radio/ICS Name" did nothing in previous V+ builds. Now, this object sets the optional name that is tagged to the end of the HLA 1.3 RTI ObjectIdentifier string name. Currently there is no DIS functionality for this object and it does nothing to a DIS radio if attached. See the VComm User Manual or the object help file for more information.

- Improved HLA performance.

- Added HLA Federation Execution Data (FED) filename to the V+ run-time system networked audio configuration page and added this feature to the remote control system.

- Updated the "V+ Runtime System Remote Control Specification.doc" to version 1.4. Note that this version is a breaking change to previous versions of the remote control system, such that previous remote control versions will not be able to communicate properly with Build 353. This was necessary in order to eliminate breaking changes in future versions.

- Fixed a problem in objects 1023 and 1048 (SMx Local ICS and SMx Local ICS (Stereo)) with regards to the **SMxICSSubFrameDivisor** registry value provided in Build 352. If this value is used, the objects will now be processed properly during run-time.

- Removed registry based setting of Entity Identifier, and removed random Entity Identifier feature in VComm. Added support for automatic Entity Identifier based on the computer IP address.

- Changed the behavior of DIS radios in regards to Entity Identifier; see VComm User Manual.

- Corrected a memory leak associated with different systems having different DIS Transmitter PDU heart beat rates.

- Added absolute timestamp information capability to existing relative timestamp in HLA RPR-FOM versions.

- Modified VComm so that the MAK RTI can now run on the same machine as the application.

- Updated the VComm User Manual.

- Modified the DIS Monitor to display CCTT SINCGARS modulation parameters when the system type is 6 (CCTT SINCGARS) rather than 5 (SINCGARS).

- The user can now change the SINCGARS and HAVEQUICK radio power and bandwidth while in these modes. Previously these modes forced the power and bandwidth to specific values.

- Removed the VComm Frequency Filter Mode.

39 Build 354

Build 354 has several beta versions that were being tested internally and at key customer sites. This build includes the following changes:

- Added HAVEQUICK and SINCGARS HLA functionality.

- Provided a Signal object timeout when in HLA.

- Corrected a rare stuttering problem with database wavefile players.

- Added an error message when loading wavefiles that exceed twelve minutes of audio for static players. The message indicates that the user should use a streaming player for files larger than that size, such as V+ object 2008.

- Provided a note in database player help files informing the user that a change in filename must remain for 2 frames for it to take effect.

- Updated the VComm User Manual.

- Updated the input streaming system to eliminate threading problems on multicore and multiprocessor machines.

40 Build 355

This build includes the following changes:

- Corrected a problem with Radio Identifiers automatic assignment when one of the fields was zero and a valid Radio Number was present. This would cause duplicate Radio Identifiers.

- Corrected a problem with the audio emulation filter causing clicking in the received audio when more than one radio is being received.

- Added a filter to the signal reception so that only voice encoded audio can be received by voice radios.

- Added a registry variable to add a filter for Radio Entity Type category field. This is off by default. See the VComm User Manual, page 51 and 52.

- Update the VComm User Manual to V 1.25.

- Moved VComm Antenna Position Threshold from the registry and exposed the variable to the user via the user interface. This variable can now be stored in .vne files.

- Corrected a problem with compression filters in VComm. In earlier versions only one compressor could be used at one time in the system. Added capability for other filters to work along with the compressor.

- Improved the performance and latency of incoming audio streams in VComm. Earlier versions had unnecessary processing for DirectSound buffer effects when they were not being used.

40.1 New Objects

The following object has been added to this build. Please review its associated object help file for detailed descriptions.

2088 – 1 of 28 Selector

2089 – VComm Radio Entity Type

2090 – VComm Parametric EQ

41 Build 356

Build 356 was released to include those changes to Build 355 of which there were several internal Beta releases and to update documentation. Otherwise, Build 356 contained no other changes.

42 Build 355

This build includes the following changes:

- Corrected a problem with Radio Identifiers automatic assignment when one of the fields was zero and a valid Radio Number was present. This would cause duplicate Radio Identifiers.

- Corrected a problem with the audio emulation filter causing clicking in the received audio when more than one radio is being received.

- Added a filter to the signal reception so that only voice encoded audio can be received by voice radios.

- Added a registry variable to add a filter for Radio Entity Type category field. This is off by default. See the VComm User Manual, page 51 and 52.

- Update the VComm User Manual to V 1.25.

- Moved VComm Antenna Position Threshold from the registry and exposed the variable to the user via the user interface. This variable can now be stored in .vne files.

- Corrected a problem with compression filters in VComm. In earlier versions only one compressor could be used at one time in the system. Added capability for other filters to work along with the compressor.

- Improved the performance and latency of incoming audio streams in VComm. Earlier versions had unnecessary processing for DirectSound buffer effects when they were not being used.

42.1 New Objects

The following object has been added to this build. Please review its associated object help file for detailed descriptions.

2088 – 1 of 28 Selector

2089 – VComm Radio Entity Type

2090 – VComm Parametric EQ

43 Build 357

This build includes the following changes:

- Added a secondary DIS network to VComm so that radios can now attach to a primary and or a secondary network with independent network settings.

- Added the capability to use host names as well as IP addresses in VComm.

- Modified the V+ remote control interface to control the additional secondary network and the host name changes above.

- Updated the VComm User manual.

- Changed the installation software to indicate that this version of V+ will not install on Windows XP SP1 or earlier. If an earlier version of V+ was installed on Windows XP with SP1 or earlier, the error reported was "Will not install on Windows XP" which did not indicate the reason.

44 Build 358

This build was released internally as Beta 1 though Beta 7. This build includes the following changes:

- Added a VComm radio background level adjustment that limits the overall maximum noise level for the simulated radio noise. This adjustment in the in the registry as radioNoiseAtten and is set to 0 as the default and expressed in dB of attenuation. The key is not installed by default.

- Added DIS Relative and Absolute time stamp controls in the V+ run-time Configure, Networked Audio tab. This was originally in the registry and has been moved to a user control. The value is also stored in the .vne file.

- Enhanced the Remote Control demonstration GUI to properly display the "Connect" and "Disconnect" buttons as well as the start and stop buttons.

- Added the capability to join HLA federations dynamically.

- Added capability in the remote control system to join a create or join federation after V+ is already running and resign from a federation at any time when V+ is running. DIS radios may be operational before HLA radios are joined to federations programmatically via the remote control system.

- Fixed a problem with object 1054 where the volume would be incorrect during the first time the object was executed.

- Changed the "HLA Enable" switch to "Join Fed on Start" switch for the Networked Audio tab in the Configure menu of the V+ runtime system. This instructs the runtime system to start HLA when the runtime system is started rather than when commanded by the remote control system.

- Updated the VComm User Manual to version 1.29

- Updated the "V+ Runtime Remote System Control Specification" to version 1.10.

45 Build 359

This build includes the following changes:

- Corrected a problem with the SMx Local ICS object where the volume state could be incorrect if the object was transmitting when the volume was changed.

- Corrected a small memory leak in the 3D audio players.

- Fixed a problem with object 1051 where the volume would be incorrect during the first time the object was executed.

- Updated the Joystick driver to allow 8 buttons (used to be 4).

- Fixed a problem in VComm with regards to its receiver output buffers. These buffers needed to have the appropriate DirectX priority in order to play properly.

- Added the VComm Signal File Converter utility (vsfc.exe) to the V+ installation.

- Added more capability to the VComm Recorder. This includes a Position pin, a third Filename Format, and a new Identifier that can be added to the filename string.

- Converted the VComm User Manual to Word 2007 format.

- Modified Emitter Audio Generator to generate higher volume levels. Users of this object will notice that the level of audio produced for a given power level and volume setting has doubled. By modifying your application to divide your volume settings by 2, you may restore your original volume levels.

45.1 New Objects

The following object has been added to this build. Please review its associated object help file for a detailed description.

2091 – VComm Max Range

46 Build 360

This build includes the following changes:

- Beta 1 through 4, 2009-07-29:

- Corrected a problem with delayed signals in HLA. Signals would be prematurely cut off upon release of the PTT at the transmitter for long duration signals.

- Corrected an HLA problem with the V+ Run Time system to allow multiple HLA resign and join commands from remote control.

- Modified the V+ Remote Control System to allow the remote control user to repeatedly send HLA Join and Resign commands out of sequence for testing purposes.

- Added time stamps to the V+ Run-Time system and V+ Development system message windows of the format:

  [Year-Month-Day] Hour:Minute:Second.Millisecond:

  ```
  [2009-8-2] 23:30:46.140: Microsoft Windows XP, Professional Service Pack 3 (Build 2600)
  [2009-8-2] 23:30:46.140: Remote control is initialized and listening for connections on Port 5068.
  [2009-8-2] 23:30:46.140: Using MAK HLA 1.3 VComm extentions
  ```
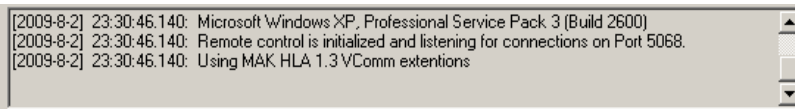
  The hour is displayed in 24 hour format.

- Beta 5, 2009-08-02:

- Corrected a small memory leak in the remote control portion of the run-time system, approximately 8K each time the remote control connected and disconnected to the run-time system.

- Fixed the same memory leak in the remote control sample application.

- Added a note in the VComm User Manual recommending adding a variable to the HLA RID file to avoid certain RTI related popup windows.

- Modified the Worksheet Connector graphics to remove the K in the green triangle.

- Modified the V+ Runtime Network Configuration window to display all network adapters whether they are enabled or not. In particular, a network adapter will now appear in the list of device names and friendly names even if it is not physically connected and/or has no IP address assigned.

- Fixed a problem with object 2045, VComm S/W VOX, where it would not operate properly if the enable pin was set to 1 on V+ start.

- Beta 6 2009-09-25:

- Added a more realistic crypto model for object 2040. This model has new internal KY-58 and KYV-5 preamble for the transmitter and receiver portions of the audio, and realistic effects due to receiving chipper on plain. This cipher on plain effect is

specific to the crypto gear. The model includes transmit hold-off just as the real world crypto gear, so that you cannot send voice until after the preamble. The actual radio PTT is held off by the crypto model until after the preamble.

- Removed a small beep that sounded when using crypto when V+ was started due to the crypto system being set before keys were valid, playing a small portion of the "No Fill" tone waveform.

47 Build 361

This was an internal test release.

48 Build 362

This build has several beta versions that were released to a handful of customers. Each beta was tested of the Joint Strike Fighter J35 simulator at Lockheed Akron, OH. This simulator is complex enough to utilize almost all of V+ capability inducing 3D HRTF audio, SMx local ICS objects, DIS radios, HLA radios, VComm secondary sockets, numerous Ethernet interfaces using the Custom Socket I/O device and tens of thousands of objects. This release includes the following changes:

- Beta 1, (2009-10-15)

    o   Added a real-time logging feature to the V+ Development System, and the V+ Run-time System. The files can be turned on or off via a registry entry. See the V+ User Manual for more information.

- Beta 2, (2009-10-17)

    o   Fixed a small memory leak in the development system message window.

- Beta 3, (2009-10-21)

    o   Added additional thread protection around VComm radio shared data areas. Newer computers have more threads and V+ and VComm are multithreaded applications. This fix was necessary to correct a crash on an international customer running many machines with multiple processors each.

- Beta 4, (2009-10-30)

    o   Added a "cut" menu item on selected objects in the V+ development system that are right mouse clicked while the platform is not running and are selected.

    o   Corrected an HLA problem in VComm that caused a loss of one way communications after a dynamic resign and join. Only the remote control system can command an HLA federation resign and join while HLA is running. Prior to this version, depending on the sequence of the load and the sequence of the HLA handle, communications would be lost after one of the computers would resign, and only in one direction.

- o Changed the remote control system to get the configuration after a connection has been made to the client. This populates all of the configuration edit boxes, etc., on the screen of the remote control client.

- o Added real-time logging messages of the HLA system in VComm to provide for more detailed messages in the run-time system window during dynamic remote control resigns and joins.

- o Update the VComm User Manual.

- o Updated the V+ user Manual

- o Updated the V+ Remote Control User Manual.

- Releases on 2009-11-01.

49 Build 363

This build has several beta versions that were released to a handful of customers. Each beta was tested of the Joint Strike Fighter J35 simulator at Lockheed Akron, OH. This simulator is complex enough to utilize almost all of V+ capability inducing 3D HRTF audio, SMx local ICS objects, DIS radios, HLA radios, VComm secondary sockets, numerous Ethernet interfaces using the Custom Socket I/O device and tens of thousands of objects. This release includes the following changes:

- Beta 1, (2009-11-07)

  - o This first Beta of Build 363 was to test for a fix for a problem at Lockheed Akron on the Joint Strike Fighter project related to HLA dynamic join under remote control. The problem was occasional loss of HLA radio communications after the second resign join sequence in remote control.

- Beta 3, (2009-11-25)

  - o The object selection dialog window was enhanced to provide a tree view in addition to the list view. The dialog window was made resizable and an option to show objects alphabetically was added. **This enhancement resulted in a change to the design file format. Worksheet designs saved with a previous build will be automatically converted when loaded using Build 363 or later. However, worksheet designs saved with Build 363 or later cannot be loaded using earlier versions.**

- Beta 4, (2009-12-23)

  - o Corrected a problem in VComm, where a radio with an exercise ID of zero was being used with an active PTT, power, etc. A flight simulator installation at Kirtland AFB reported this problem and it was corrected by not allowing the PTT for radios to go active when the exercise ID is zero. This corrected the problem which manifested itself as a complete lockup of wave in and out devices for SimPhonics SMx system. It is not known if this condition would have caused problems with other wave in and out devices in the operating system.

49.1 New Objects

The following object has been added to this build. Please review its associated object help file for a detailed description.

1. 2092 – VComm Radio Input Status

    a. This object accepts a DIS/HLA radio handle for an input, and provides a series of radio parameters as an output for monitoring.

2. 2093 – Wave Recorder with Advanced Filename

    a. This object provides a more advanced filename scheme for real-time recording of Wave Input audio streams.

50 Build 364

This build was a critical release, fixing a problem with radios that caused the streaming audio to stop. This build corrected this problem, and was installed on a Kirtland AFB MC-130P Flight Simulator. There were no new objects.

51 Build 365

This build has several beta versions that were released to a handful of customers. Each beta was tested on the Joint Strike Fighter J35 simulator at Lockheed Akron, OH. This simulator is complex enough to utilize almost all of V+ capability inducing 3D HRTF audio, SMx local ICS objects, DIS radios, HLA radios, VComm secondary sockets, numerous Ethernet interfaces using the Custom Socket I/O device and tens of thousands of objects. This release includes the following changes:

- Beta 1, (2010-01-22) this first Beta of Build 365 was for specific fixes.

    o Added the capability to adjust the 3D Audio HRTF Rolloff Factor via a registry entry: `\\HKEY_LOCAL_MACHINE\SOFTWARE\SimPhonics\VPLus\Platforms\Native Platform\3DAudioRolloffFactor.`

    o Updated the code for HLA dynamic join via remote control to avoid a race condition that could have happened under rare occasions.

    o Corrected a small memory leak with multiple HLA federate joins.

- Beta 2, (2010-01-24)

    o Added the new Vdx I/O Device that communicates with shared memory to other Vdx compatible devices. This device is part of the V+ installation instead of a standalone I/O Device installation.

- Beta 3, (2010-01-28)

    o The VComm noise model was enhanced to change the spectral shape of the sound across the radio frequency range. For example the background static for VHF sounds different from the UHF static as in real radios.

- Beta 4, (2010-02-02)

  - Fixed a dynamic HLA federation join problem in VComm where a federate would not rejoin after a specific sequence of joins and resigns from multiple federates.

- Beta 5, (2010-02-07)

  - Updated the Vdx I/O Device to 4.1.0.5 to prepare for the new Vdx pending specification and release.

- Formal Release Build 365

52 Build 366

This build fixes a long standing issue in V+ which caused problems saving VNE files that contained I/O devices. Attempting to save such a VNE file using the V+ Runtime was successful but the resulting VNE file would not run. Changing the V+ platform configuration in any way would also cause problems. A workaround was available to enable the creation of valid VNE files which is described in section 4.2. Starting with this build, the workaround is no longer necessary. **As a result of this fix, the VNE file format was modified. It is necessary to rebuild VNE files created with prior versions.**

A number of improvements have been implemented in VComm to make interaction with the VComm Terrain Server (VTS) more robust. **As part of these improvements, VComm no longer supports use of the VTS legacy Build 100 messages**.

This build was introduced as several Beta versions, and these are documented in detail below.

52.1 Beta 1, (2010-05-01):

- The automatic DIS ID generation system has been modified to make it more flexible. In particular, it is now possible to generate individual parts of the DIS ID while other parts are fixed. The simulation address, entity number, and radio number can be auto generated independently of each other for any particular radio. As a consequence of the change, IP addresses that contain zeroes will no longer cause the generation of invalid DIS IDs. Please refer to the VComm User Manual for a full explanation of DIS IDs and how they can be automatically generated by VComm.

52.2 Beta 2, (2010-01-24)

- Added Object 2094 – VComm Set TX Audio Gain

  This object accepts a DIS/HLA radio handle for an input and adjusts the audio gain on outgoing transmissions.

- Added Object 2095 – VComm Set Application Specific Data

  This object sends four floating point data values in a VTP record. Note that a VTP record is a new concept still in Draft form in the latest DIS standard that is now in IEEE balloting that will become version 7 of the protocol. The VTP record is a new

concept that allows the Transmit PDU to send variable length records that are identified by enumerations. In this case, a VTP record has been identified that simply sends 4 floating point values in the PDU.

- Added Object 2096 – VComm Get Application Specific Data

  This is the receiving side of object 2095 above using the arriving VTP record.

- Added Object 2097 – VComm S/W VOX with Activity

  This object implements VOX capability for radios and intercoms. It is the same as the existing object 2045 with the addition of an output pin which indicates when the VOX is active.

- Added Object 2098 – VComm Transmitter Audio RMS Level

  This object reports the RMS level of the audio for outgoing radio or intercom transmissions.

52.3 Beta 3, (2010-07-24)

- Added Modulation Match Logic to Radios. From this version on, the major and detail modulations must match for a valid communications in DIS and HLA

- There are other activities in VComm and V+ that are under development and test now at SimPhonics. This is an interim release for a customer needing the modulation change.

- Added logging of transmitter state to VComm Recorder.

- Updated the "Package Code" in InstallShield and release procedure for V+, so that future installations will work without having to uninstall the previous versions.

52.4 Beta 4

- This was an interim release.

52.5 Beta 5

- Improvements were made to the VComm Radio Transmitter Wave File Player object (2057). Stereo files can now be played (only the left side is played). The "playing" output pin also stays at 0 (not playing) if an attempt is made to play an unsupported format. - RF

- Any volume control of waveform players in V+ that have a volume over 1.0 when V+ is started, will result in the volume being set to zero. This was corrected in all waveform players so the volume is limited to 0.9999. - SWJ

52.6 Beta 601

- This was an interim release to fix an AM/FM modulation interoperability problem in HLA for the JSF project at Lockheed. The previous beta threw out the radio

completely if the AM/FM modulation did not match. This release processed the modulation logic for AM/FM interoperability in the receiver, since real radios in this mode would in fact receive the signal, but would not demodulate the audio properly. The carrier is still there, generating Signal and Noise levels, just no audio.

52.7 Released

This version was finally released on September 11, 2010 at 1:15:26 am.

53 Build 367

This build began immediately after the previous release, since the demand for a late release was building. This release is just a continuation of changes of VComm related issues and new features. New HLA messages have been added to aid in troubleshooting HLA dynamic join, remote control of the environment variable RTI_RID_FILE, and others.

- Added Object 2099 – VComm Set Open Mike

   This object controls the sending of an Open Mike VTP record.

- Added Object 2100 – VComm Get Open Mike

   This object monitors incoming Open Mike VTP records.

- Fixed bug in Object 2079 – Data Set Function (0 Arguments)

   Opcodes 4 and 5 of this object were not handling negative data set values correctly.

- Added Auto Connect feature.

   Selecting objects with unconnected output pins and clicking Connect under the Edit menu or the right mouse button pop-up menu will cause V+ to connect those pins automatically to unconnected input pins that are to the right and vertically level with the output pins.

- The messaging system for the VComm runtime system has been rebuilt to improve stability. Previous versions did not properly display information from VComm. Now, all messages are displayed without ill effects.

- New HLA messages have been added to aid in troubleshooting HLA dynamic join, remote control of the environment variable RTI_RID_FILE, and others. Check the log file for the runtime system after an HLA operation to see these new messages.

54 Build 368

This build began immediately after the previous release to update the HLA section in VComm.

54.1 Beta 1

- Modified the manner in which VComm managed the RTI_RID_FILE variable. This version has renamed the edit box "RTI Filename" to "RTI_RID_FILE" in the V+

runtime networked audio configuration page to show that this field is now the current value of this environment variable. The value can be overridden by the user or via remote control. Note that if the value is overridden, the new value is valid only for the V+ runtime system process. All other processes see the value that was present before it was changed. Note that the RTI_RID_FILE variable in this discussion refers to the System variable, not the user version.

- Updated the tab order to controls for the runtime system configuration dialog boxes. The previous order was arbitrary. Typing the <TAB> key on controls will sequence through the controls in a logical fashion from left to right and top to bottom.

- Updated the VComm System User Manual to 1.46.

- Changed the layout of the V+ Run Time window so that the message window convers the entire document area of the main window.

54.2 Beta 2

- Added a section to the V+ Development System and V+ Runtime System log files that lists the file versions of the key V+ files as shown. Note that the right most digits are the beta version of the file.

```
********************************************************
V+ Development System User Interface (VPLUS.EXE) - 4.1.368.2
V+ Runtime System Objects (NATIVE.DLL) - 4.1.368.1
V+ Runtime System User Interface (VPLPLTSH.EXE) - 4.1.368.2
V+ Runtime System Real-Time Executive (VPLRTI.EXE) - 4.1.368.2
V+ VComm Radio Simulation System (VCOMM.DLL) - 8.1.368.1
********************************************************
```

54.3   Release

- Changed the layout of the V+ Runtime screen so that the message window is as large as possible so that more messages can be seen at one time.

- Added a switch to turn on or off the logging of runtime information in the message window.

- Added a new default I/O Device that will now ship with V+, "GLStudio", a V+ interface to and from graphical elements of GLStudio, a product of DiSTI Corporation. GLStudio is a suite of tools enabling developers to build high-fidelity graphics and fully interactive controls into their software products.

55 Build 369

55.1 Beta 1

- Modified the VComm Entity Filter object (2024) to allow multiple filters to be applied to a single radio.

- Added object 2101, VComm Suppress PDU Transmit. When attached to a radio this object suppresses the transmission of PDUs on the network. This is useful when a radio is being used solely to monitor traffic (i.e. the radio is never used to transmit). In this case, suppressing transmission of PDUs will make the radio "invisible" to other radios, saving both network bandwidth and CPU processing time.

55.2 Beta 2

- Added a "`Monitor All`" and "`Monitor Selected`" menu item when right mouse clicking on an object output pin when the system is running. Also added a menu bar item under the Edit menu for the same purposes. If multiple pins need monitoring, turn on the data monitor windows on all output pins at once or the selected ones. Both menu items are disabled unless the system is running.

- Add a "`Close All Monitors`" menu item in the Edit group that is always active. Obviously it is used to close all open monitors out output pins.

- Corrected a crash that can occur in rare circumstances where an error is generated in a running design's object inventory.

- Removed a Message Box warning the user of a rare error that would cause the execution to halt. This error has other means of warning the user without causing a stop.

55.3 Release

This version was released on June 3, 2011.

56 Build 370

56.1 Beta 1

- Fixed play back of wave files with sample sizes that are not 8 bits. This change affects objects 1051, 1054, and 2007. Positions provided to and reported by these objects were only being handled correctly if the sample size of the wave file was 8 bits.

56.2 Beta 2

- Allow project manager dialog to be resized.

- Add input stream performance counters.

56.3 Beta 3

- Modify object 1051 to use dynamic streaming of audio for large wave files.

56.4 Beta 4

- Added Object 2102, Performance Monitor object that has four input pins that are exposed to the Window Performance Monitor Utility PERFMON.EXE under the performance object "V+ Runtime". Within this object are four counters, "V+ Object 2012 Pin 1" through "V+ Object 2012 Pin 4" that are displayed directly without modification to the display graph.

- Modified Datapool header format.

56.5 Release

This version was released on October 5, 2011.

57 Build 371

This build includes work on signal and noise modeling. **As a result, the volume of radio noise produced for a given signal to noise ratio has been reduced. If you have been using the radio noise attenuation registry entry to reduce the level of noise, you will need to readjust this value. Due to the modeling improvements, it is likely that you will not need to use the radio noise attenuation registry value at all.**

57.1 Beta 1

- Modify noise modeling to reduce noise volume levels.

- Implement signal dithering. Signal dithering is disabled by default. It can be enabled by setting the enableDithering registry entry to 1 as described in the VComm User Manual. When signal dithering is enabled, weak incoming radio signals will intermittently break squelch. This adds additional realism to the modeling of weak radio signals.

57.2 Beta 2

- Modify Vdx I/O device to comply with Vdx System Version 2.

57.3 Release

This version was released on January 5, 2012.

58 Build 372

This version includes changes necessary to run the VComm.dll in another .NET application.

58.1 Beta 1

- Modified the VComm DLL to work with other executables such as a .NET host. There was a problem with obtaining a window handle for DirectSound that caused a failure in this mode.

- Updated the V+ file loading to produce a more informative messages that "Unknown Version". The new version will report conditions where the file version is being loaded by a V+ version that is older than the file version.

58.2 Release

- The V+ Runtime now attempts to force an audio device match when there is only one audio device in the vne file and only one audio device in the hardware. This allows audio devices with different names but identical functionality to be interchangeable.

59 Build 373

This version includes changes to fix dialog boxes appearing behind the development window.

59.1 Beta 1

- The V+ Development System no displays a dialog box informing the user that a save it not possible when the system is running. This had caused a dialog box to appear behind the development window, which would not be discovered until the application was closed.

59.2 Beta 2

- Changed the Bind function to accept a true NULL for the bind address for the VS 2010 code mainline. The new VS 2010 required the parameter to be NULL to signify to bind on all addresses. The XP C:\VPL mainline had an empty string which works in the old VS 2003 Win XP version.

59.3 Release

- Added object 2103, Virtual Audio Selector that works with the SMx Audio system I/O device for V+.

60 Build 374

This version includes the following bug fixes:

- The cipher key associated with a radio is now being properly published when using HLA.

- The crypto model now considers signal strength. This prevents the erroneous playing of preambles on the receiving radio when the incoming signal is too weak to be received.

- Logic has been added to ensure that only a single crypto preamble is played per received transmission.

- The new Virtual Audio Selector object (2103) has been changed to fix multiple issues.

61 Build 375 (Windows XP only)

This is an update to Windows XP V+ release. The Windows XP version of V+ is no longer being updated. This version includes the following updates, fixes, etc.

- Added Object 2107 – VComm Radio DIS Ex ID and Adx Monitor (Specifically requested by customer

- The user interface for the V+ development system has been updated in this release to include some of the best new time saving features that have been added in Windows 7.   These include the following:

- o Added a Hot Key**, CTRL-E** to automatically wire the connections of selected V+ objects. This is a very handy feature and is used often in development.

- o Added a Hot Key, "**V**", to change the cursor mode to a standard selection tool.

- o Added a Hot Key, "**Z**", to change the cursor mode to a zoom cursor mode.

- o Added a Hot Key, "**N**", to change the cursor mode to net mode.

- o Added a Hot Key, "**T**", to change the cursor mode to a standard text selection tool.

- o Added a Hot Key, "**F12**" to perform the same function as the menu, **Window / Cascade**.

- o Added a Hot Key, "**S**", to start or stop execution depending on the current state of execution. If V+ is stopped it will be started and if V+ is started it will be stopped, etc. Repeatedly pressing the S key continues this o , the execution can be started and stopped.

62 Build 376 (Windows XP only)

This is an update to Windows XP V+ release and includes the following changes:

1. More updates to the HAVEQUICK radios where the frequency filter was not being updated properly. This has caused the radio to not communicate with other HAVEQUICK radios when in Spread Spectrum mode, or more specifically when that field is set in the Transmitter PDU.

63 Build 377 (Windows XP only)

This is an update to Windows XP V+ release and includes the following changes:

1. Added new objects 2108 and 2109:

   a. 2108, VComm Get Boom ICS VTP Record

   b. 2109, VComm Set Boom ICS VTP Record

64 Build 378 (Windows XP only)

This release includes the following:

1. Added a Message Box that the user must acknowledge in the V+ Development System when executing a design and an attempt is made to save the worksheet. This ensures the user realizes that the worksheet will not be saved while the system is running so that the user must stop execution before changes can be saved to that worksheet.

2. Fixed a mouse problem in net mode where the system can get stuck in a race condition when clicking a menu item in the Development System while also connecting a net.

This build can be downloaded from the following link:

http:\\www.simphonics.com\library\Bin\VPLusreg\V378\setup.exe

65 Build 379 (Windows XP only)

This version of Windows XP corrects a significant problem in previous releases for both Windows XP and for Windows 7 in releases prior to Build 526 that changes VTP record byte swapping from Host Byte Order to Network Byte Order. Older versions used Host Byte Order.

65.1 Important Notice!

All versions of software must be changed in order for this change (i.e. VTP records) to work properly since the byte swapping has changed on the wire. This is a critical notice. Again, any participating V+ systems must be updated if any system is changed.

66 Build 380 (Windows XP only)

This release corrects a problem with database player objects, 2008 and 2054 where the underlying streaming audio manager had a problem when the Audio Stream Manager services a new streaming buffer before direct sound has played any of the buffers. This was manifested as glitches, false starts, and uncommanded loops.

67 Build 381 (Windows XP only)

This release changes the network behavior for the Primary and Secondary network configurations that affect routing of packets in VComm by removing the socket option **SO_DONTROUTE.** This socket option was set in past releases preventing the routing of UDP packets through WAN routers.

Release Date: 1/2/2014 17:13:45

68 Build 382 (Windows XP only)

This release incorporates the jitter buffer audio improvements that were provided by the Windows 7 Build 548.1 (Beta 1) update.   (See Build 548.1 Beta 1 Win 7)

69 Build 383 (Windows XP only)

This release made no changes in the software. The previous build (382) introduced changes that require more physical memory to be installed in the computer. Therefore, this build will not install unless the computer has 4 GB of memory.

70 Build 384 (Windows XP only)

This release has the following changes:

70.1 Object 2114, VComm LVC

This object sets the DIS (IEEE 1278.1) LVC Indicator field of the PDU Status record for both the Transmitter and Signal PDU on a radio by radio basis. This version also added a User control to setup a global LVC Indicator that this object can override on a radio basis. This is for DIS Version 7 only.

70.2 Radio Attached Indicator (RAI) field

This version also added logic to set the RAI bits in the PDU status field. The entity attach logic was also modified to detach radios from an entity when the entity either issues a final entity state update PDU or the entity state update PDUs time out.

70.3 Object 2115, VComm Basic Fidelity HQ / SINCGARS

This object combines the functionality of the old HQ (2050) and SINCGARS (2058) objects to prevent problems associated with using these old objects at the same time on a single radio. New designs should use this object instead of the old ones.

71 Build 385 (Windows XP only)

This release fixed an issue whereby enabling spread spectrum radios (i.e. Have Quick or SINCGARS) could potentially corrupt the frequency settings of other radios resulting in a loss of communication.

72 Build 390 (Windows XP only)

This build modified the behavior of radios to round off input frequencies as follows:

1 Hz to 16.777 MHz	No rounding. Frequency is set exactly as specified.
16.777 MHz to 134.217 MHz	Frequency is rounded to the nearest 10 Hz.
134.217 MHz to 1 GHz	Frequency is rounded to the nearest 100 Hz.
1 GHz and greater	Frequency is rounded to the nearest 1000 Hz.

73 Build 500

This version is the first Windows 7 version, and was based on the current version of the Windows XP.

73.1 Beta 1

- Recertification for running on the Windows 7 platform.

- Fixed a bug that surfaced in Windows 7, when editing a number in the slew control for static data for numbers greater than 10 digits.

73.2 Beta 2

- Recertification for running on the Windows 7 platform.

- Vdx System Version 3 using the datapool registration system.

- Improved input stream system.

- Corrected audio glitch.

73.3 Beta 3

- Corrected a VComm buffer deadlock condition that occurred when V+ was stopped while radios were actively transmitting.

- Added missing information for installation.

- Updated object artwork for the development system.

- Fixed an installation bug that caused the wrong version to be displayed in the runtime system help.

73.4 Beta 5

- Added the Joystick I/O Device that was in the Windows XP version.

- Windows 7 is now required for the installation of Build 500 and above as this build no longer supports Windows XP for the input streaming.

73.5 Beta 6

- This version increased the size of the DTOL (V+ Runtime) object list from 9,000 objects to 11,000 objects. Two customers hit the limit of objects.

- This version added Windows 7 capability to the Windows Audio Mixer Device. This new device has new features such as the edition of some special features that were not part of Windows XP capability such as Bass boot, AGC, etc.

- Fixed a possible crash on system stop while streaming.

73.6 Beta 8

- Added object 2104, remote monitoring device.

73.7 Beta 9

- Modified the V+ Development command line to allow for a filename to be loaded with spaces in the filename.

73.8 Beta 10

- SimPhonics corrected a bug in the joystick driver as previous versions would not load the device when the user double-clicked the drive in the runtime system.

- This is the first version to be code signed using SimPhonics certificate.

73.9 Beta 11

- Software was added to prevent the computer from entering a sleep mode upon when the system idle timer expires. The sleep mode can still be entered by closing a laptop lid, etc. This mode is necessary to keep V+ running at all times.

74 Build 501

This is the second Windows 7 version, which followed the first one very shortly.

74.1 Beta 2

- Beta 1 was an internal release not released to the public.

- Fixed a major command line problem with the Windows command shell where filenames containing spaces would not load properly for both for design files (.DES) files and runtime (.VNE) files. For example if the V+ command line or a filename was double-clicked named "Test 1 2 3.des", the name that V+ would try to load would be "test.des". This is corrected in this release build.

- About 20 older object artwork designs were updated.

75 Build 502

This version has the following changes.

75.1 Beta 1

1. This beta version updated the Window Message Area standard used at SimPhonics for all of its products. Specifically this version pads zeros to maintain the same character widths.

2. The Windows 7 version installation didn't have the log file registry key present and therefore enabled. Added the logfile registry key to the installation and set the logfile to be enabled by default. This minor release change was added to the existing

beta 2 release and the existing release will be overridden by this one dated today: Wednesday, May 29, 2013.

75.2 Beta 2

1. The Runtme system had an extra blank entry in the I/O Drivers list in the configuration window that was a result of changes to Windows 7 from XP.

2. More message window cleanup was conducted which updated the SimPhonics Message Window Specification.

76 Build 503

This version has the following changes.

76.1 Release

A new object, Remote radio Monitor was added, as well as a few registry entries added that were supposed to be installed by default when it was ported from Windows XP. These are all related to VComm. See the updated VComm User Manual for more information about these updates. Updated various User Manuals, etc.

1. radioNoiseAtten

2. SquelchTailAtten

76.2 New Objects

The following new objects have been added:

1. Object 2103, Virtual Audio Selector, automatically selects the proper Wave In and Wave Out mixer controls when adding an audio device on SMx systems. It saves time and many ports in the designs. See the sample design file in this new release in the sample designs folder.

2. Object 2104, VComm Endpoint Audio Monitor, is a powerful object that can setup a stream of audio over a network to monitor any Windows 7 audio output. A DIS ICS object is added on both ends to send and receive this stream. Since this is built around the new Windows 7 WASAPI low latency API, the audio is streamed at 20ms delays.

3. Object 2105, is a new object that can look for a specific radio on the network and produce the outputs as shown. This object paves the way for more of these types of objects, that will be able to monitor more aspects of any radio on the network.
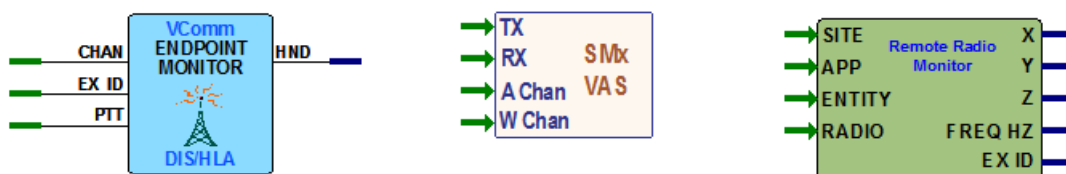
77 Build 501

This version has the following changes.

77.1 Beta 1

The file DSETUP.DLL was deleted from the installation. It is not needed any longer.

78 Build 505

This version was a jump forward due to a number of beta versions released as a result of moving to Windows 7 and the first projects that were being developed at SimPhonics at the same time. This version updated the security certificates, so it will be easier to download and install.

78.1 New Objects

The following new objects have been added:

Object 2105, Remote Radio Monitor: Remote Radio Monitor will search for a DIS Radio Identifier, (Site number, Application number, entity number, and radio number) by inspecting all of the radios on this system, followed by examining all radios that this application can see on the network. Radios that are outside of the capability of hearing will not be searched unless the registry entry "freqFilter" is set to zero or missing from the registry. This object is installed with VComm with is normally installed with V+. The valid output pin will be false (0) if the object is not capable of finding the radio simulation address. If the radio that is being monitored times out or is otherwise removed from the network the output of the search object will return to zero for all output pins. Any number of these objects may be used, even with the same searches. This object is costly in terms of CPU time, since it has to search through all possible radio devices.

78.1.1 freqFilter registry entry

Added **freqFilter** to the VComm registry section and set the value to 1 or on. See MISC as defined in the VComm User Manual. This is no change since its behavior was the same when it was not present.

79 Build 506

The following changes were made to this version:

1. This version disabled V+ object graphics translations for rotate, mirror and flip as the objects were not rotating, mirroring and flipping properly. Prior to this release, the objects would take on mangled forms, often drawing vectors all over the screen. The pins do rotate however, so this is an overall improvement. The proper transformation will be added in a later version.

2. Added a Hot Key, "**V**", to change the cursor mode to a standard selection tool.

3. Added a Hot Key, "**Z**", to change the cursor mode to a zoom cursor mode.

4. Added a Hot Key, "**N**", to change the cursor mode to net mode.

5. Added a Hot Key, "**T**", to change the cursor mode to a standard text selection tool.

6. Added a Hot Key, "**F12**" to perform the same function as the menu, **Window / Cascade**.

7. Corrected a problem with the Runtime Window network selection for friendly name. The previous version would not return the proper selection.

8. The previous version would not accept audio input unless it was in stereo mode. Any mono selection in the sound devices control panel would cause the system to not start. This has been corrected in this version with a new sample rate converter system that is built into Windows 7.

80 Build 507

This version added some cosmetic improvements to the development system graphics as well as VComm improvements for Windows 7.

1. VComm

    a. Modified the VComm input audio streaming system to handle a wide variety of audio formats both sample rates and mono/stereo. Before this change, VComm would not start if the audio input device was set to mono at any sample rate.

    b. Disabled Windows 7 "ducking Mode" for all input streams by default

2. V+ Development system

    a. Increased the thickness of nets in V+ development system graphics so that nets are more visible in high-resolution monitors

    b. Changed the appearance of selected nets to improve visibility

3. Vdx

    a. Updated Vdx to System version 3 for Windows 7 versions and Windows XP

4. Added a Hot Key, "**S**", to start or stop execution depending on the current state of execution. If V+ is not running, it will be started, and if V+ is running, it will be stopped. By repeatedly pressing the S key, the execution can be started and stopped.

81 Build 508

This version added a Vdx datapool for initialization of execution rate and the VComm network configuration.

82 Build 509

This version added object 2107, a DIS radio monitor for reading out the DIS Exercise ID and DIS simulation radio address.

83 Build 510

Since Build 508, Vdx must be installed before V+ in order for V+ to run properly. The warning, "native DLL or one of its components is missing" would be seen immediately after running V+. Installing Vdx corrects this problem. Until V+ Build 511 is released that will correct a problem in V+ execution. You must install Vdx before installing V+. The latest Vdx, build 125 (Version 1.0.125.0) is located at the following download link:

http:\\www.simphonics.com\library\Bin\Vdx\Build 125\setup.exe

After Vdx is installed, download and install this latest release, V+ Build 510 at the following download link:

http:\\www.simphonics.com\library\Bin\VPLusreg\V510\setup.exe

This version fixes this problem described above. Build 512 will correct this and only one installation will be required. Note that if your system includes Vdx anyway, you don't need to install it twice.

83.1 Custom Socket I/O Device

This release includes the Custom Socket I/O device for V+, which has been replaced by Vdx. However, for legacy systems, the custom socket device was ported and included in the release for those systems that needed it and could not switch to Vdx, which was intended to replace the functionality of Custom Socket.

84 Build 511

Since Build 508, Vdx must be installed before V+ in order for V+ to run properly. The warning, "native DLL or one of its components is missing" would be seen immediately after running V+. Installing Vdx corrects this problem. Until V+ Build 511 is released that will correct a problem in V+ execution. You must install Vdx before installing V+. The latest Vdx, build 125 (Version 1.0.125.0) is located at the following download link:

http:\\www.simphonics.com\library\Bin\Vdx\Build 125\setup.exe

After Vdx is installed, download and install this latest release, V+ Build 510 at the following download link:

http:\\www.simphonics.com\library\Bin\VPLusreg\V511\setup.exe

This version fixes this problem described above. Build 512 will correct this and only one installation will be required. Note that if your system includes Vdx anyway, you don't need to install it twice.

84.1 I/O Device List problem

This release fixed a problem with the I/O device list having a blank entry in the list.

85 Build 511.1

This version corrects the following problems.

1. This build fixed a problem with the Window Audio Mixer V+ I/O Driver that is installed with V+ that caused the list to lose track of aliased names of Mixer Devices in the V+ runtime .vne file.
2. This build corrects an installation problem where the Vdx application was required to be installed before V+ in order to avoid a problem with starting the V+ runtime system. Now, V+ can be installed without Vdx. The Vdx installation is independent of the V+ installation.

The build can be downloaded from the following link:
http:\\www.simphonics.com\library\Bin\VPLusreg\V512\setup.exe

86 Build 512

This version corrects the following problems.

1. The Have Quick radios in VComm were not working properly unless the frequencies matched caused by an improper filtering of spread spectrum radios. This release fixes this problem.

87 Build 513 and 514

The following items were addressed in this release.

1. This version corrected the installation to install the Vdx registry entry and schema file. Previous releases required Vdx to be installed as well. This release of V+ can be installed now on its own.

88 Build 515

The following items were addressed in this release.

1. Changed the font in the V+ Development system Port and Object dialog boxes and the message windows or the development and runtime system in order to improve readability.

2. Fixed a problem with the Joystick I/O driver for V+. The actual driver DLL, **"joydrv.dll",** was missing from the release and was corrected in this release.

89 Build 516

The following items were addressed in this release.

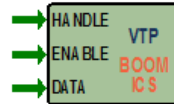1. Updated the Windows 7 Joystick I/O Driver to have an additional 8 buttons for a total of sixteen and the Z-Axis was reversed.

2. Added new objects 2108 and 2109:

   a. 2108, VComm Get Boom ICS VTP Record
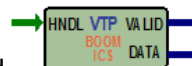
   b. 2109, VComm Set Boom ICS VTP Record

90 Build 517

The following items were addressed in this release.

This build no longer requires Vdx to be installed at the same time and can be installed indecently. Since Build 511, the versions of the DLLs were being updated incorrect which showed them to be Build 511 DLLs, but they were in fact newer versions that the dates would reflect.

This version begins the long journey of correcting DRs for the EC-130H project, which is a large and comprehensive voice communications project that uses modern Crypto equipment in modes that the world has not yet seen in IEEE-1278.1-2012 (DIS) simulation. Modes will be introduced beginning in this version to simulate these new modes.

This build can be downloaded from the following link:
http:\\www.simphonics.com\library\Bin\VPLusreg\V517\setup.exe

This version also has the following:

1. More updates to the HAVEQUICK radios where the frequency filter was not being updated properly. This has caused the radio to not communicate with other HAVEQUICK radios when in Spread Spectrum mode, or more specifically the that bit was set in the Transmitter PDU.

2. Corrected a huge inefficiency problem in the drawing code for the V+ Visual Development System. Large projects will refresh much faster when viewing V+ worksheets.

91 Build 518

This release includes updates to fix problems with the object 2108 and 2109 which are the Get and Set for the MAF DMO Boom ICS Interphone VTP record.

This build can be downloaded from the following link:
http:\\www.simphonics.com\library\Bin\VPLusreg\V518\setup.exe

This version also has the following:

1. Corrected an additional HAVEQUICK mode where changing from spread spectrum and back could have caused problems.

2. Test MAF DMO Boom ICS VTP Record

92 Build 519

This release includes the following:

1. Added a Message Box that the user must acknowledge in the V+ Development System when executing a design and an attempt is made to save the worksheet. This ensures the user realizes that the worksheet will not be saved while the system is running so that the user must stop execution before changes can be saved to that worksheet.

2. Fixed a mouse problem in net mode where the system can get stuck in a race condition when clicking a menu item in the Development System while also connecting a net.

3. Increased the usability of the mouse during net construction operations by decreasing the hit test area that determines how the mouse responds to what is under the mouse on left mouse button down operations. The result is that the mouse can place anchors onto of existing segments, but overall, the usability is very much improved.

92.1 Added new objects:

The following new objects were added

92.1.1 Object 2111, One-Shot Player

Object 2111 One-Shot Player was added.

Figure 2, Object 2111, One Shot Player
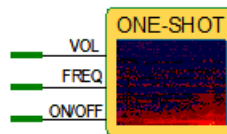
This object is the same as the previous object, 1069 except that it uses channels instead of the legacy balance and device number.

92.1.2 Object 2111, One-Shot Player

Object 2111 One-Shot Player was added, and is the same as object 1020, Ramp Waveform Generator but used pins that are horizontal instead of vertical to aid in auto routing nets.

Figure 3, Object 2111, Ramp generator (Improved)
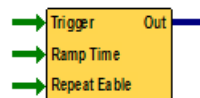
92.1.3 Download Link:

This build can be downloaded from the following link:
http:\\www.simphonics.com\library\Bin\VPLusreg\V519\setup.exe

92.2 Note: Problem Report

This text was added after the release. Object 2111 is defective and does not recognize the channel properly. This is corrected in build 520.

93   Build 520

Interim Release not released to the public.

94   Build 521

This release incorporated code cleanup and two environment variables to facilitate a customer's needs for HLA. These are not published variables and are loaded for custom use.

1. Moved from HLA capability based on MAK 4.1.1 version to the MAK 4.2 version.

2. Fixed a rare HLA memory leak that would occur if DIS and HLA was used at the same with HAVEQUICK radios that used the KY-58 crypto gear and in crypto only mode, requiring an enumeration of 1002 for Crypto Devices.

95   Build 522

This release was specifically to add the Parent Process ID to the two environment variables created in the previous build.

96   Build 523

This release added a series of messages about the Process IDs, current and the parent and HLA information used by some RTI vendors.

97   Build 524

Added better message windows support for HLA messages, updated linked RTI DLLs to MAK 4.2. Updated documentation and cleaned up and checked VComm User Manual registry section.

98   Build 525

This version merely doubled the maximum length of the Windows message text.

99   Build 526

This version of Windows 7 corrects a significant problem in previous releases for both Windows 7 and for Windows XP in releases prior to Build 379 that changes VTP record byte swapping from Host Byte Order to Network Byte Order. Older versions used Host Byte Order.

99.1   Important Notice!

All versions of software must be changed in order for this change (i.e. VTP records) to work properly since the byte swapping has changed on the wire. This is a critical notice. Again, any participating V+ systems must be updated if any system is changed.

100 Build 527

This version of Windows 7 corrects a potential Signal PDU padding problem and cleans up the V+ Runtime VComm configuration Window to better show the configuration sections for DIS. Prior to this version, VComm did not properly pad or process the padding at the end of the Signal PDU audio payload section. Under certain conditions where the number of audio bytes was not a multiple of 32 there would have been a few bytes of noise at the end of each Signal PDU causing a repetitive glitch during signal reception.

101 Build 528

This was an internal test release only.

102 Build 529

This version of Windows 7 corrects a problem with object 2008 and 2054 where the underlying streaming audio manager had a problem when the Audio Stream Manager services a new streaming buffer before direct sound has played any of the buffers.

Release Date: Thursday, November 06, 2014

103 Build 530

This Build for Windows 7 improved HLA radio management efficiency. Installed an HLA frequency filter that works the same as the DIS frequency filter where everything outside of the bandwidth of 4 times the bandwidth of each radio is not considered.

Release Date: Monday, November 17, 2014

104 Build 531

This build added a separate frequency filter for DIS and HLA which can now be edited by editing the XML file for initialization data for VComm Initialization Datapool. (See Vdx UI after VComm is loaded into memory)

105 Build 532

This build improves the HLA multi-threading efficiency for HLA LRC processing.

106 Build 533

This build corrects the following:

1. Corrects a problem with the V+ runtime window not displaying text messages properly.
2. Added performance counters and monitors for HLA activity in Vdx.
3. Removed unnecessary thread protection for the HLA tick() function.

107 Build 380 Win XP, Build 535 Win 7

This build corrects the following:

1. Corrected an error in the DIS Timestamp that was present on all DIS PDUs.
2. Updated HLA messages.
3. Added several new V+ sample worksheets.

108 Build 536 Win 7

This build corrects the following:

1. Fixed a problem with remote control where the socket on the V+ runtime would lock out the remote control after connecting the remote control for the second time. This had been remedied by restarting the PC. Now, the V+ runtime will never indicate that the port is being used by another process after the first connect/disconnect of the remote control system.

2. Moved the V+ development and Runtme Log files to the %TEMP% folder location instead of the executable location. Due to increased security, some systems could not produce a log file in the executable folder.

3. This release changes the network behavior for the Primary and Secondary network configurations that affect routing of packets in VComm by removing the socket option **SO_DONTROUTE.** This socket option was set in past releases preventing the routing of UDP packets through WAN routers.

109 Build 538 Win 7

This build corrects the following:

1. Added registry DWORD entry "HlaEnableSwitchDefault" which was not present in previous releases although it was being read properly at runtime. The user could have manually entered the key and value in previous releases. This key is located at: `HKEY_LOCAL_MACHINE\SOFTWARE\SimPhonics\VPLus`

   a. The key determines the startup value of the Join Fed on Start checkbox in the V+ Runtime Window, Configure menu and Network Audio tab. Before this update the registry entry would always set the switch on or "checked" regardless if it was checked or not.

2. Added SO_DONTLINGER and SO_REUSEADDR socket options to the V+ remote control system client. (V+ Runtime Window) Note that the remote control application still reports the port 5068 in use on occasion when it is not. This can be remedied by rebooting the computer.

3. Added an HLA running total of the number of HLA radios being processed by VComm.

4. Added an HLA application ID filter minimum and maximum range for filtering objects.

5. Added various HLA filter event monitors in the VComm Status datapool.

110 Build 539 Win 7

This build corrects the following:

1. Corrected a rare problem that could have occurred related to changing frequency on an HLA radio when either the old or new frequency has active transmissions while using the frequency filter.

2. Corrected a problem with the V+ runtime remote control application where the command to start a .VNE file would not load properly.

111 Build 540.1 Beta Win 7

This build corrects the following:

1. Added thread protection back in for the HLA RTI tick() function in VComm. This is a beta release to test for crashes occurring in missions. See PWDR002.

112 Build 540 Win 7

This build corrects the following:

1. Started from Previous Beta 1

2. Corrected a TCP/IP buffering problem with the V+ runtime system and remote control TCP/IP application. Previous versions of the V+ Runtime system and the remote control application would not process the streams properly.

113 Build 541 Win 7

Added the ability to filter Radio Entity Types that are not equal to 1 (voice) or 3 (data and voice) as well as a datapool variable to switch them on and off. This build corrects the following:

1. Added **Number of HLA Radio Category Filter Events** to VCommStatus.xml

2. Added **RadioEntityCatagoryTypeFilter** to VCommInitData.xml and set the initialization value to **1**.

114 Build 543 Win 7

Rolled the code base back to Build 540 to get back to where we were on Build 540 for the JSF HAL system. This code should behave the same as Build 540. Lockheed staff Will test in Orlando today to verify it behaves this way. Then we can debug code crashes as one is reported.

115 Build 544 Win 7

The previous build did not roll back project settings for some debug release issues, this release rolls back to 540 for the project settings as well.

116 Build 545 Win 7

This release is based on testing on the Lockheed JSF system using HLA, MAK RTI 4.2. The RTI was preempting the main V+ thread and the input streaming system was switched from WASAPI to MMI. The release places a switch in VCommInitData.xml for the user to select the MMI or WASAPI input stream modes. If the WASAPI stream is selected another switch determines if that streaming mode uses MMCSS, or Multimedia Class Scheduling Service.

117 Build 547 Win 7

Added HLA tick() and audio input streaming instrumentation in support of finding source of HLA coms breakups on JSF.

118 Build 548.1 Beta 1 Win 7

118.1   Jitter Buffer Overhaul

This release overhauled the VCOMM.DLL network playout buffer which is audio being played from radios on the network. Heavy network jitter caused serious audio breakup problems for incoming radios in VComm. This modification was the result of a modification to correct audio breakup caused by an update of the HLA RTI. Old RTI versions running on Windows XP worked fine, but moving to Windows 7 with a new RTI caused heavy jitter on the input audio streams. Future versions of VComm should be less subject to jitter problems. Two new VCommInitData.xml initialization datapool variables are added to this release.

1. **radioHandleForMetrics** is the V+ assigned handle of the radio for which the instrumentation is calculated and displayed. The TD COMM intercom in JSF is handle 3 and that is the default in the initialization file in SCM.

2. The **outputBufferDelay** is the delay in milliseconds that is applied to the incoming packets as they are put into the play buffer. You can change these values on the fly using Vdx but you must stop and restart V+ for them to take effect.

3. There are two new output variables in the VComm Status datapool:

   a. **CurrentOutputBufferWriteMargin**

   b. **MinimumOutputBufferWriteMargin**

The Current Write Margin is calculated in the output buffer code to be the time in seconds between the point where windows say we can write in the buffer and the point where we finished writing on the last pass. In the example below, the current write margin is 60 milliseconds. The closer this value gets to zero, the closer we get to a glitch in the audio due to running out of data to play in the buffer. If this value goes negative, then a gap exists in our audio buffer where we could not write new data (bigger negative values mean a bigger gap and a bigger glitch). The Minimum Write Margin (55 milliseconds in the example below) is the lowest value of the current write margin during the current run. If this value is negative, outputBufferDelay should be increased.

119 Build 549 Win 7

The following changes were made to this release.

1. This release fixed a memory leak that had been hanging out from the start of Windows 7 releases. See *Critical Problem Report 2015-001*. This leak affected only the 32-bit version of the Windows 7 V+ releases and will be fixed in the next release.

2. Added the datapool Vdx variable to applyAmInterference to VCommInitData.XML

120 Build 551 Win 7

Build 550 was a custom release for a specific customer who needed a special build for testing. This release is back to the normal release process.

1. This release incorporates a new Beam Antenna based for DIS. See the VComm User Manual in the next release for details as this antenna is still being tested.

2. Changed VComm to use a custom HLA licensing scheme specific to an HLA RTI vendor and to a specific project. This information will be suppled on request.

3. The next release, Build 552 will incorporate the following change so be prepared to test the audio streaming for DIS and HLA as the previous system used the MMI processing while this one will use WASAPI.

   a. Changed the audio input streaming system from **MMI** to **WASAPI** using the **useWasapi** variable located in the **VCommInitData.xml** file. The variable was set to zero or (0) which would have selected **MMI** as the input streaming system. Setting it to one or (1) enables **WASAPI** for the audio input streaming system.

121 Build 552 Win 7

This release updates the HLA RTI licensing system in use by V+. See the VComm User Manual for details. A new environment variable was added to enhance the flexibility of how customers use RTI licensing schemes. Each RTI and version is unique and may have its own installation procedure. Contract SimPhonics when using HLA and installing a new RTI for the latest information on RTI version installations.

122 Build 553 Win 7

This release updates the version numbers of all V+ executables and DLLs to build 553. This release corrected a problem with secure voice tones logic when using HLA, as DIS already has this fix. This release also tested with SimPhone Build 110, and updated Vdx release to 127.

123 Build 554 Win 7

This release has the following changes:

123.1   Object 2114, VComm LVC

Figure 4, Object 2114, VComm LVC

This object sets the DIS (IEEE 1278.1) LVC Indicator field of the PDU Status record for both the Transmitter and Signal PDU on a radio by radio basis. This version also added a User control to setup a global LVC Indicator that this object can override on a radio basis. This is for DIS Version 7 only.

123.2   Radio Attached Indicator (RAI) field

This version also added logic to set the RAI bits in the PDU status field. The entity attach logic was also modified to detach radios from an entity when the entity either issues a final entity state update PDU or the entity state update PDUs time out.

124 Build 561 Win 7

This release featured three engineering releases to fix a number of problems with HLA RTIs. The one tested was the MAK RTI version 4.4.2b release.

1. This version fixed a problem with the federate ambassador object not being deleted properly. When V+ was stopped and started, the previous releases would not remove the old ambassador objects from memory and the RTI Federate view would show the old federate ambassadors still in memory. Now when V+ is stopped the federate ambassador is removed and when V+ is started, a new ambassador object is created. Previous versions would cause a crash of the system eventually.

2. An HLA DLL was removed, "iconv.dll" based on the RTI release notes guidance and that DLL had to be re-inserted or an error would be displayed.

125 Build 562 Win 7

This release had the following changes:

1. The Remote Control Specification was changed to include a version field in all messages. The signature field has been changed to require the value "REMO". The SimPhonics demonstration remote client has been updated to work with these changes. Customers using their own software for interfacing to V+ through the remote control interface must update their software to comply with the new specification. The version field must include the current version of the specification which is now 114. V+ has been updated to recognize and report when either the signature or version are not correct (indicating an old version of the remote client).

2. New status datapools have been added for each radio that exists in a running V+ design. Please note that the new release of the Vdx application is required to monitor these datapools.

3. An exception handler was placed around the call to create the HLA manager. This will catch and handle properly any exceptions generated by the RTI when it is being initialized.

126 Build 563 Win 7

This release fixed an issue where the V+ Runtime hangs when dynamically joining to HLA if the RID file or federation information is incorrectly specified in the runtime configuration.

127 Build 564 Win 7

This release fixed an issue whereby enabling spread spectrum radios (i.e. Have Quick or SINCGARS) could potentially corrupt the frequency settings of other radios resulting in a loss of communication.

128 Build 565 Win 7

This release modified the SMx I/O device by adding code to detect start up failures in the SMx mixer and to restart the mixer when such failures are detected.

129 Build 566 Win 7

This build has the following modifications

1. Modified the VComm radio path loss computation to increase the rate of loss over distance when the signal goes past the optical and radio horizon and changed the curve of this loss rate to exponential rather than linear. – SWJ Sunday, October 08, 2017

2. Build 566 for Windows 7 prevents all antennas from reaching the ground by restricting this height to greater than 3.0 meters. – SWJ Sunday, October 08, 2017

130 Build 569 Win 7

Build versions 567 through 568 were for internal test only. This build has the following modifications

1. Modified the basic VComm radio to exhibit a base radio sensitivity of -79 dBm rather than -113 dBm. Customers were complaining about the radios reaching too far with both aircraft at high altitudes.

131 Build 571 Win 7

This release contains new functionality to simulate SATCOM uplink jamming. SATCOM uplink jamming is considered to be active at a receiving radio when any incoming transmission with an input source equal to 14 is received. When SATCOM uplink jamming is detected at a receiving radio, no communication is possible at that radio: all incoming transmissions from all other radios are considered jammed and no audio is produced.

Object 2117, VComm Jamming Status, has been added. It attaches to a radio via its input pin. The output pin value is one if SATCOM uplink jamming is currently detected at that radio; otherwise, the pin value is zero.

The VComm Jamming Status can also be monitored using Vdx in the Radio Status datapool of each radio.

132 Build 572 Win 7

This release added a remote control feature that allows a remote control client to force a re-publish and re-subscribe to be executed when V+ is joined to an HLA federation.

133 Build 573 Win 7

This release modified the SATCOM Uplink jamming simulation. Previously, SATCOM transmissions were considered jammed only if the transmissions were on the same frequency as the jammer. Now, all transmissions are considered jammed if there is an active SATCOM uplink jammer.

134 Build 580 Win 7

Build 580 is a reserved build number for a specific client. Build 580 is currently released as a Beta only. The latest Beta build is designated 580.2.

134.1 Build 580.1 Win 7

This first Beta build modified the behavior of radios to round off input frequencies as follows:

1 Hz to 16.777 MHz	No rounding. Frequency is set exactly as specified.
16.777 MHz to 134.217 MHz	Frequency is rounded to the nearest 10 Hz.
134.217 MHz to 1 GHz	Frequency is rounded to the nearest 100 Hz.
1 GHz and greater	Frequency is rounded to the nearest 1000 Hz.

This build also added Transmitter Radiation Volumes to satisfy a requirement for a jamming capability for CAF DMO. VComm keeps track of all incoming TRV VTP records and processes all radio transmissions against those records to determine if the transmissions should be jammed.

134.1.1 Object 2118, VComm TRV

The VComm TRV object has been added to support Transmitter Radiation Volumes.

Figure 5, Object 2118, VComm TRV
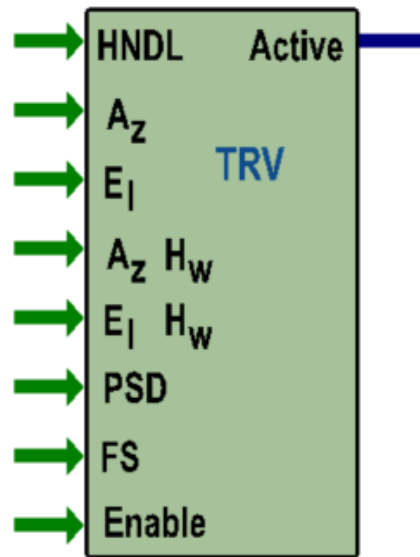
This object attaches to a radio via the radio handle and is used to generate a TRV VTP record for the Transmit PDU for that radio. If the Enable input pin is set to 1 then a TRV VTP record is generated with parameters as specified by the other input pins: Az (Azimuth), El (Elevation), Az Hw (Azimuth Halfwidth), El Hw (Elevation Halfwidth), PSD (Power Spectral Density),and FS (Frequency Sweeping). Note however that PSD and FS are not currently considered when TRV VTP records are received by VComm.

The Active output pin is set to 1 whenever a TRV VTP record is being generated.

134.2 Build 580.2 Win 7

This second 580 Beta build incorporates the changes in Build 581.

135 Build 581 Win 7

This build fixed a couple of issues. The Windows 10 operating system is now reported correctly by V+ and looped wave players no longer cause spare time issues when they have never been enabled.

136 Build 582 Win 7

This build extended interference effects (previously found only on AM radios) to FM and PM modulations. The following changes were made:

- AGC effects in the presence of multiple incoming signals were extended to include FM and PM modulations. For all AM, FM, and PM modulations, stronger incoming signals will push weaker signals down into the noise. This effect is now always enabled.

- The AM interference "step on squeal" effect continues to apply only to AM radios (1,2,1) and can be enabled via the *applyAmInterference* option in the *VCommInitData* initialization file. This effect continues to be off by default.

- For radios with a source of *Audio Jammer,* the transmitter bandwidth is now considered in tuning calculations. This allows a transmitting radio to act as a jammer over a large frequency range.

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137 Build 583 Win 7

This build corrected an issue with the interference effect changes added in Build 582 where AGC effects were incorrectly applied with only one incoming signal.

138 Build 584 Win 7

This build added Link 16 functionality to VComm according to SISO-STD-002-2006. This functionality is provided through object 2119.

Figure 6, Object 2119, VComm Link 16 Radio

139 Build 585 Win 7

This build added the capability to add a prefix to the HLA Object Identifier for a Transmitter. The prefix applies to all radios and is set in the Network Audio tab of the Platform Configure window in the VPLus Runtime.

140 Build 586 Win 7

This build implemented internal class hierarchy changes. There are no functionality changes from the previous build.

141 Build 587 Win 7

This build fixed an issue with the Custom Socket device where the length of the network packet was incorrect.

This build also fixed an issue with the Marker Beacon Receiver object (2011). These objects no longer cause spare time issues when they have never been enabled.

142 Build 588 Win 7

This build added object 2120, Host Name Id. This object sets its output pin to the number at the end of the host name for the local machine. For example, if the host name is Simulator04, then the output pin will be set to 4. If the host name does not have a number at the end then the output pin is set to -1.

143 Build 589 Win 7

This build incorporates additions and changes related to the VComm radio simulation model: two new objects were added, a Radio Model Demonstration was added to the VPLus samples, and other related bug fixes and improvements were made.

### 143.1 Object 2121 - VComm Radio Horizon and LOS

Object 2121 is a utility object for use in testing and demonstrations.

It takes as input the geocentric (x,y,z) position of a radio, and the latitude and longitude of a second radio.

The object calculates the distance to the radio horizon from the first radio (in meters). This is the output of the Horizon pin.

The object also calculates the minimum height required for the second radio to be in clear radio line of sight to the first radio. This is the output of the Min Ht pin.

Radio horizon and line of sight calculations depend on a refraction factor. VComm uses 1.33 as the refraction factor unless it is changed using object 2122. The refraction factor used in the calculations used by object 2121 must be specified by the K input pin. Note however, that the value provided for K in this object does not affect the refraction factor used within VComm (i.e. object 2121 provides helpful calculations but does not affect the radio simulation in VComm).
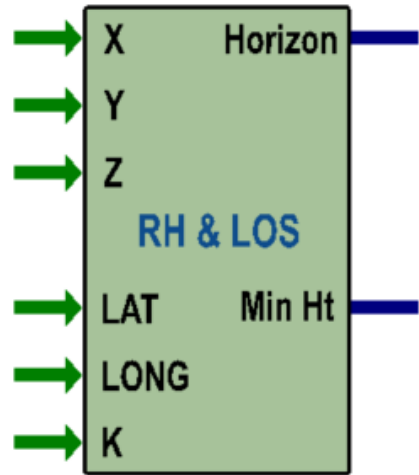
Object 2121 can be used to provide a convenient way to position a radio relative to the radio line of sight of another radio. This is demonstrated in the new Radio Model Demonstration.

143.2 Object 2122 - VComm Refraction Factor

Object 2122 provides a way to change the default refraction factor used by VComm to determine radio line of sight. The default refraction factor is 1.33. VComm will use the default unless object 2122 is used to set it to a different value.

Setting the refraction factor to 1.0 is equivalent to optical line of sight which reduces the distance to the radio horizon. Setting the factor to a value greater than 1.33 increases the distance to the radio horizon to greater than the default.

This object can be used to dynamically change the refraction factor and consequently the distance to the radio horizon. This is a global setting (i.e. it applies to all radios in the simulation). Changing the refraction factor allows simulations to model changing atmospheric conditions.

143.3 Radio Model Demonstration

A demonstration of the VComm radio simulation consisting of VPLus worksheets and Vdx datapool files has been added to the VPLus samples provided as part of the VPLus installation. Full details for running the demonstration are included in the "Demonstration of Radio Simulation" document. The document and all the associated files are located in

```
C:\Program Files (x86)\VPLus\VPlus Samples\VComm\Radio Model Demo
```

143.4 Other Additions and Fixes

The following other changes have been made as part of Build 589:

- The initialization of datapool strings has been fixed to check for string lengths greater than 255.

- Radio horizon calculations have been improved to increase the accuracy at higher altitude.

- The latitude, longitude, and altitude of the radio have been added to the VComm Radio Status datapool.

- Receiver sensitivity changes via object 2039 have been re-enabled

144 Build 590 Win 7

This build fixes the following issues:

- A bug in the Vdx registration code has been fixed which resulted in incorrect reference counts in the Vdx registry and which would remove datapools from the Vdx registry even though they were still open in an application.

- The VPLus Runtime status datapool and VComm status datapools are now formally initialized with their initial data. Datapools accessed through the Vdx API require initialization before they can be accessed.

- Received radio streams over long periods of time may develop an increasing delay. This issue has been reported by several customers and is the result of clock drift between the transmitter and receiver. The output stream code has been modified to reset the output stream when the delay exceeds a threshold. The threshold can be adjusted in the VComm Initialization datapool.

145 Build 591 Win 7

This build adds the initial version of Opus functionality to VComm. This functionality is non-standard and therefore is disabled by default. Refer to the Opus User Manual for details regarding how to enable and use the Opus codec in VPlus/VComm. Build 591 is for internal use only and is not a public release.

146 Build 592 Win 7

This build is identical to Build 591 except that it uses the release version of the Opus library. It is the public release for the Opus functionality.

147 Build 593 Win 7

The GL Studio sample (A10 Engine) has been removed.

148 Build 599 Win 7

This build adds HLA support for Link 16. Build 584 added object 2119 which provides Link 16 functionality according to SISO-STD-002-2006 however, this was only available in DIS. Build 599 adds HLA support to object 2119.

148.1 Build 599.10 Win 7

This build adds objects 2123 and 2124.

149 Operating System Object Interoperability Matrix

V+ software was ported from Windows XP to Windows 7 and completed by January 1 2014. Worksheets are backward and forward compatible with considerations.

149.1 Worksheets (.des)

V+ worksheet files (.des) are backward and forward load compatible in that V+ will try to load them. V+ will report anything it does not recognize however so new files may have objects that don't exist in the machines inventory. Newer versions will always load older ones although some objects may have become obsolete which will be reported to the user via the message window.

149.2 V+ Runtime execution File (.vne)

V+ runtime execution files with a .VNE extension are V+ application specific and must be configured for each platform and in most cases even specific to the machine. These files can be built from V+ worksheets however, so this is not a problem.

Table 2, OS Object Interoperability Matrix

Object ID	Name	Windows XP	Windows 7/10
0 – 2102	All Objects Prior to 2103	✓	✓
2103	SMx Virtual Audio Selector	✓	✓
2104	VComm Endpoint Audio Transmitter	(2)	✓
2105	VComm Remote Radio Monitor	(2)	✓
2110	Ramp Waveform Generator (Improved)	(3)	
2106	VComm Get Nearest Radio Transmitter	✓	✓
2107	VComm Radio DIS Exercise ID and Radio Simulation Address Monitor	✓	✓
2108	Boom ICS VTP Record Set	✓	✓
2109	Boom ICS VTP Record Get	✓	✓
2111	One Shot Player (Improved)	✓	✓
2112 - n	All objects unless otherwise noted	✓	✓

Notes:

1. Shaded areas show full interoperability.

2. Windows XP does not have an internal monitor for endpoints in the audio subsystem as does Windows 7 via the WASAPI interface and therefore does not have objects 2104 and 2105, Monitor Remote Endpoint object pair.

3. Windows XP does not have this object, use object 1020 instead.

4. Windows 7 Builds Prior to 526 and Windows XP prior to 379 send and receive VTP records using Host Byte Order while later releases are Network Byte Order.

149.3 I/O Device Differences

The following I/O devices have some differences between the Windows XP and Windows 7 release.

149.3.1 Joystick I/O Driver

1. The Windows 7 Joystick device features 16 buttons, while the Windows XP Joystick Driver has only eight.

2. The Windows 7 Joystick has the Z Axis reversed as compared to Windows XP.