VComm Terrain Server User Manual

Table of Contents

List of Figures

List of Tables

1 Preface

This document describes how to use the VComm Terrain Server (VTS). It is assumed that the user is familiar with VPlus and its VComm radio objects, and the C/C++ programming languages.

1.1 Trademarks and Copyrights

Any trademarks shown throughout this document are the property of their respective owners. V+ is a trademark of SimPhonics, Incorporated.

Copyright © 2012 SimPhonics, Incorporated. All rights reserved.

1.2 Revision History

Version	Revision	Date
0.1	Draft Release	May 30, 2006
1.0	Initial Release	November 27, 2007
2.0	New messages were added to accommodate updated message structures.	September 15, 2008
2.1	New terrain server messages incorporating Exercise ID.	April 7, 2009
2.2	Moved details of protocol to separate document, "VComm Signal Quality Service Specification"	August 24, 2009
2.3	Migrated to Build 200 protocol.	May 13, 2010
2.4	Added support for Windows 7.	June 12, 2012

This document was authored using Microsoft Word 2007 and may be copied freely for any purpose.

For more information on this product, go to the following:
http://www.simphonics.com

1.3 Before Reading This Document

The reader should be familiar with the Department of Defense DIS (Distributed Interactive Simulation) and HLA (High Level Architecture) specifications. A basic understanding of networking principles is important, as well as a good understanding of the V+ Visual Programming System and VComm. It is assumed that the reader also has Administrator privileges and is familiar with basic Windows system administration.

2 Installation

The VComm Terrain Server runs on either Windows XP or Windows 7. Installation of the VComm Terrain Server is relatively simple. It involves loading a CD which will install the software and this user manual, install a world-wide DTED Level 0 database, and configure a few registry settings. Follow the steps below to install the VTS.

1. Insert the **VComm Terrain Server** CD into your CD/DVD drive.
2. The installation program will begin automatically. If the installation does not begin automatically, select **Start/Run**, enter `d:\setup`, and click **OK**.
3. Respond to the installation prompts including accepting the license agreement.
4. Click **Finish** and remove the CD from the drive.

3 Registry Settings

The VComm Terrain Server uses the Windows registry for setting and storing configuration data. Registry keys are created during installation with default values. These values may be changed either directly using **regedit**[1], or by setting the appropriate fields within the VTS user interface. The base registry location for these settings is located at the following (see Figure 1):

`/HKEY_CURRENT_USER/Software/SimPhonics/VTS`
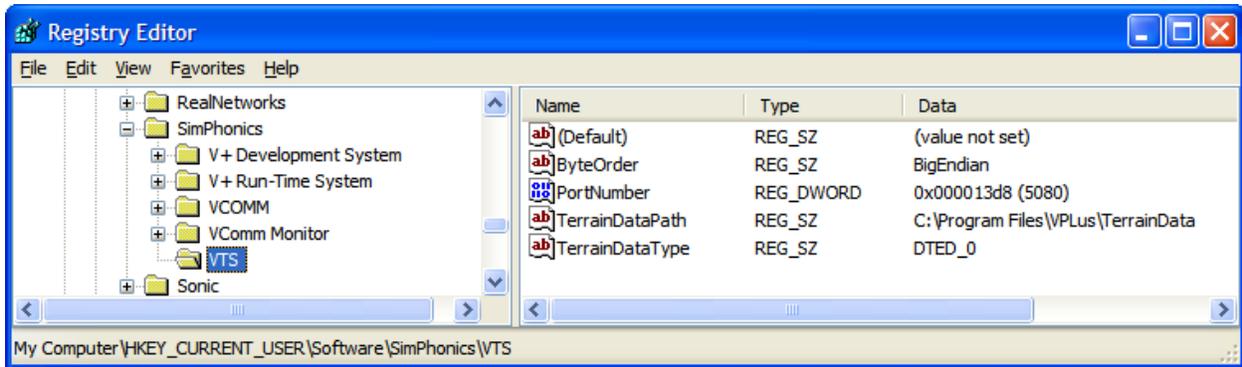
Figure 1. VTS Registry Settings

Table 1 identifies and describes each of the registry key values used by the VTS.

Table 1. VTS Registry Settings			
Key Name	**Type**	**Description**	**Default Value**
ByteOrder	String	This refers to the byte order of numerical data within the remote message protocol. Only the values **LittleEndian** or **BigEndian** are recognized by VTS.	LittleEndian
PortNumber	DWORD	This is the port number used by VTS to listen for incoming socket connection requests. If you change this, make sure it doesn't conflict with "standard" operating system port numbers.	5080
TerrainDataPath	String	This defines the data path where the DTED or DEM data resides.	C:\Program Files\SimPhonics \VComm Terrain Server \TerrainData
TerrainDataType	String	This defines the type (and level) of terrain data. Valid values are **DEM_1**, **DTED_0**, **DTED_1**, **DTED_2**, **DTED_3**, **DTED_4**, **DTED_5**	DTED_0

---

[1] Using **regedit** can be harmful to your operating system – please be careful. If you use regedit to make modifications, VTS will have to be restarted for the changes to take effect.

4 Using VTS

There's not much to using the VComm Terrain Server. If it's installed along with VPLus/VComm, all that needs to be done is to start the VTS. VComm will detect VTS and remotely access it automatically for determining attenuation for antenna pairs.

When the VTS is started, the screen shown in Figure 2 will appear. This screen is used for plotting a single solution independent of the remote message interface which VComm uses. It is not necessary to do anything here when VPLus/VComm is running. For more information on how VComm is configured to run with VTS, refer to the VComm Users Manual.
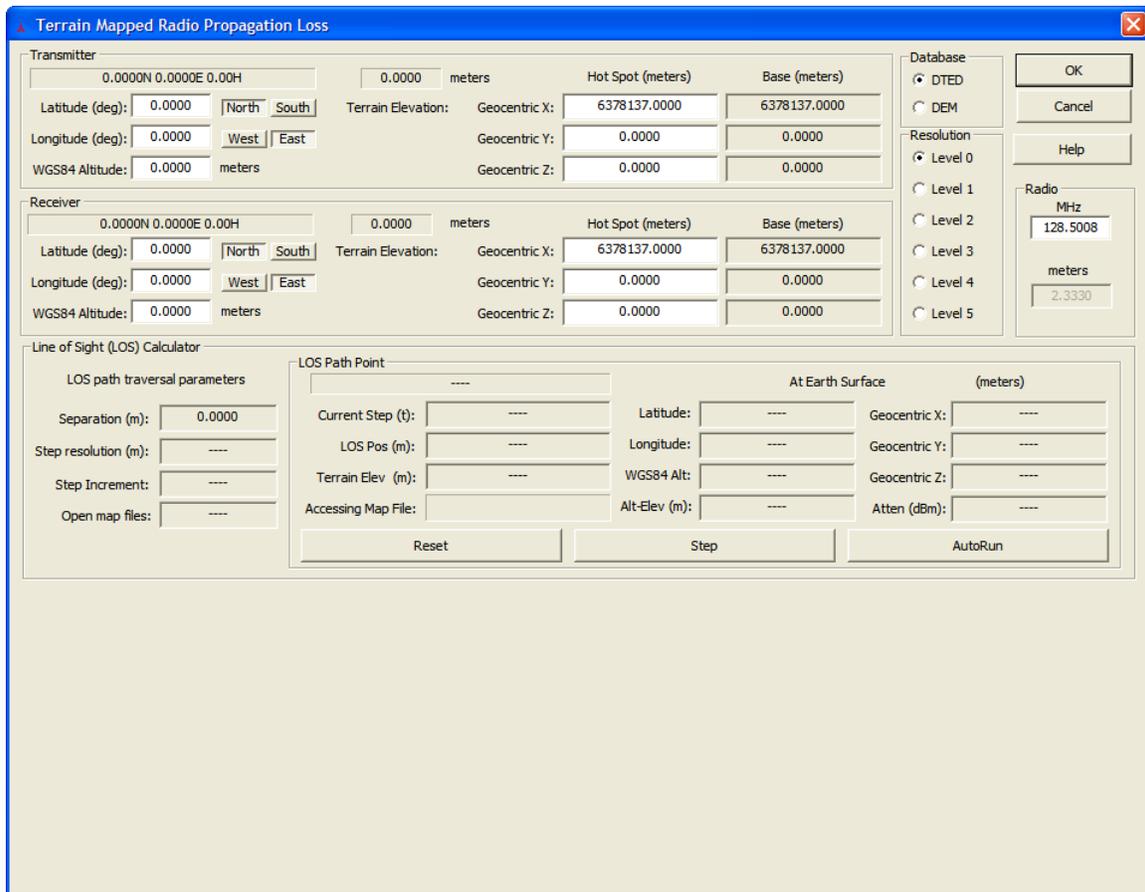

Figure 2. VTS Startup Screen

When first starting VTS after it has been installed, a Windows Security Alert dialog similar to that shown in Figure 3 may appear. If turned on, the Windows Firewall will attempt to block the VTS from remote connections. If this dialog appears, click the **Unblock** button. This will allow VTS to act as a TCP/IP server which is how VComm, and possibly your application, access the VTS for antenna propagation loss requests.

Figure 3. Window Security Alert Dialog

4.1   Plotting a Single Solution

If you wish to plot a single solution for two antenna positions, simply type in the positions using either Geodetic (Latitude, Longitude, Altitude) or Geocentric (X, Y, Z). Once the positions have been entered, enter the frequency of the radios in the Radio MHz text field. Click the **Reset** button, and then click the **Autorun** button. An example of a single solution is shown in Figure 4. The bottom part of the screen shows two antennas with a terrain profile between them. The dashed line is the direct line-of-sight line between the antennas, and the dotted line represents the terrain profile. In this example, the attenuation is -31.6793 dBm.
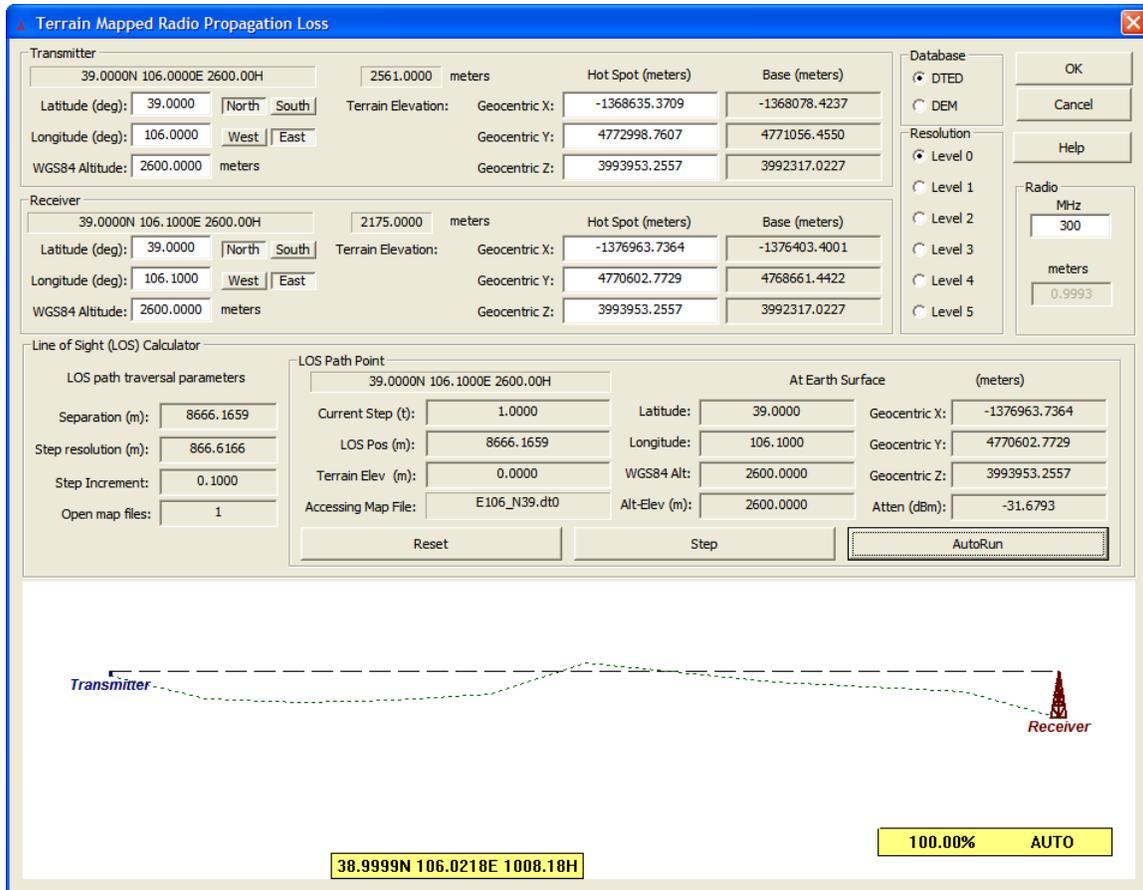

Figure 4.   VTS Single Solution Plot

4.2   A Word About the OK and Cancel Buttons

Clicking the **OK** button has no effect. Clicking the **Cancel** button will terminate the VTS.

5 Remote Message Protocol

Access to the VTS is via a remote message protocol. The underlying protocol is TCP/IP. The VTS acts as a TCP/IP server and will allow any number of clients to connect to it. Clients send requests to the VTS and for each received request the VTS sends back a response.

The VComm Signal Quality Service Specification defines a set of messages for exchanging signal quality related data. The remote message protocol supported by the VTS is a subset of these messages. Versions 2.0 and later of the VTS support the following Build 200 messages: 211, 212, 213, 214, 215, 216, 311, 312, 313, 314, 315, and 316. Please note that Build 100 messages are not supported by versions 2.0 and later of the VTS.

Using the remote message protocol it is possible for you to access the VTS using your own software. However, if you have VPLus and VComm installed along with VTS, you may not need to use this protocol directly as it is already implemented in VComm.

VComm Builds 331 through 365 are compatible with version 1.0 of the VTS. VComm Builds 366 and later are compatible with versions 2.0 and later of the VTS. VComm uses the remote message protocol to obtain terrain attenuation levels for its radio simulation. Please see the VComm Users Manual for details on how to configure VComm to use the VTS.