

Deployment Guide



VBS4 24.1.1



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- support@bisimulations.com

Our website contains a range of media and handouts relating to Bohemia Interactive Simulations products:

- <http://www.bisimulations.com/>

The BISim Wiki is the primary resource on VBS4 scripting:

<https://sqf.bisimulations.com/display/SQF/VBS+Scripting+Reference>

PhysX

VBS4 uses the PhysX physics engine. For more information on PhysX visit the Nvidia site.

<https://gameworksdocs.nvidia.com/simulation.html>



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1. Deploying VBS4

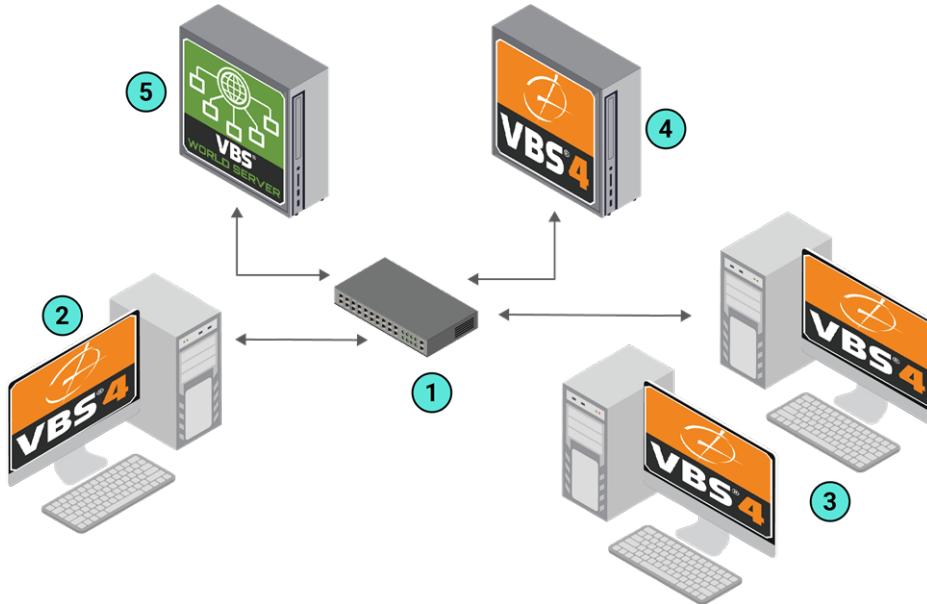
VBS4 is available for download from VBS License Manager and consists of multiple product installers and packages:

- VBS World Server installer
- VBS4 Client / Dedicated Server installer
- A set of mandatory core download packages
- A set of optional download packages.

WARNING

VBS4 and VBS World Server installations must be the same major version (e.g., 21.1.x) to ensure full compatibility.

For most use cases, a VBS4 deployment consists of the products shown in the following diagram.



1	Network Switch	The recommended setup for VBS4 deployments is for all clients and servers to share the same network.
2	VBS4 Admin Clients	<p>The Admin Client is a VBS4 Client installation started with Administrator privileges for the following primary purposes:</p> <ul style="list-style-type: none">• Prepare - Design Scenarios by creating a Battlespace containing terrain edits, a tactical plan, and a mission.• Execute - Start and manage a Scenario as the Instructor.• Assess - Run After Action Review to playback a Scenario Execution.

3	VBS4 Trainee Clients	Each Trainee Client is a VBS4 Client installation started with default user privileges in order to participate in Scenario Executions.
4	VBS4 Dedicated Server	The Dedicated Server is a VBS4 Client installation started as a server to host the Scenario.
5	VBS World Server	For Online use cases the VBS World Server acts in two significant capacities: <ul style="list-style-type: none">Streaming the base Whole-Earth Terrain to connected VBS4 Clients.Acts as the central repository of Battlespaces.

**TIP**

Bohemia Interactive Simulations recommend a faster network connection between the VBS World Server and the network switch. For more information, see [System Requirements \(on page 19\)](#).

**NOTE**

VBS4 supports Offline use cases where VBS World Server is not required.

To download and install VBS4 for most use cases, follow this process:

1. Review [VBS4 Deployment Options \(on page 8\)](#) to assess the deployment requirements that meet your training needs.
2. Review the [System Requirements \(on page 19\)](#).
3. [Download VBS4 \(on page 22\)](#) from VBS License Manager.
4. Install VBS World Server, see [Installing VBS World Server \(on page 25\)](#).
5. Install as many Dedicated Servers and VBS4 Clients as required for your training needs, see [Installing VBS4 \(on page 30\)](#).

Your VBS4 deployment is installed.

**WARNING**

Additional World Data packages are available on VBS License Manager that are not installed by default.

Download and deploy them using the Updater Tool. For more information, see [Installing World Data \(on page 37\)](#).

To support patch updates and later download of optional packages, VBS4 includes update utilities for VBS World Server and VBS4 Clients.

- [Installing a VBS World Server Patch \(on page 33\)](#)
- [Updating VBS4 \(on page 35\)](#)

After successful deployment, you are ready to start VBS4:

1. If it is not already running, start VBS World Server:

Run `\WS_Installation\vws_start.exe`

2. Start the Dedicated Server and VBS4 Clients:

See [Starting VBS4 \(on page 47\)](#).

2. VBS4 Deployment Options

VBS4 supports a large range of use case options from single computer usage to multi-room combined simulation and specialist display solutions.

- *Online* use cases include the separate deployment of a VBS World Server that streams the Whole-Earth Terrain to all connected VBS4 Clients and acts as a central repository of Battlespaces.
- VBS4 supports *Offline* use cases where VBS World Server is not required.
- VBS4 uses the same installer on all Dedicated Server and VBS4 Client computers and the operation type is determined by the VBS4 startup options for each computer.

WARNING

VBS4 and VBS World Server installations must be the same major version (e.g., 21.1.x) to ensure full compatibility.

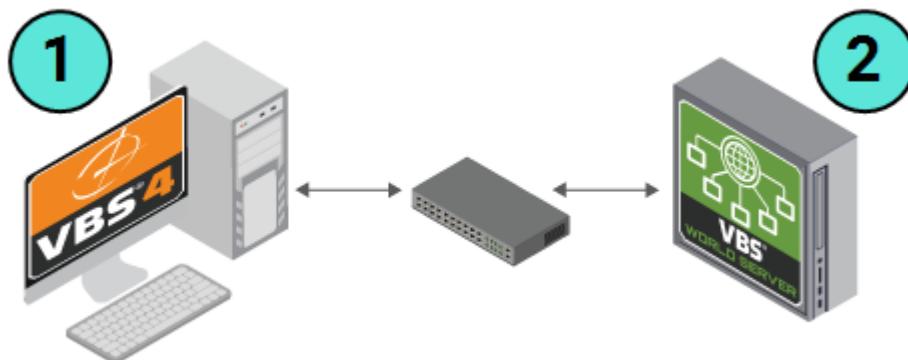
Refer to the following for an overview of which deployment type is most suitable for different use cases:

- [Single Computer Deployment \(on the next page\)](#)
- [Hosted Training \(on page 10\)](#)
- [Group Training \(on page 12\)](#)
- [High-Load Training Exercises \(on page 14\)](#)
- [Multi-Room Combined Simulation \(on page 16\)](#)
- [Multi-Product Combined Simulation \(on page 17\)](#)
- [Specialist Display Solutions \(on page 18\)](#)

2.1 Single Computer Deployment

Running VBS4 on a single computer is suitable for the following use cases:

- Single Player Training
- Scenario Design
- AAR Playback



1	VBS4 Clients	Admins and Trainees use VBS4 with an optional connection to VBS World Server.
2	VBS World Server	For Online use cases where VBS World Server acts as a central repository of Battlespaces and streams the Whole-Earth Terrain to all connected VBS4 Clients.

NOTE

For Offline use cases, VBS World Server is not required.

Follow this process:

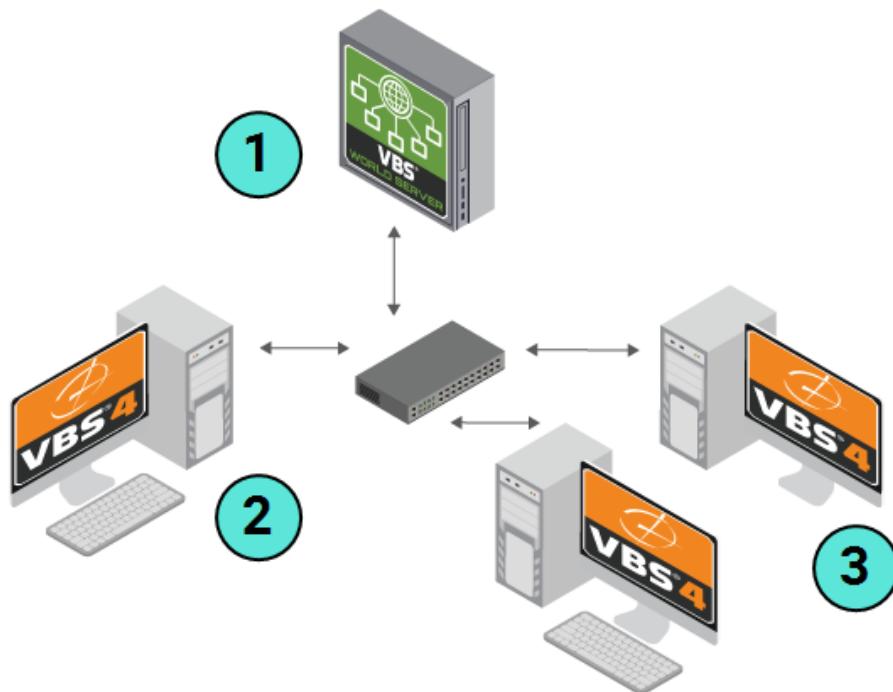
1. Install VBS World Server on a single computer if you need to save or access data on it.
For more information, see [Installing VBS World Server \(on page 25\)](#).
2. Install VBS4 on a single computer.
For more information, see [Installing VBS4 \(on page 30\)](#).
3. Use VBS Launcher with the appropriate **Client** tab settings to start VBS4 for your use case.
For more information, see [Starting VBS4 \(on page 47\)](#).

Depending on your Single-Computer use case, see the following topics for more information:

- For Single Player Training, see Single Player Training in the VBS4 Trainee Manual.
- For Scenario Design, see Scenario Preparation in the VBS4 Editor Manual.
- For AAR Playback, see After Action Review (AAR) in the VBS4 AAR Manual.

2.2 Hosted Training

For less demanding Scenarios with a small number of Trainee Clients, a VBS4 Admin Client can Host the Scenario, with connected VBS4 Trainee Clients.



1	VBS World Server	For Online use cases where VBS World Server acts as a central repository of Battlespaces and streams the Whole-Earth Terrain to all connected VBS4 Clients.
		NOTE For Offline use cases, the VBS World Server is not required.
2	VBS4 Admin Clients	Instructors use VBS4 with Admin privileges to start and manage the Scenario.
3	VBS4 Trainee Clients	Trainees use VBS4 without Admin privileges to participate in the Scenario.

Follow this process:

1. Install VBS World Server on its own computer.

For more information, see [Installing VBS World Server \(on page 25\)](#).

2. Install VBS4 on the VBS4 Admin and Trainee Clients.

NOTE

All computers must be on the same network for VBS4 to communicate automatically.

For more information, see [Installing VBS4 \(on page 30\)](#).

3. If it is not already running, start VBS World Server:

Run `\WS_Installation\vws_start.exe`

4. Use a VBS4 Admin Client to create your training exercise.

For more information, see Scenario Preparation in the VBS4 Editor Manual.

5. Use VBS Launcher with the applicable Admin settings in the **Client** tab to start VBS4 on the Admin Clients to manage the Scenario.

NOTE

If you require Clients to connect from outside the local network, disable **multicast** (`-multicast=0`) on the Host computer.

For more information, see [Starting VBS4 \(on page 47\)](#).

To administer a Multiplayer Scenario, see Scenario Execution in the VBS4 Instructor Manual.

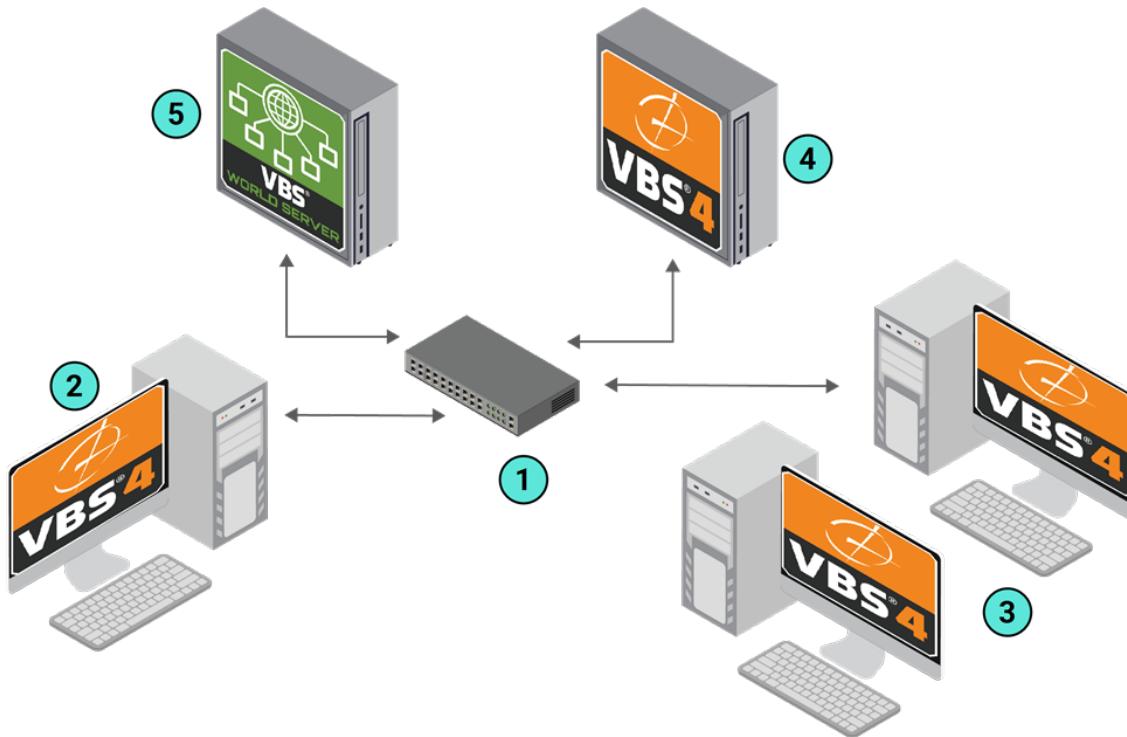
6. Use VBS Launcher with the applicable settings in the **Client** tab to start VBS4 on each Trainee Client to participate in the scenario.

For more information, see [Starting VBS4 \(on page 47\)](#).

To participate in a Multiplayer Scenario, see Joining a Multi-Player Scenario in the VBS4 Trainee Manual.

2.3 Group Training

For a typical Scenario Execution for Group Training, deploy a VBS World Server, a Dedicated Server, one or more VBS4 Admin Clients, and VBS4 Trainee Clients.



1	VBS World Server	For Online use cases where VBS World Server acts as a central repository of Battlespaces and streams the Whole-Earth Terrain to all connected VBS4 Clients.
2	VBS4 Dedicated Servers	In typical use cases, a Dedicated Server is used to Host the Scenario Execution. NOTE For less demanding Scenarios with smaller numbers of Trainees, a VBS4 Admin Client can Host the Scenario.
3	VBS4 Admin Clients	Instructors use VBS4 with Admin privileges to start and manage the Scenario.
4	VBS4 Trainee Clients	Trainees use VBS4 without Admin privileges to participate in the Scenario.

Follow this process:

1. Install VBS World Server on its own computer.
For more information, see [Installing VBS World Server \(on page 25\)](#).
2. Install VBS4 on the Dedicated Server, and all VBS4 Admin and Trainee Clients.

 **NOTE**

All computers must be on the same network for VBS4 to communicate automatically.

For more information, see [Installing VBS4 \(on page 30\)](#).

3. If it is not already running, start VBS World Server:

Run `\WS_Installation\vws_start.exe`

4. Use a VBS4 Admin Client to create your training exercise.

For more information, see Scenario Preparation in the VBS4 Editor Manual.

5. Use VBS Launcher with the applicable settings in the **Server** tab to start VBS4 on the Dedicated to Host the Scenario.

 **NOTE**

If you require Clients to connect from outside the local network, disable **multicast** (`-multicast=0`) on the Host computer.

For more information, see Dedicated Server in the VBS4 Administrator Manual.

6. Use VBS Launcher with the applicable Admin settings in the **Client** tab to start VBS4 on the Admin Clients to manage the scenario.

For more information, see [Starting VBS4 \(on page 47\)](#).

To administer a Multiplayer Scenario, see Scenario Execution in the VBS4 Instructor Manual.

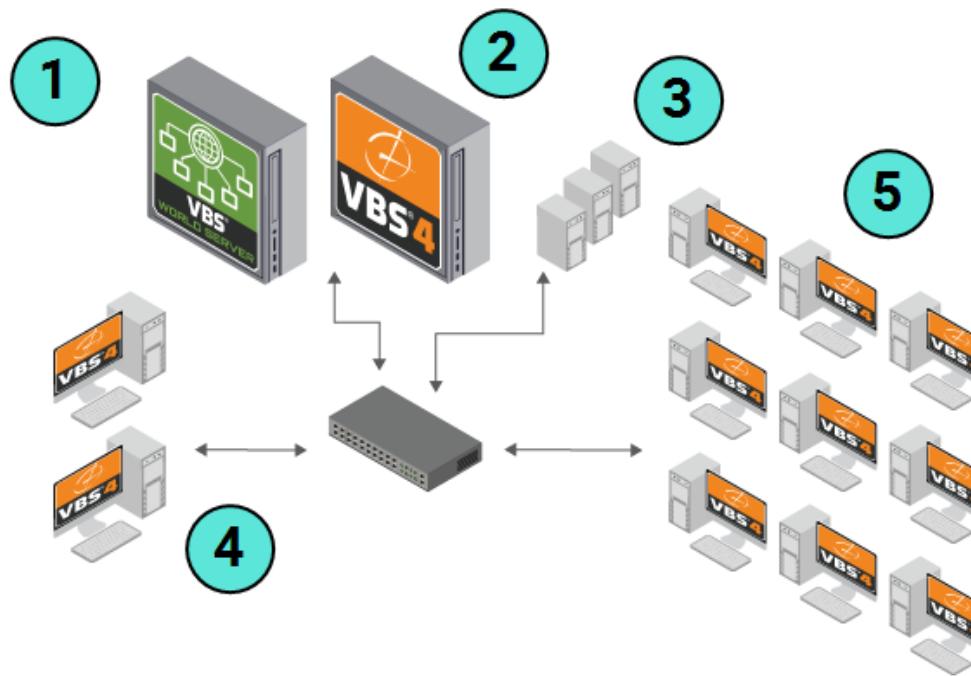
7. Use VBS Launcher with the applicable settings in the **Client** tab to start VBS4 on each Trainee Client to participate in the scenario:

For more information, see [Starting VBS4 \(on page 47\)](#).

To participate in a Multiplayer Scenario, see Joining a Multi-Player Scenario in the VBS4 Trainee Manual.

2.4 High-Load Training Exercises

For even larger training scenarios with many participants and a very large number of simulation objects, Simulation Clients can provide additional computing resources to Host the simulation and maintain performance.



1	VBS World Server	For Online use cases where VBS World Server acts as a central repository of Battlespaces and streams the Whole-Earth Terrain to all connected VBS4 Clients.
		NOTE For Offline use cases, the VBS World Server is not required.
2	VBS4 Dedicated Servers	In high-load use cases, a Dedicated Server is used to Host the Scenario Execution.
3	VBS4 Simulation Clients	Simulation Clients can manage the simulation of entities or AAR recording to improve performance.
4	VBS4 Admin Clients	Instructors use VBS4 with Admin privileges to start and manage the Scenario.
5	VBS4 Trainee Clients	Trainees use VBS4 without Admin privileges to participate in the Scenario.

1. Install VBS World Server on its own computer.

For more information, see [Installing VBS World Server \(on page 25\)](#).

2. Install VBS4 on the Dedicated Server, Simulation Clients, VBS4 Admin Clients, and VBS4 Trainee Clients.

 **NOTE**

All computers must be on the same network for VBS4 to communicate automatically.

For more information, see [Installing VBS4 \(on page 30\)](#) and Simulation Clients in the VBS4 Administrator Manual.

3. If it is not already running, start VBS World Server:

Run `\WS_Installation\vws_start.exe`

4. Use a VBS4 Admin Client to create your training exercise.

For more information, see Scenario Preparation in the VBS4 Editor Manual.

5. Use VBS Launcher with the applicable settings in the **Server** tab to start VBS4 on the Dedicated to Host the Scenario.

 **NOTE**

If you require Clients to connect from outside the local network, disable **multicast** (`-multicast=0`) on the Host computer.

For more information, see Dedicated Server in the VBS4 Administrator Manual.

6. Use VBS Launcher with the `-simulationclient` option to start the Simulation Clients, also specifying the `-connect` option with the IP Address or DNS name of the Dedicated Server.

For more information, see Simulation Clients in the VBS4 Administrator Manual.

7. Use VBS Launcher with the applicable Admin settings in the **Client** tab to start VBS4 on the Admin Clients to manage the scenario.

To administer a multi-player scenario, see Scenario Execution in the VBS4 Instructor Manual.

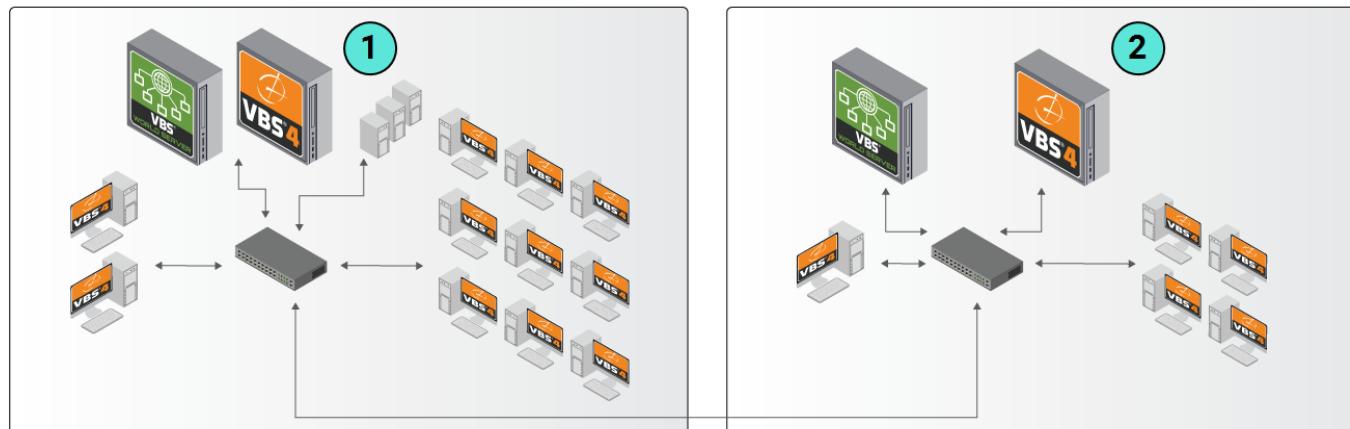
8. Use VBS Launcher with the applicable settings in the **Client** tab to start VBS4 on each Trainee Client to participate in the scenario.

To participate in a multi-player scenario, see Joining a Multi-Player Scenario in the VBS4 Trainee Manual.

More specific setups are available by setting the Simulation Client type. For more information, see Simulation Clients in the VBS4 Administrator Manual.

2.5 Multi-Room Combined Simulation

VBS Gateway enables multiple instances of VBS4 to Host different sets of simulation objects as part of a combined simulation where entities managed by each instance of VBS4 appear as external entities in the other instances of VBS4.



1 Room 1 - Dedicated Server running VBS Gateway.

2 Room 2 - Dedicated Server running VBS Gateway.

i NOTE

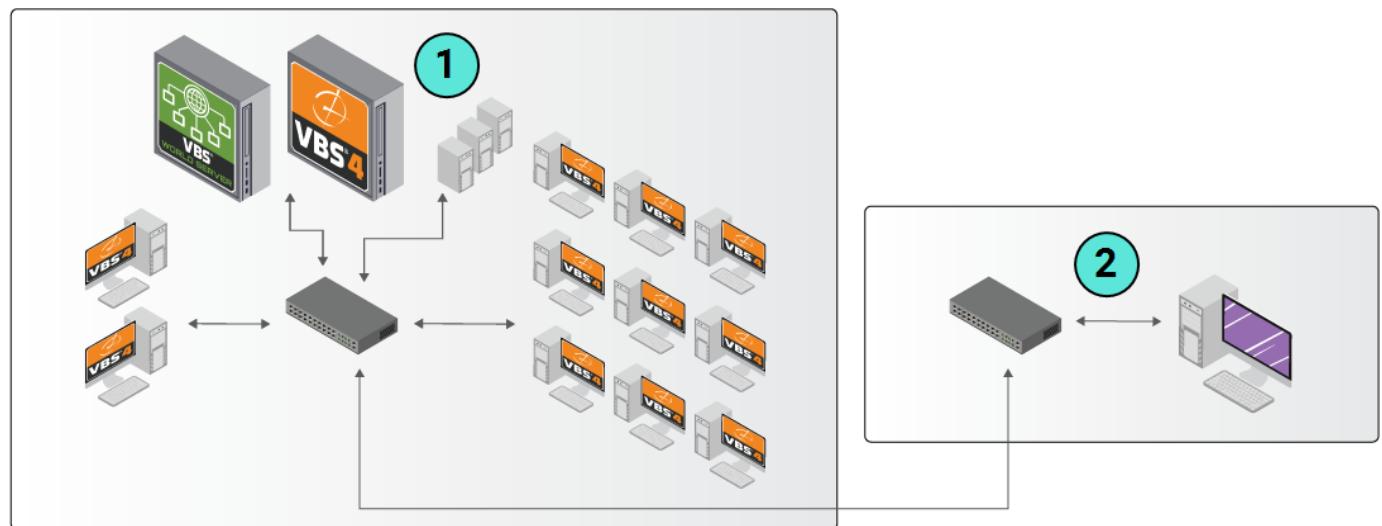
The simulation runs in two separate sessions that are broadcast to each other. This means that an Administrator in the Room 1 session cannot directly interact with objects created in the Room 2 session.

This scenario may be appropriate for all previously described deployment scenarios. Follow the appropriate process for each deployment type, replacing the preset with the equivalent **Gateway** preset, or by additionally selecting the **-gateway** option on the VBS4 instance that is Hosting the Scenario.

For more information, see VBS Gateway Overview in the VBS Gateway Manual.

2.6 Multi-Product Combined Simulation

VBS Gateway enables VBS4 to participate in combined simulations with other HLA or DIS compliant simulation products where entities managed by each product appear as external entities in the other products.



1 Room 1 - Dedicated Server running VBS Gateway.

2 Room 2 - HLA / DIS compliant Simulation Product

This scenario may be appropriate for all previously described deployment scenarios. Follow the appropriate process for the VBS4 deployment type, replacing the preset with the equivalent **Gateway** preset, or by additionally selecting the `-gateway` option on the VBS4 instance that is Hosting the Scenario.

WARNING

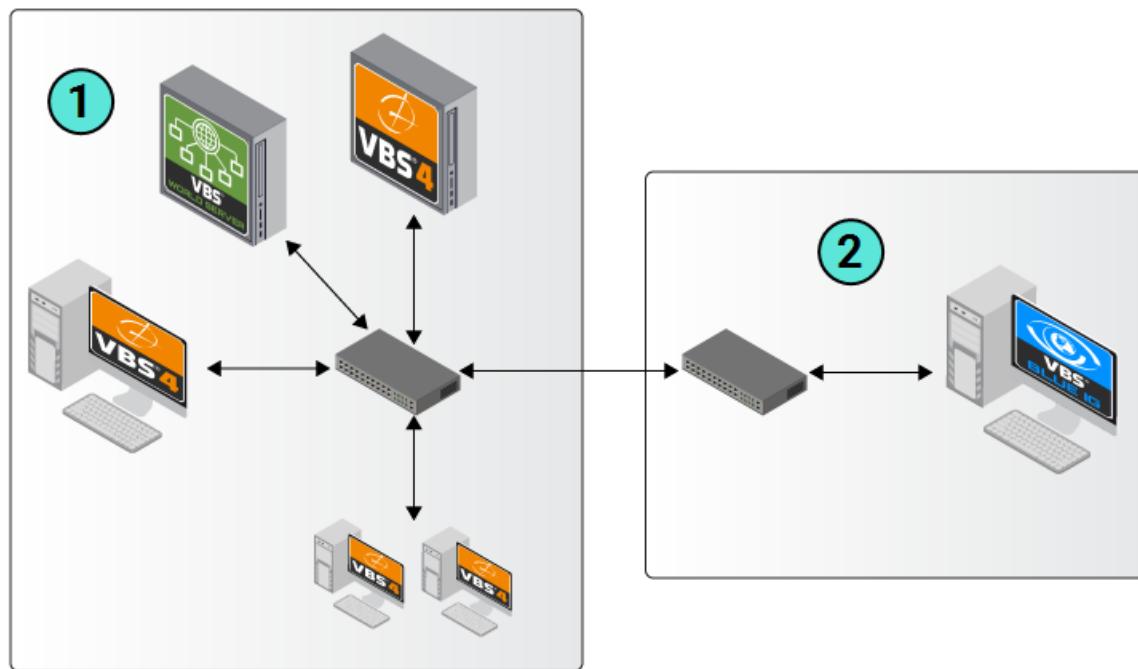
If you are broadcasting a combined DIS exercise to VBS Blue IG, you must enable `-interopForwarding`, see Enabling DIS Entities in the VBS Host Manual.

For more information, see VBS Gateway Overview in the VBS Gateway Manual.

Start the other simulation products as appropriate.

2.7 Specialist Display Solutions

For graphically demanding deployments, such as output to domes, use VBS4 to Host the simulation objects and transmit to VBS Blue IG to render high quality graphics.



1 Room 1 - Dedicated Server Hosting the Scenario

2 Room 2 - VBS Blue IG

This scenario may combine with any of the previously described deployment scenarios. Follow the appropriate process for the VBS4 deployment type, with the following additional startup options:

- To transmit to VBS Blue IG, start VBS4 with the `-vbsHostNet` parameter.

⚠️ WARNING

If you are broadcasting a combined DIS exercise to VBS Blue IG, you must enable `-interopForwarding`, see Enabling DIS Entities in the VBS Host Manual.

For more information, see VBS Host Overview in the VBS Host Manual.

Start the Image Generation product as appropriate.

ℹ️ NOTE

Bohemia Interactive Simulations recommend using VBS Blue IG for Image Generation solutions. For more information, contact sales@bisimulations.com.

3. System Requirements

Bohemia Interactive Simulations recommends the following hardware requirements for VBS4 Clients:

VBS4	Recommended	Optimal
CPU	Intel Core i7-12700K (or better) Ryzen 9 7900X	Intel Core i9-12900K (or better) Ryzen 9 7950X
RAM	32GB DDR4 (or better)	64GB DDR4 (or better)
GPU	Nvidia GeForce RTX 3070 (or better) DirectX 11	Nvidia GeForce RTX 3080 (or better) DirectX 11
	<div style="border: 2px solid red; padding: 10px; text-align: center;"> WARNING AMD GPUs are not currently supported.</div>	
Disk	512GB SSD for OS and VBS4	1TB SSD for OS and VBS4
OS	Windows 10 (v1607+) or 11, 64-bit	Windows 10 (v1607+) or 11, 64-bit
	<div style="border: 2px solid red; padding: 10px; text-align: center;"> WARNING VBS4 uses the Windows account name as the VBS4 user name. This name can only contain printable ASCII (https://www.w3schools.com/charsets/ref_html_ascii.asp) characters. VBS4 may crash if characters outside this range are used. Modify the Windows account name before starting VBS4 if it contains non-ASCII characters.</div>	
Network	1 Gbps / 2.5 Gbps	1 Gbps / 2.5 Gbps

NOTE

VBS4 does not require expensive professional graphics cards (designed for CAD work, CGI, or other complex scientific calculations). These cards do not provide any additional benefits compared to graphics cards designed for gaming.

VBS4 installations that are intended to be used as Dedicated Servers or Simulation Clients can meet the VBS World Server requirements instead of the more graphically demanding VBS4 requirements.

Third-party cybersecurity software may increase load time and impact VBS4 performance.

⚠️ WARNING

To avoid potential UI display issues, do not use USB hubs or adapters to connect monitors. Also, support of the new map view (see Advanced New Map and Map Layers) is limited on 4K monitors. Delays may occur when moving / dragging the map.

Bohemia Interactive Simulations recommends the following for VBS World Server:

VBS World Server	Recommended	Optimal
CPU	Intel Core i7-12700K (or better) Ryzen 9 7900X	Intel Core i9-12900K (or better) Ryzen 9 7950X
RAM	64GB DDR4 (or better)	128GB DDR4 (or better)
GPU	Nvidia GeForce GTX 1080 (or better) DirectX 11	Nvidia GeForce GTX 4090 (or better) DirectX 11
Disk	512GB SSD for OS, 4TB SSD for VBS World Server and Global Data (optional)	512GB SSD for OS, 8TB SSD for VBS World Server and Global Data (optional) and space for local processing.
OS	Windows 10 (v1607+) 64-bit, Windows Server 2016/2019	Windows 10 (v1607+) or Windows 11 64-bit, Windows Server 2016/2019
Network	1 Gbps	10 Gbps

NOTE

The hardware listed is not exclusive. Compare your hardware to the listed items for an indication of performance.

Operational usage can affect performance requirements. Increasing visual fidelity (detail, distance, and / or resolution), as well as scenario complexity, can have a significant impact on performance, and may warrant increasing the system specification to the next performance tier.

For hardware queries, contact us at <https://bisimulations.com/company/contact-us>.

Bohemia Interactive Simulations recommends the following hardware requirements for VBS Map:

VBS Map	Recommended
CPU	Intel Core i5-7400 (equivalent or better)
RAM	8 GB RAM
GPU	NVidia GeForce GTX 1050 Ti 4GB (equivalent or better) DirectX 11
OS	Windows 10 64-bit
Web Browser	Google Chrome

NOTE

A firewall may prevent VBS Map clients from connecting to the VBS Map Server. If you get an error message, either disable the firewall, or configure it to allow client to server connections.

VBS Map uses the following port, which is configurable:

- 4080 (default VBS Map Server port) - Configurable on the VBS Map Server (see Server Configuration in the VBS Map Manual).

If you are using a firewall, this port should be open.

For more information, see Deploying VBS Map in the VBS Map Manual.

TIP

The Benchmark Tool can be used to measure system performance.

For more information, see Benchmark Tool in the VBS4 Administrator Manual.

4. Download VBS4

VBS4 is typically accessed and downloaded using VBS License Manager.

NOTE

Alternate distribution methods are available by contacting support@bisimulations.com.

In each case, the content you require must be copied to the same temporary folder on the machine where you want to install VBS4 or VBS World Server.

Follow these steps:

1. In VBS License Manager, open the **Downloads** page.
2. Select VBS4 from the products panel and **Choose Version**:
3. Expand **Instructions** to view the help available for product deployment.
4. Expand **Products Available to Download** to display the products available for download.
5. Select **VBS4+VWS** for a default download of VBS4 and VBS World Server packages.
6. Select optional World Data packages to install procedural and generated terrain detail:
 - **World Data (23.2)**: Global coverage of procedurally generated buildings and roads.
 - **World Airfields (24.1)**: A large set of insets for global airfields.

For a list of supported airfields (using ICAO airport codes), see [Global_Airfield_List.txt](#).

NOTE

The World Airfields package includes some heightmap changes in the area of each airfield that can conflict with existing World Data buildings when used together. To address this, the World Airfields package contains cutouts of World Data buildings around each airfield to resolve building elevation changes. If using World Airfields without World Data buildings, these extra buildings around airfields may be distracting and can be removed. For more information, see Removing World Airfield Building Data in the VBS World Server Manual.

NOTE

Only download packages if your current World Data is older than the version listed.

WARNING

If World Data is not installed as part of your initial installation, add it to your installation using the Updater Tool.

For more information, see [Installing World Data \(on page 37\)](#).

If you already have a VBS World Server installation, backup your World Data before installing a newer version of VBS World Server.

For more information, see [Migrating Data to a New VBS World Server Version \(on page 28\)](#).

7. Select from the additional products as required, which include:

- Select **DeveloperSuite** to download the VBS4 Developer Suite.
- Select **VBS Radio Standalone** to download the separate VBS Radio client application.
For more information, see [VBS Radio Standalone](#).
- Select **READ THIS FIRST** to download supplementary PDFs.



FEATURE NOTICE

The exact set of products and packages displayed depends on your licensing.

8. Do any of the following for a more selective VBS4 download:

- For a default VBS4 and VBS World Server download, skip to step 10.
- For a selective installation, **click** the Configure List icon to display the Configure panel.

9. Deselect **VBS4** to uncheck all items, and then select specific packages to download:

- **VBS4** is the installer and core packages for VBS4.
- **VBS World Server** is the installer and core packages for VBS World Server.
- **VBS4 KEY_General** and **VBS World Server - KEY_General** contain exclusive content for your licensed version of the products.
- **VBS4 Terrain_Inset** are optional highly detailed terrain insets.

For more information, see Terrain Insets in the VBS World Server Manual.

i **NOTE**

To deploy Terrain Insets at a later date, download them from VBS License Manager, copy the downloads to the same folder as the VBS4 Installer, and re-run the VBS4 Installation.

- **Geolocation Lookup Service** is an optional package that provides location search.

If optional packages are present in the downloads folder when the installer runs, they automatically install.

10. Expand **Save Location**, click **Change**, and select a download folder.

11. Click **Download**.

VBS License Manager downloads the selected packages to the selected location.

Copy the applicable downloads to the required computers and proceed with installation:

- [Installing VBS World Server \(on the next page\)](#)
- [Installing VBS4 \(on page 30\)](#)

5. Installing VBS World Server

Before getting started:

- If you are installing VBS World Server for the first time, continue to [Installing the VBS World Server \(below\)](#).
- If you are updating VBS World Server from a previous version, follow the instructions in [Installing a Newer VBS World Server Version \(on page 28\)](#).

After you [Download VBS4 \(on page 22\)](#), the VBS World Server installer and the selected download packages are available in the selected download folder.

WARNING

VBS4 and VBS World Server installations must be the same major version (e.g., 21.1.x) to ensure full compatibility.

5.1 Installing the VBS World Server

Install VBS World Server on a computer meeting the VBS World Server [System Requirements \(on page 19\)](#).

NOTE

VBS4 and VBS World Server installers must be in the same directory for the VBS World Server installer to automatically detect and install VBS4 in the correct location.

WARNING

The VBS4 installed by the VBS World Server installer is used by the server and should not be used as a VBS4 client. Download and install VBS4 Clients on separate computers.

Copy the downloaded folder containing the VBS World Server installer and the download packages to the required computer and run the installer:

`VBS_World_Server.Core.InstallerX64.version.exe`

The VBS World Server installer starts and leads you through the following installation process:

WARNING

Installation requires Windows Administrator privileges.

1. Installer Language

Select the Installer language to use and click **OK**.

NOTE

Language selection only applies to the installer and does not affect the VBS World Server installation.

2. Welcome Panel

Review the version of VBS World Server and click **Next** to continue.

3. License Agreement

Review the license agreement, and click **I Agree**.

4. Choose Components

Select which components to install, and then click **Next**:

- The **Core** package is mandatory and pre-selected.
- Your **License Key** encoded package is mandatory and pre-selected (for example, YYMEA).
- **Geolocation Lookup Service** is an optional package for location search services.
- Select **Start Menu Shortcuts** to add VBS World Server to your Start Menu list.
- Select **Desktop Shortcuts** to add VBS World Server shortcuts to your desktop.
- Select **Verify Checksum** to validate the download packages prior to installation.
- Select **VBS4 Server** to silently install VBS4 as a Dedicated Server for Scenario Execution.
- Select **Installing Drivers** to run install drivers process during VBS World Server installation.

5. Choose Install Location

Input or click **Browse** to select an installation folder, and then click **Next**.

NOTE

Select a location on an SSD drive that meets the VBS World Server [System Requirements \(on page 19\)](#) that is as close to the drive root folder as possible.

WARNING

The installation path can only contain printable [ASCII](https://www.w3schools.com/charsets/ref_html_ascii.asp) (https://www.w3schools.com/charsets/ref_html_ascii.asp) characters. VBS World Server does not start if installed to a path with characters outside this range.

6. Choose Start Menu Folder

Input a name and optionally select an existing start menu item to place it in.

Click **Install** to start the installation process.

i NOTE

This documentation refers to the VBS World Server installation folder as `\Installation\`.

VBS World Server installs to the selected folder and, if selected, silently installs VBS4 to:

`\Installation\Services\VBS4\`

When installation completes, select from the following options:

- **Open the Installation Folder**

View the content of the `\Installation\` folder.

Click **Finish** to close the installer.

After installation, run the following executable to finalize the VBS World Server configuration:

- Run `\Installation\vws_configure.exe`

i NOTE

The `vws_configure.exe` must be run following the initial installation in order to start using the VBS World Server. For more information about the executable and its functions, see Managing VBS World Server in the VBS World Server Manual.

VBS World Server is ready to start. For more information, see Managing VBS World Server in the VBS World Server Manual.

If you wish to install World Data to your offline VBS4 installation, follow the instructions in [Installing World Data \(on page 37\)](#).

5.2 Installing a Newer VBS World Server Version

If you have an older version of the VBS World Server installed on your computer (for example, 20.1.x) and you wish to install a newer version (for example, 21.1.x), you must manually back up any user data that you wish to carry over to the new version. Otherwise, this user data will be deleted when you perform the update.

5.3 Migrating Data to a New VBS World Server Version

To back up your user-generated data (such as Battlespaces and VBS4 inset data) and any installed World Data packages, follow these steps:

1. Create a New Folder

Separate from the VBS World Server installation, create a new folder to act as a repository (for example, `D:\Backup`).

2. Move User Data

Cut the following folders from the VBS World Server installation:

- `\Installation\data\Battlespaces\`
- `\Installation\Services\VBS4\myData\`

If [World Data \(on page 39\)](#) is installed, cut these folders as well:

- `\Installation\Services\VBS4\data\BlueBase\earth\Global_Geometry\`
- `\Installation\Services\VBS4\data\BlueBase\earth\Global_Roads\`
- `\Installation\Services\VBS4\data\BlueBase\earth\Global_Veg_Removal\`



WARNING

Once all desired user data has been archived, you must uninstall all older versions of the VBS World Server prior to updating to the newer version.

3. Uninstall the Older Version

Uninstall the older version of the VBS World Server. For more information, see [Uninstalling VBS World Server](#) in the VBS World Server Manual.

4. Install VBS World Server

Install the new version of the VBS World Server by following the instructions in the [Installing the VBS World Server \(on page 25\)](#).

5. Run the Stop Executable

After installing the new version of the VBS World Server, stop the service before restoring the user data.

- Run `\Installation\vws_stop.exe`

6. Delete the VBS World Server Cache

Delete the VBS World Server Cache folder at the following location:

- `\Installation\Services\VBS4\cache\`

7. Restore User Data

After VBS World Server has been installed, manually restore the archived data by cutting it from the backup repository folder made in **Step 2: Move User Data** to the following locations in the new installation.

- `\Installation\data\Battlespaces\`
- `\Installation\Services\VBS4\myData\`
- `\Installation\Services\VBS4\data\BlueBase\earth\Global_Geometry\`
- `\Installation\Services\VBS4\data\BlueBase\earth\Global_Roads\`
- `\Installation\Services\VBS4\data\BlueBase\earth\Global_Veg_Removal\`

8. Run the Start Executable

After restoring user data, run the following executable to finalize the VBS World Server upgrade:

- Run `\Installation\vws_start.exe`

6. Installing VBS4

After you [Download VBS4 \(on page 22\)](#), the VBS4 installer, and the selected download packages, are available in the selected download folder.

Install VBS4 on every client computer, ensuring that they meet the [System Requirements \(on page 19\)](#).

WARNING

VBS4 and VBS World Server installations must be the same major version (e.g., 21.1.x) to ensure full compatibility.

Copy the downloaded VBS4 folder containing the VBS4 installer and the download packages to the required computer and run the installer:

VBS4.Core.InstallerX64.version.exe

WARNING

Installation requires Windows Administrator privileges.

The VBS4 installer starts and leads you through the following installation process:

Follow these steps:

1. Select your Language

Select the language to use during installation and click **OK**.

NOTE

The language selection only applies to the installer process and does not affect the VBS4 installation.

2. Welcome Screen

Review the version of VBS4 and click **Next** to continue.

3. License Agreement

Review the license agreement, and click **I Agree**.

4. Choose Components

Select which components to deploy, and then click **Next**:

- **Core** is mandatory and pre-selected.
- **Terrain_Inset** selections are optional and deploy highly detailed terrains for the specified locations.
- Your **License Key** encoded package is mandatory and pre-selected (for example, YYMEA).
- Select from the set of **Additional Options**:
 - Select **Verify Checksum** to validate the download packages prior to installation.
 - Select **Start Menu Shortcuts** to add VBS4 to your Start Menu list.
 - Select **Desktop Shortcuts** to add a VBS4 shortcut to your desktop.
 - Select **Firewall Exceptions** to add VBS4 to your list of permitted software in the Windows Firewall rules.
 - Select **Installing Drivers** to run the driver installation process as part of the VBS4 installation.

5. Choose Install Location

Input or click **Browse** to select an installation folder, and then click **Next**.



NOTE

Select a location on an SSD drive that meets the [System Requirements \(on page 19\)](#).



WARNING

The installation path can only contain printable [ASCII](https://www.w3schools.com/charsets/ref_html_ascii.asp) characters. VBS4 does not start if it is installed to a path containing characters outside this range.

6. Choose Start Menu Folder

If you selected the additional **Start Menu Shortcuts**, input a name and optionally select an existing Start Menu item to place it in

Click **Install** to start the installation process.

The installer deploys VBS4 to the specified installation folder. This documentation refers to the folder as **\VBS_Installation**.

When installation completes, select from the following options, and click **OK**:

- **Open the Installation Folder**

View the content of the **\VBS_Installation** folder in Windows File Explorer.

Click **Finish** to close the installer.

VBS4 is ready to start. For more information, see [Starting VBS4 \(on page 47\)](#).

If you want to install World Data to your offline VBS4 installation, follow the instructions in [Installing World Data \(on page 37\)](#).

6.1 Silent Installation

You can install in Silent Mode, with default options from a command line using the **/S** switch, and any of the following additional switches (required switches are in bold):

Installation Switch	Description
/S	Silent / unattended installation.
/INST=	Specify the installation directory.
/NOSM	Do not create Start Menu shortcuts.
/NOFIREWEX	Do not create firewall exceptions.
/NODESK	Do not create desktop shortcuts.
/NOCRC	Do not perform an MD5 check of the installation packages.



EXAMPLE

To install VBS4 to a local **C:\VBS4_20.1** folder with no Start Menu shortcuts:

```
VBS4.Core.InstallerX64_20.1.0_b8.exe /S /INST=C:\VBS4_20.1 /NOSM
```

7. Installing a VBS World Server Patch

The Updater Tool included with VBS World Server supports patch updates to VBS World Server.

WARNING

Updates to VBS World Server require an earlier release of the same major version. For example, updating to VBS World Server 20.1.1 requires an earlier version of VBS World Server 20.1.x.

If you have not already installed the same major version of VBS World Server, please perform a full installation instead of using the update process.

For more information, see [Installing VBS World Server](#).

Download updates for VBS World Server through VBS License Manager.

NOTE

If you have been delivered a patch, see [Installing the Patch \(on the next page\)](#).

Follow these steps:

1. Open VBS License Manager, and select the **Download** page.
2. Select VBS4 in the products panel, and **Choose Version:**, selecting the applicable major version **Y.X**.
3. Expand **Products Available to Download**, select **VBS4**, and click the **View** icon.



The Configure panel opens, displaying all VBS4 and VBS World Server packages available for download.

4. In the **Configure** panel, click **VBS4** to deselect all packages.

Select the required VBS World Server Updates between your current version and the version you require. For information about the updates, see the Patch Notes for the specific version.

Update packages use the naming convention: **WS_x.x.x_Update_Customer**. For each update, VBS License Manager displays the update applicable to your specific customer license:

- **WS_x.x.x_Update_General** contains updates for all customers.
- **WS_x.x.x_Update_Customer** also contains updates specific to your customer license.

5. Expand **Save Location**, click **Change**, and select a download folder.

**TIP**

If VBS License Manager is running on the same computer as the VBS World Server installation you want to update, select the VBS World Server Installation folder.

6. Click **Download**.

VBS License Manager downloads the update packages as a set of **.zip** files in a **\VBS4 version** folder in the selected location.

Once you have the update packages, use the Updater Tool to deploy the update to your VBS World Server installation.

**WARNING**

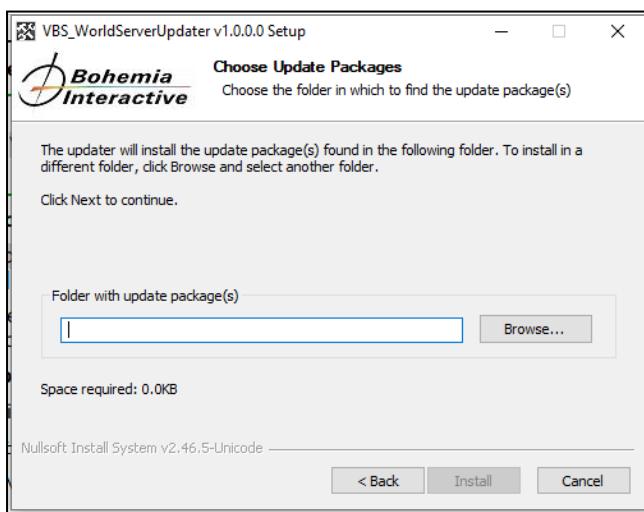
Ensure that VBS World Server is shut down before running the Updater Tool.

7.1 Installing the Patch

This section describes how to install a patch on an existing VBS World Server installation.

Follow these steps:

1. From your existing VBS World Server installation folder run the Updater Tool:
\Installation\Updater.exe
2. Specify the **\VBS4 version** folder in your VBS License Manager download location.



3. Click **Install**.

VBS World Server is updated with the changes from the selected download packages.

The Updater Tool can also be used to install World Data for the VBS4 installation on the VBS World Server. For more information, see [Installing World Data \(on page 37\)](#).

8. Updating VBS4

Bohemia Interactive Simulations provides an Updater Tool with VBS4 to support updates to VBS4 and the later deployment of optional packages.

WARNING

Updates to VBS4 require an earlier release of the same major version. For example, updating to VBS4 20.1.1 requires an earlier version of VBS4 20.1.x.

If you have not already installed the same major version of VBS4, please perform a full installation instead of using the update process.

For more information, see [Installing VBS4 \(on page 30\)](#).

Download updates for VBS4 through VBS License Manager.

Follow these steps:

1. Open VBS License Manager, and select the **Download** page.
2. Select VBS4 from the products panel, and **Choose Version: x.x**.
3. Expand **Products Available to Download**, select VBS4, and click the **View** icon.



The Configure panel opens, displaying all VBS4 packages pre-selected for download.

4. In the **Configure** panel, click **VBS4** to deselect all packages.

Select the Required Updates between your current version and the version you require. For information about the updates, see the VBS4 Patch Notes for the specific version you require.

Update packages use the following naming convention: **VBS4_x.x.x_Update_Customer**. For each update, VBS License Manager displays the update applicable to your specific customer license.

- **VBS4_x.x.x_Update_General** contains updates for all customers.
 - **VBS4_x.x.x_Update_Customer** contains updates specific to your customer license.
5. Expand **Save Location**, click **Change**, and select a download folder.

TIP

If VBS License Manager is running on the same computer as the VBS4 installation you want to update, select the VBS4 Installation folder.

6. Click Download.

VBS License Manager downloads the update packages as a set of **.zip** files in a **\VBS4 version** folder in the selected location.

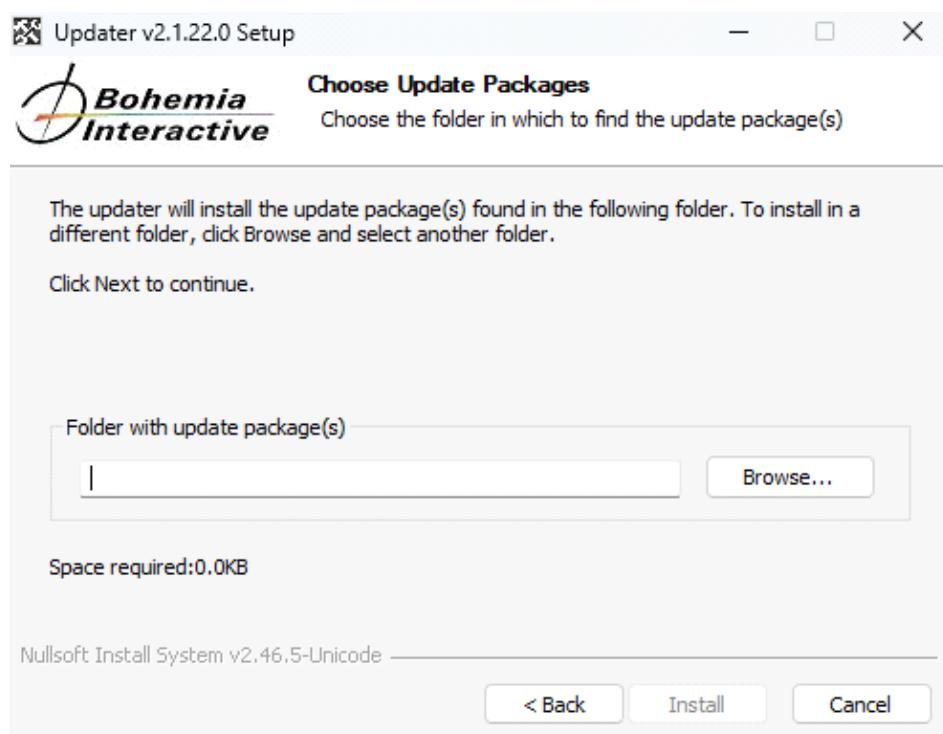
Once you have the update packages, use the Updater Tool to deploy the update to your VBS4 installation.

Follow these steps:

1. From your existing VBS4 installation folder run the Updater Tool:

\VBS_Installation\Updater.exe

2. Specify the **\VBS4 version** folder in your specified VBS License Manager download location.



3. Click **Install**.

Your installation of VBS4 is updated with the changes from the selected download packages.

9. Installing World Data

VBS4 is available with a set of optional World Data packages that include buildings, roads, and airfields. They are intended to serve as background cultural data to enhance large scale training environments.

Download World Data from VBS License Manager.

Follow these steps:

1. In VBS License Manager, open the **Downloads** page.
2. Select **VBS4** from the products panel and **Choose Version**.
3. Expand **Products Available to Download** to display the World Data available for download:
 - **World Data (23.2)** contains procedurally generated buildings for each continent and regional roads generated from OpenStreetMap data.
 - **World Airfields (24.1)** is a large set of insets for global airfields. For a complete list of supported airfields (using ICAO airport codes), see [Global_Airfield_List.txt](#).

Click the **Configure List** icon, to view the available sets of World Data:



- Asia
- North America
- South America
- Europe
- Australia
- Africa
- Antarctica
- Islands
- Airfields

For more information, see [World Airfields \(on page 42\)](#) and [World Data \(on page 39\)](#).

NOTE

The World Airfields package includes some heightmap changes in the area of each airfield that can conflict with existing World Data buildings when used together. To address this, the World Airfields package contains cutouts of World Data buildings around each airfield to resolve building elevation changes. If using World Airfields without World Data buildings, these extra buildings around airfields may be distracting and can be removed. For more information, see Removing World Airfield Building Data in the VBS World Server Manual.

4. Select the World Data packages to download.

TIP

Deselect **VBS4** and all other products to only download World Data packages.

5. Expand **Save Location**, click **Change**, and select a download folder.

6. Click **Download**.

VBS License Manager downloads your selected packages to the selected folder.

Once your packages are downloaded, use the Updater Tool to install them.

Follow these steps:

1. Copy the download packages to the same temporary folder on the target computers.

2. Stop VBS World Server and close all target VBS4 Clients:

On VBS World Server run `vws_stop.exe`.

3. Run the appropriate Updater Tool to install the World Data:

- On VBS World Server:

`\Installation\Updater.exe`

- On VBS4 Clients:

`\VBS_Installation\Updater.exe`

4. Specify the folder containing the World Data packages, and click **Install**.

5. After installation, restart VBS World Server:

- On VBS World Server run `vws_start.exe`.

The VBS World Server or VBS4 Updater Tools will update your installation of VBS World Server or VBS4 with the applicable World Data.

9.1 World Data

The World Data packages for roads and buildings are organized by continent and include regional road coverage, and contain OpenStreetMap-based cultural data including procedurally extruded building footprints with regional texturing and roads with road type-based texturing. Shown below are examples of cities using the world data for each continent.

Image-1: Asia - Hong Kong



Image-2: North America - New York City



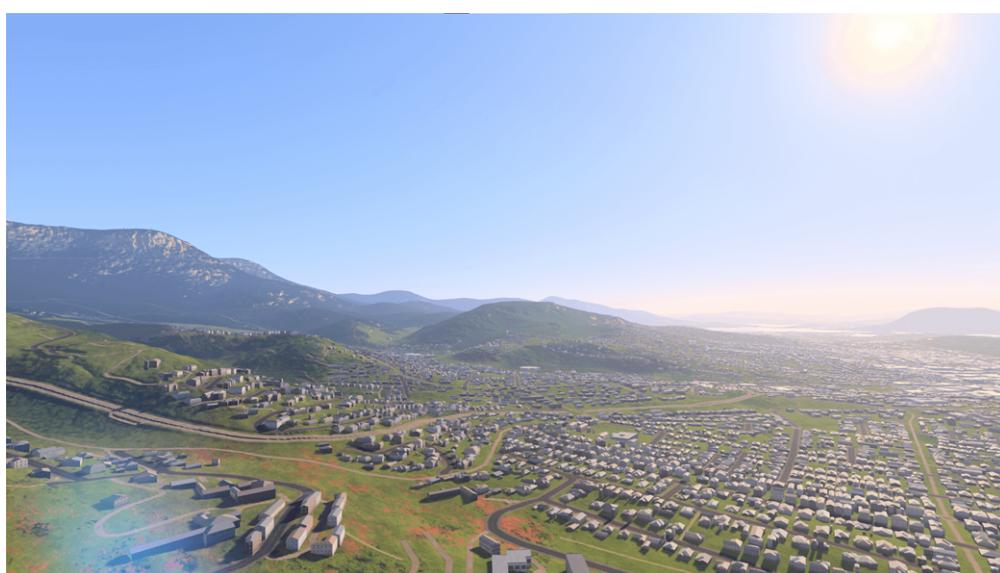
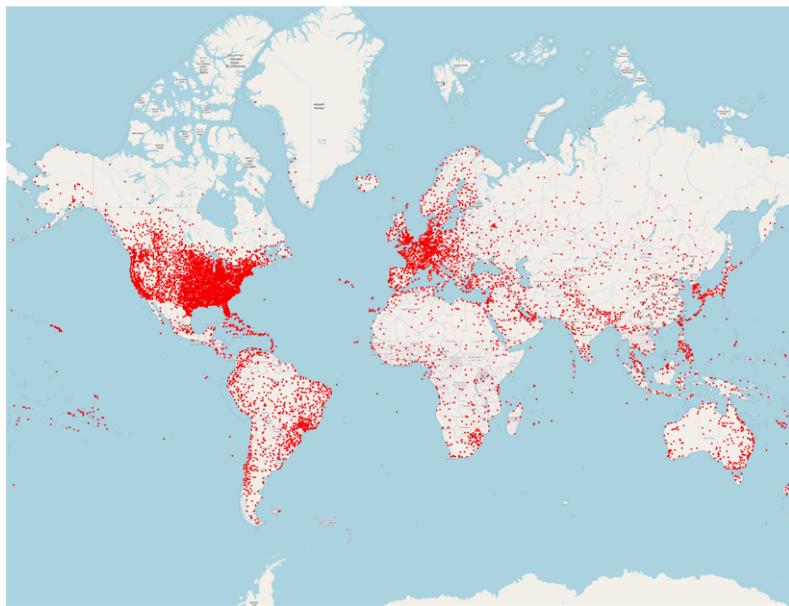
Image-3: South America - Rio de Janeiro**Image-4: Europe - San Marino****Image-5: Australia - Hobart**

Image-6: Africa - Cape Town**Image-7: Antarctica - Troll Research Station****Image-8: Islands - Rejkjavik**

9.2 World Airfields

VBS4 includes an optional airfield package that contains over 9,000 major and regional airfields throughout the world.

Image-9: VBS4 World Airfields Coverage



These airfields are created using TerraTools to produce accurate paint markings, realistic navigational light models, and updated heightmaps and surface masks for each inset. The airfield pack can be installed in an offline VBS4 instance or on the VBS World Server for streaming across your network.

For a complete list of airfields supported in VBS4 (provided in ICAO airport codes), see the [Global_Airfield_List.txt](#) list.

Below are examples of some of the airfields included in this package:

Image-10: EDDB - Berlin Brandenburg Airport, Germany



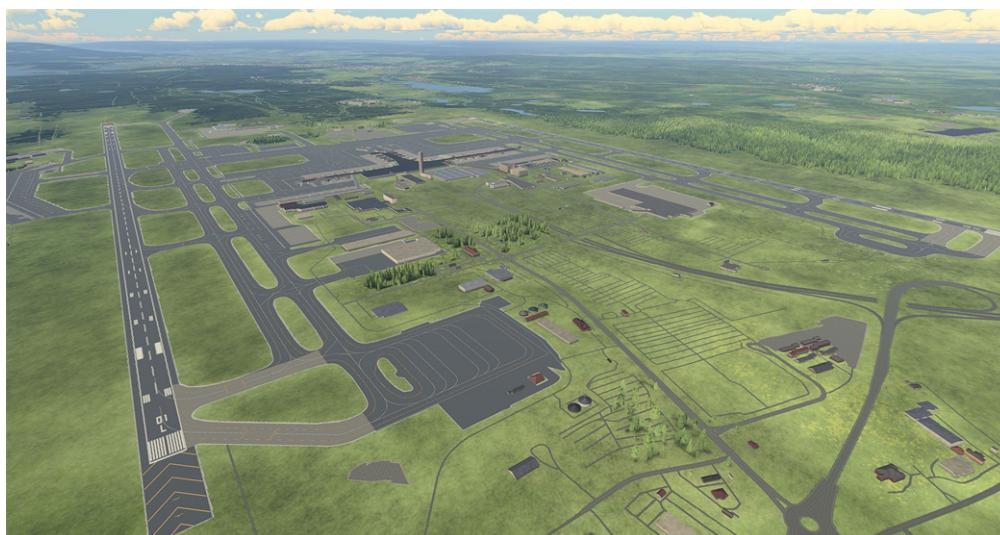
Image-11: EETN - Tallinn Airport, Estonia**Image-12: ENGM - Oslo Gardermoen Airport, Norway****Image-13: EPWA - Warsaw Chopin Airport, Poland**

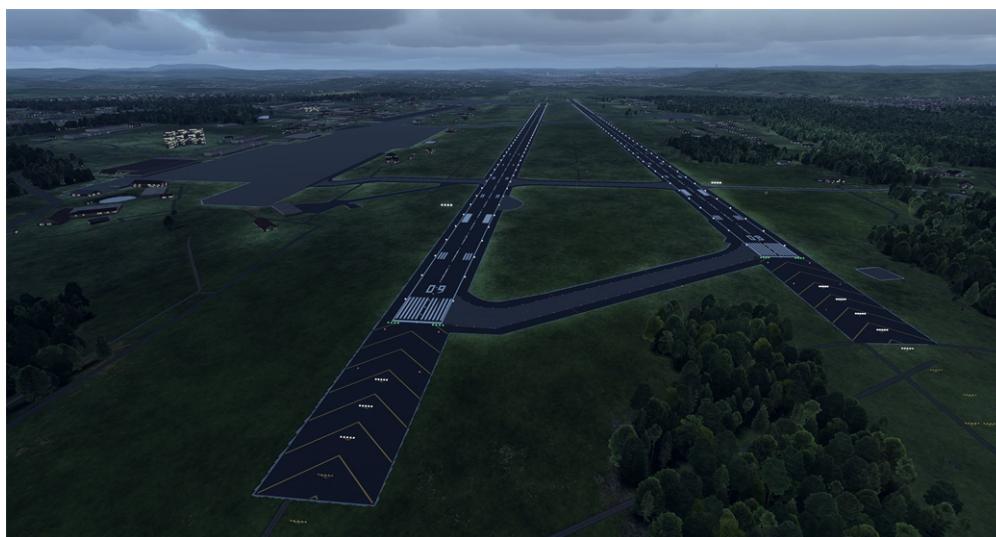
Image-14: ETAR - Ramstein Air Base, Germany**Image-15: FACT - Cape Town International Airport, South Africa****Image-16: KCLE - Cleveland Hopkins International Airport, United States**

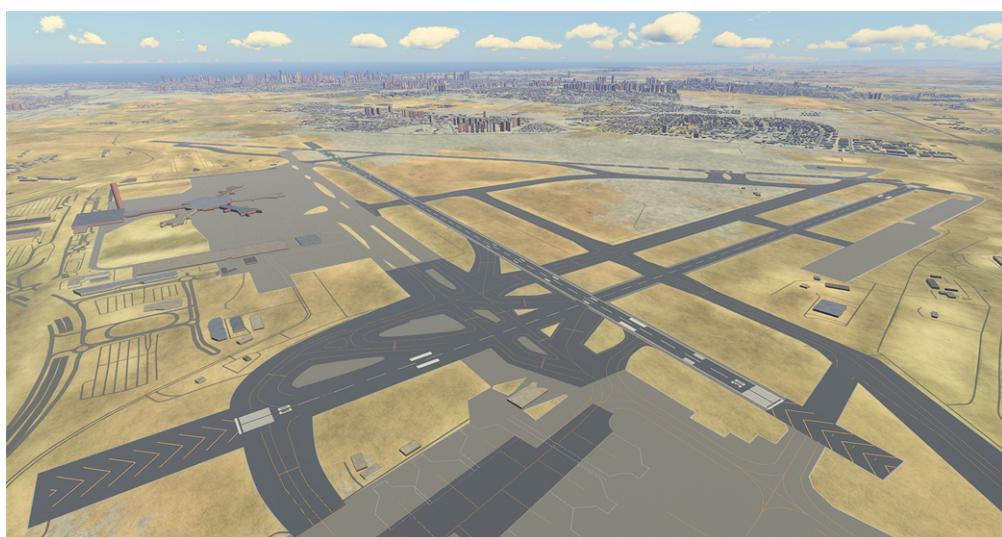
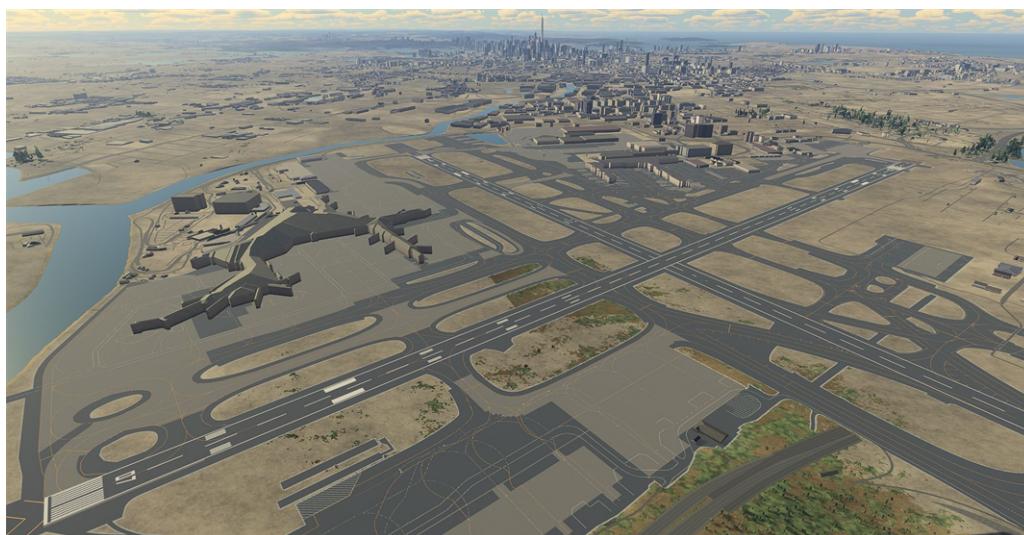
Image-17: KIAD - Dulles International Airport, United States**Image-18: LEBL - Josep Tarradellas Barcelona–El Prat Airport, Spain****Image-19: LLBG - Ben Gurion Airport, Israel**

Image-20: LOWW - Vienna International Airport, Austria**Image-21: YSSY - Sydney International Airport, Australia**

10. Starting VBS4

After installing VBS4 with appropriate licensing, you are ready to run it.

VBS4 provides the following primary methods to start the application:

- Use VBS Launcher, a utility specifically designed to enable you to launch VBS4 using Presets or custom startup parameters, and also to launch VBS4 on other computers on your network.

For more information, see VBS Launcher in the VBS4 Administrator Manual.

- Start VBS4 with a Command Line.

For more information, see [Starting with a Command Line \(on the next page\)](#).

- Use Desktop Shortcuts available as an option to add during installation.

You can also create [Custom Desktop Shortcuts \(on page 50\)](#).

All these methods can use custom startup parameters. For more information, see Command Line and Launcher Options in the VBS4 Administrator Manual.

WARNING

VBS World Server is included with VBS4. VBS World Server provides terrain streaming to connected VBS4 Clients, and also acts as a central repository of Battlespaces.

VBS4 can only stream terrain data from VBS World Server if it is connected as a Client.

To use VBS4 with VBS World Server, select the **VBS4 Online** configuration in VBS Launcher.

For most use cases, a separate Dedicated Server or VBS4 Admin Client hosts the scenario:

- For Online use cases, VBS World Server streams the base Whole-Earth Terrain and the Host computer provides additional terrain edits associated with the running Battlespace.
- For Offline use cases, the Host computer (Dedicated Server or VBS4 Admin Client) provides the terrain data.

Use the Client or Server tabs in VBS Launcher to select the appropriate Configuration.

For more information, see [Launching with Parameters](#) in the VBS4 Administrator Manual.

The primary decision when starting a VBS4 Client is whether to start as an Administrator or as a User. For more information, see [Administrator and User Modes \(on page 49\)](#).

VBS4 creates Profiles for each user containing their settings and preferences. For more information, see [Profiles \(on page 49\)](#).

⚠️ WARNING

VBS4 uses the Windows account name as the VBS4 user name. This name can only contain printable [ASCII](https://www.w3schools.com/charsets/ref_html_ascii.asp) (https://www.w3schools.com/charsets/ref_html_ascii.asp) characters. VBS4 may crash if characters outside this range are used. Modify the Windows account name before starting VBS4 if it contains non-ASCII characters.

⚠️ WARNING

VBS4 does support multiple instances running on the same computer. However, it is not recommended due to its effect on performance.

ℹ️ NOTE

While VBS4 is running, the Microsoft Windows Sleep settings are ignored, and the computer on which VBS4 is running does not enter Sleep mode.

10.1 Starting with a Command Line

You can start VBS4 using a Command Prompt console window.

Follow these steps:

1. Open a Windows Command Prompt.
2. Run the VBS4 executable, adding the startup parameters you require. For example:

```
C:\Program Files\Bohemia Interactive Simulations\VBS4\VBS4.exe -admin  
-window -forceSimul
```

For details of the available startup parameters, see Command Line and Launcher Options in the VBS4 Administrator Manual.

10.2 Administrator and User Modes

Start VBS4 in either Administrator or User mode (not to be confused with Windows administrator / user modes). Administrator mode enables full access to video, audio, and difficulty settings and has a more advanced setup interface.

To start VBS4 in Administrator mode, the `-admin` command line option is required (or start VBS4 using the Administrator shortcut). For a full list of command line options, see Command Line and Launcher Options in the VBS4 Administrator Manual.

NOTE

The Editor in Prepare Mode is only available if VBS4 is started in Administrator mode. In User mode during a Scenario, the Command and Control (C2) View is available instead of the Editor. Also, User mode does not allow you to change video, simulation, or localization options.

WARNING

The concept behind Administrator and User modes is to prevent users from changing key configuration settings and speed up the process of getting a scenario started (without users spending time on customizations).

10.3 Profiles

A VBS4 profile stores all relevant information for a particular user, including:

- Options configuration settings
- Keyboard settings, custom key controls
- Editable missions
- Overlays
- AAR and in-game video recordings
- Map visualization data

WARNING

VBS4 uses the Windows account name as the VBS4 user name. This name can only contain printable [ASCII](https://www.w3schools.com/charsets/ref_html_ascii.asp) (https://www.w3schools.com/charsets/ref_html_ascii.asp) characters. VBS4 may crash if characters outside this range are used. Modify the Windows account name before starting VBS4 if it contains non-ASCII characters.

Profile data is stored in:

- Default VBS4 Profile location: `%LOCALAPPDATA%\VBS4\`
- Other VBS4 Profile location: `Path` (`Path` is specified using the `-profiles=Path` command-line option - for more information, see Command Line and Launcher Options in the VBS4 Administrator Manual)

WARNING

Deleting a profile also removes all associated saved games and custom created missions assigned to the **deleted** profile.

10.4 Custom Desktop Shortcuts

If you chose the Desktop Shortcuts option during installation, you can use them to start VBS4.

You can also create custom shortcuts to start VBS4 using specific startup parameters:

Follow these steps:

1. Navigate to the VBS4 installation folder with Windows File Explorer.
2. Right-click the executable file, `VBS4.exe`, and select **Create Shortcut**.
3. Right-click the Shortcut and select **Cut**, and then right-click in your Desktop and select **Paste**.
4. Right-click the Shortcut and select **Properties**.
5. In the Target input add startup parameters to the Target path.

For example, `C:\VBS_Installation\VBS4.exe -admin -window -forceSimul`

For more information about the available startup parameters, see Command Line and Launcher Options in the VBS4 Administrator Manual.

6. Click **OK**.
7. Right-click the Shortcut and select **Rename** to apply a suitable name to your custom Shortcut.

Windows saves the Shortcut. Double-click the Shortcut to start VBS4 with the specified parameters.