

Convoys



VBS4 24.1.1



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The BISim Wiki is the primary resource on VBS4 scripting:

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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. Convoys

The purpose of this guide is to simulate a convoy, which is defined as a group of vehicles traveling together, for mutual support and protection. Often, a convoy has an armed defensive support.

There are four types of convoy simulation:

Convoy Simulation	Description
Full AI Convoy	All the convoy crew members are AI-controlled.
AI and Player Convoy	Part of the convoy crew members are AI-controlled, while another part is player-controlled.
Full Player Convoy	All the convoy crew members are player-controlled.
Scripted Convoy	The convoy crew is controlled using SQF scripts.

For a walkthrough example of a simple convoy scenario, see the following:

- [Control AI Convoy Example \(below\)](#)

The general workflow of a convoy scenario in VBS4 contains two parts:

- [Convoy Preparation \(on page 13\)](#)
- [Convoy Execution \(on page 16\)](#)

1.1 Control AI Convoy Example

You can create a full Control AI convoy, and give it a Convoy Order.

Follow these steps:

1. In the VBS4 Toolbar of the Battlespaces Mode, select the **Battlespaces** tab.

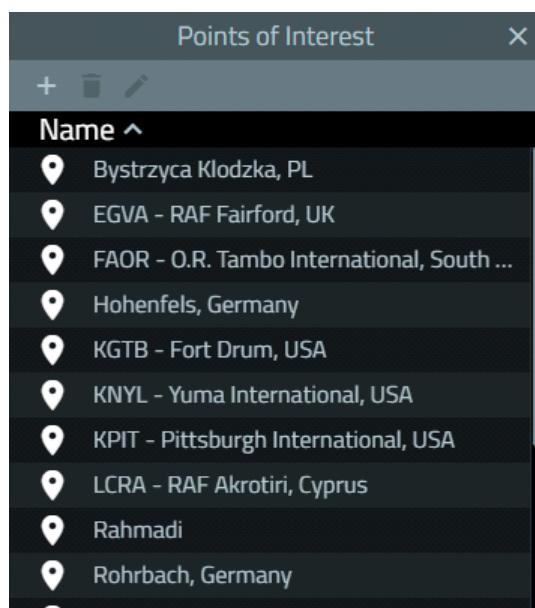
 **NOTE**

When starting the VBS4 Admin Client, the Battlespaces tab is selected by default.

2. Click the POI Icon.

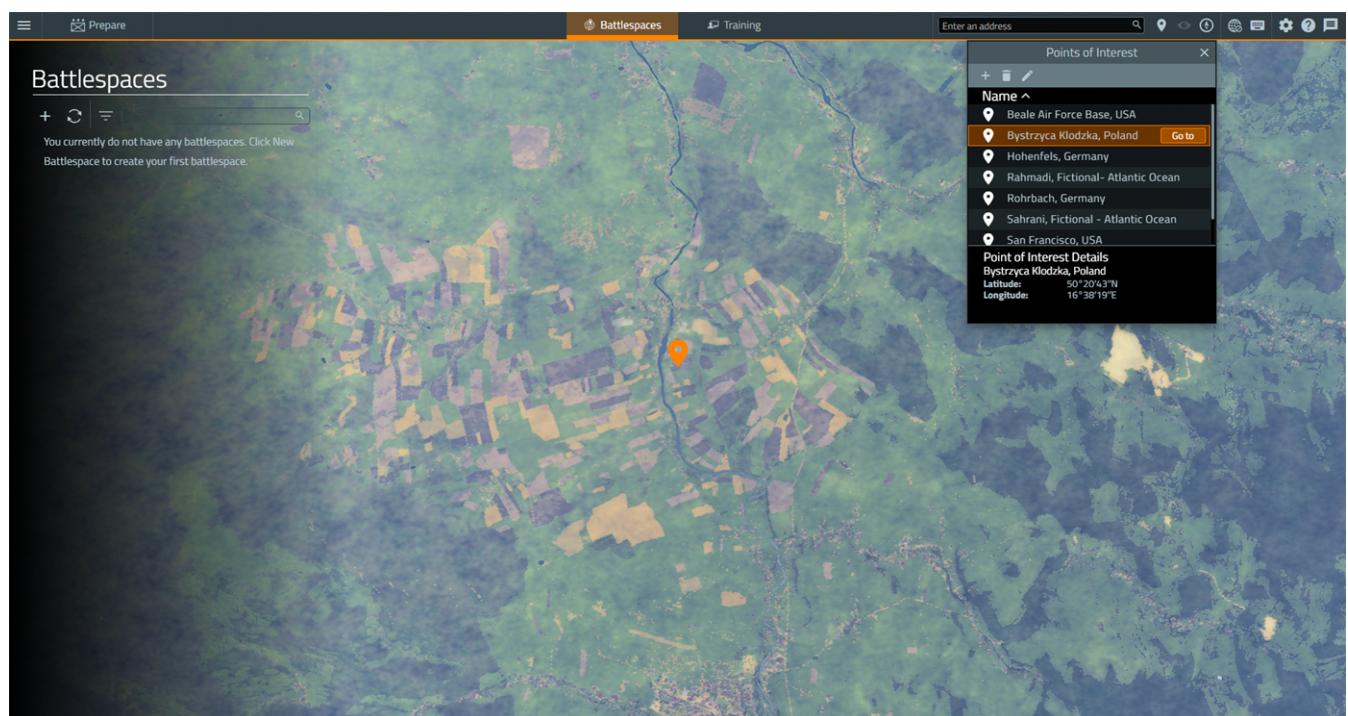


The Points of Interest Panel opens.



3. In the Points of Interest Panel, select **Bystrzyca Kłodzka, PL**, and click **Go to**.

The Whole-Earth Terrain rotates directly above the Bystrzyca Kłodzka terrain in Poland.



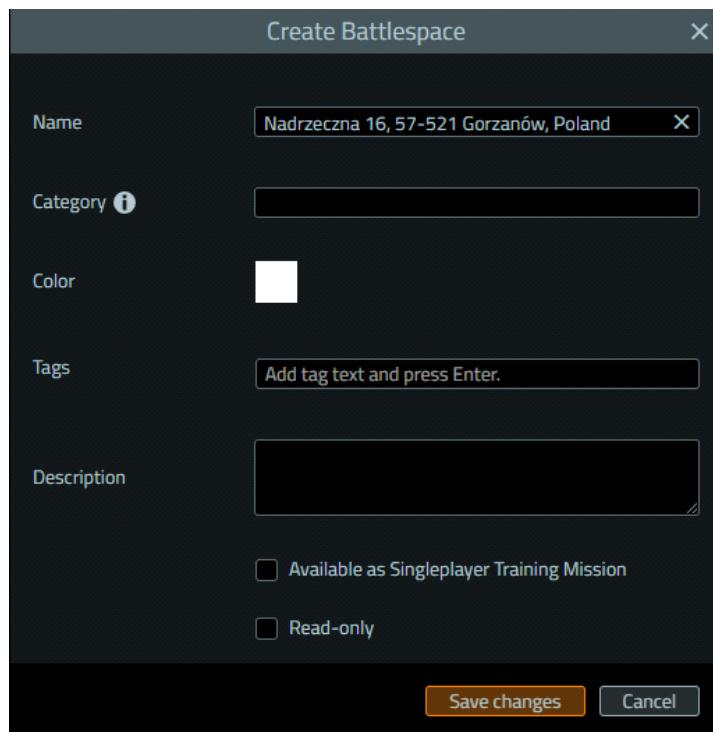
4. In the Search Bar of the VBS4 Toolbar, input the coordinates **50°20'46"N, 16°38'08"E**, and then press **Enter**.

Use the **Mouse Scroll Wheel** to zoom in to view the area displayed in the following image:



5. Click **+ New Battlespace** and click the location of the **yellow circle**.

The Create Battlespace dialog opens, displaying the selected coordinates.

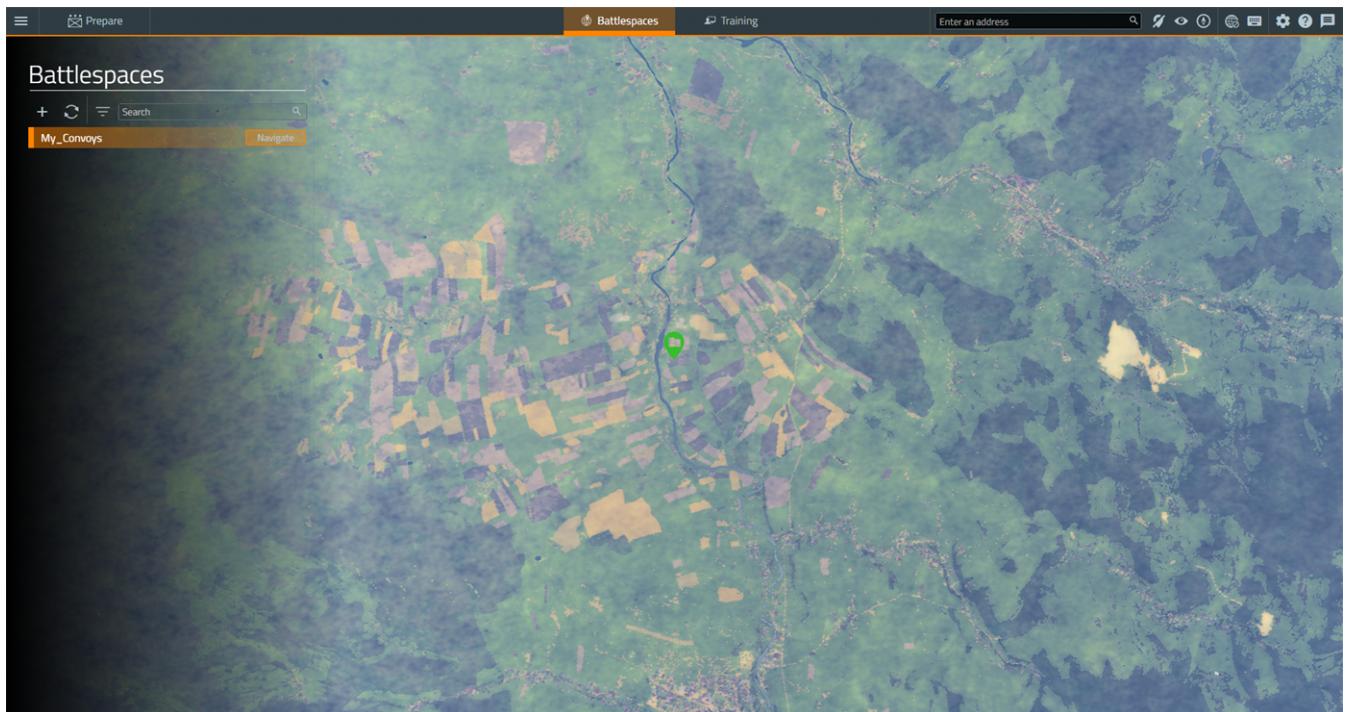


6. Input the following details in the Create Battlespace dialog:

Parameter	Value
Name	My_Convoys
Color	Green #36b82c
Tags	MyUseCase
Description	Convoys Use Case

7. Click **Save Changes**.

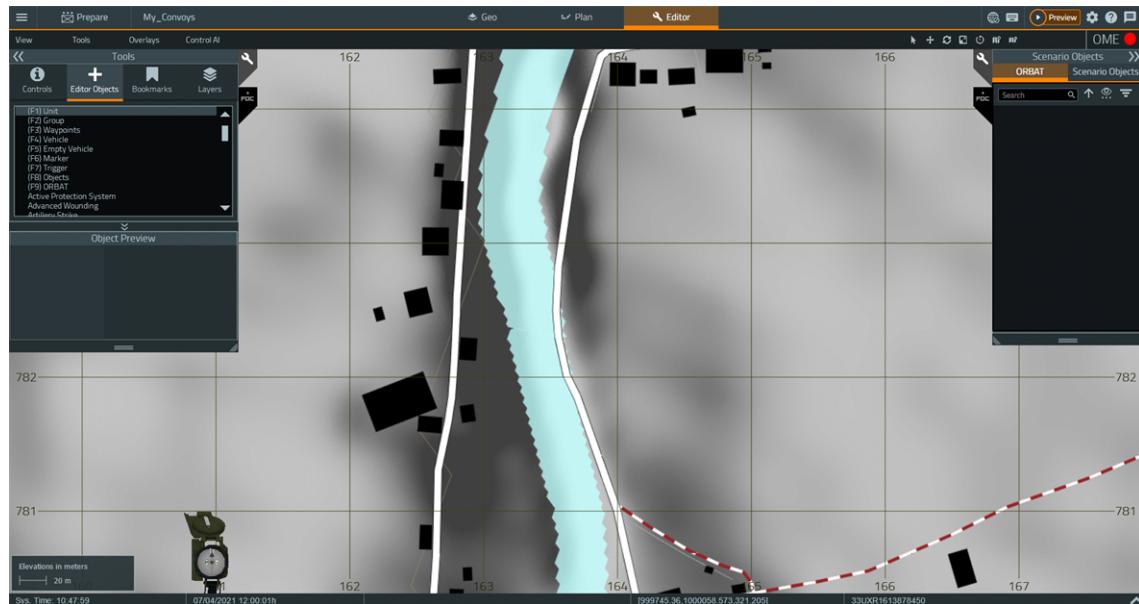
VBS4 adds the Battlespace to the Battlespaces List.



8. Select the newly created **My_Convoys** Battlespace to show a **green** icon added to the Whole-Earth Terrain in the designated location.

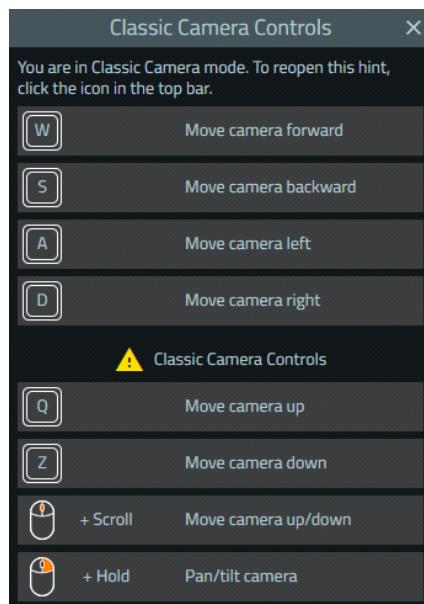
9. Under Prepare > Editor, click Create.

The Battlespace opens in VBS Editor (Prepare Mode) in the 2D View.



If required, toggle terrain textures in the 2D View, select **View > Hide / Show Texture**.

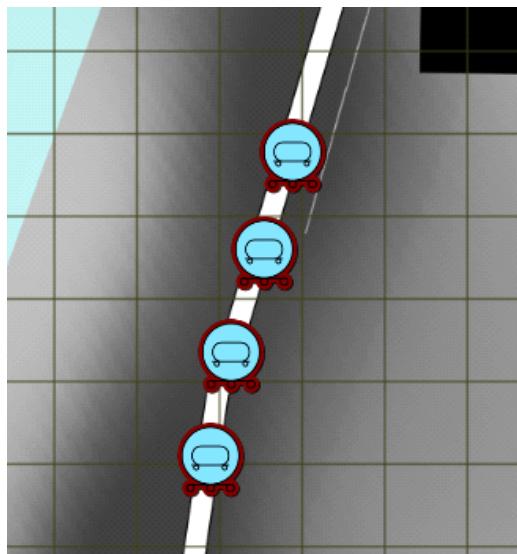
Use the Classic Camera Controls to move the camera:



10. In the Tools Panel, select **(F4) Vehicle**, and double-click a location on the white road, where you want the lead convoy vehicle to be.
11. In the Object Properties dialog, select the **US Army Wheeled - Woodland > M1114 HMMWV** vehicle.

12. Click **OK**.
13. Place three more convoy vehicles south of the lead vehicle, along the road.

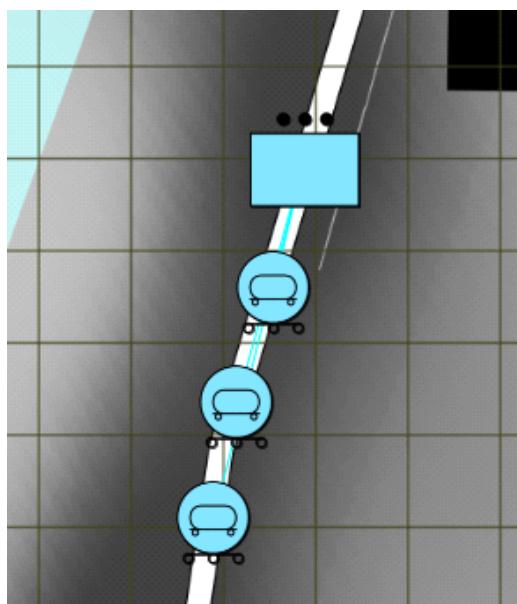
The convoy vehicles should look like this:



14. Link each of the three bottom vehicles with the lead vehicle:

- a. Hold **LShift** and click any of the three bottom vehicles.
- b. Click the lead vehicle.

The convoy vehicles now form a group.

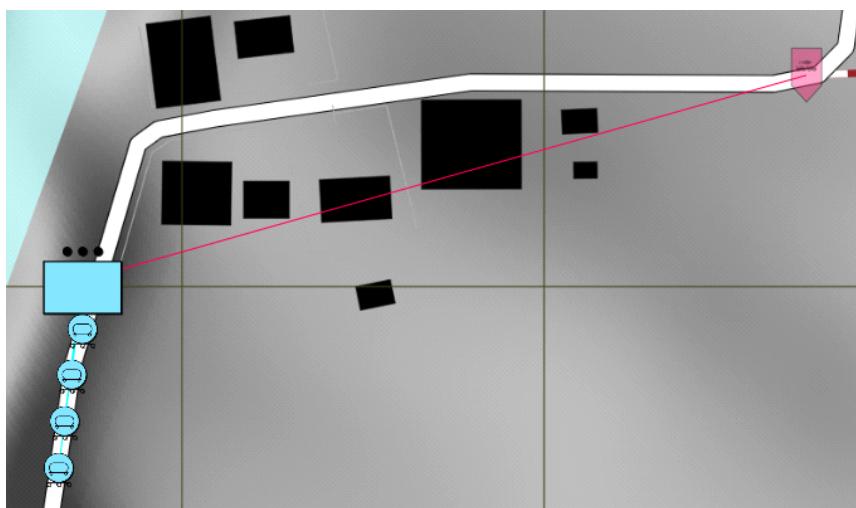


15. Hold **LShift**, click the lead vehicle, and click a location on the map, northeast up the road, where you want your convoy to drive.

The (F3) Waypoints Object Properties dialog opens.

16. In the Object Properties dialog, in the **Behavior** list, select **Convoy** (leave the other settings as they are) and click **OK**.

The Convoy Order appears on the map.

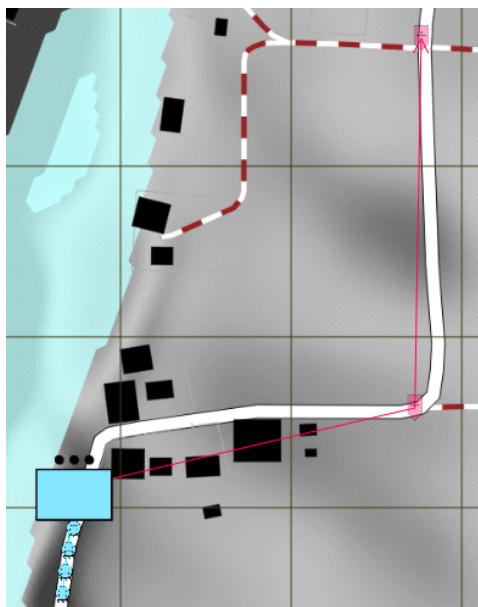


17. Hold **LShift**, click the Convoy Order, and click a location on the map, north up the road, where you want the second Convoy Order to be.

The (F3) Waypoints Object Properties dialog opens.

18. In the Object Properties dialog, in the **Behavior** list, select **Convoy** (leave the other settings as they are) and click **OK**.

The second Convoy Order appears on the map.



19. In the Tools Panel, select (**F1**) **Unit** and place a **VBS Objects > Invisible spectator (walking)** Player unit, anywhere on the map, where the Scenario takes place.
20. Expand the **Main Menu**, and under **Battlespaces**, select **Save**.

21. Click **Preview** to preview the Scenario.
22. Press **Pause (Esc)** and in the VBS4 Toolbar, select **Editor** and press **Map (M)**, to switch to the 3D View.

Observe the vehicle convoy driving to its first and second Convoy Order destination.

NOTE

The Convoys Scenario is also available as a sample Battlespace on VBS World Server or in:

`\VBS_Installation\optional\Demo_Scenarios\Battlespaces\`

Compare your scenario to the sample by deploying the sample Battlespace to VBS4.

Follow these steps:

- For Online use cases, do the steps in [Copy Battlespace \(below\)](#) on the VBS World Server computer, and then synchronize the Battlespace on the VBS4 Client connected to VBS World Server.
- For Offline use cases, copy the Battlespace from the `\optional\` folder.

Copy Battlespace

1. Open the following folder in Windows File Explorer:

`\VBS_Installation\optional\Demo_Scenarios\Battlespaces\`

2. Copy the `UseCase_Name` folders to your local Battlespaces Folder (see the Introduction to VBS4 Guide) at:

`\Documents\VBS4\Battlespaces\`

Use the Battlespaces List to Filter Battlespaces (see the Introduction to VBS4 Guide) using **UseCase** as the filter.

Select the sample Battlespace and select **Prepare > Editor > Open** to review the Scenario.

1.2 Convoy Preparation

As an administrator, use VBS Editor in Prepare mode to create a Convoy Scenario.

Follow these steps:

1. Use VBS Editor to create a new Scenario, or edit an existing one.

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

2. VBS4 has vehicles with specific convoy functionality, including the following:

Vehicle	Description
Control AI Vehicle	Any vehicle that has a Control AI driver. For Control AI convoys, see Convoy AI (on page 17) .

Add vehicles to the scenario.

For more information on placing vehicles, see [Adding Vehicles in the VBS4 Editor Manual](#).

3. Add additional objects and equipment.

VBS4 includes a specific set of Editor Objects and equipment for Convoy scenarios:

Additional Object / Equipment	Description
Road Signs	Road signs can be used to regulate convoy movement. For more information, see Military Road Signs - Scenario Design (on page 36) . <div style="border: 1px solid #0070C0; padding: 10px; margin-top: 10px;">iNOTE<p>Road signs are only used for guidance by players in the simulation, and do not affect AI convoys.</p></div>

4. **Full AI Convoy** - In the case of a fully AI-controlled convoy, do the following:

- Make sure that all crew members are in the convoy vehicles (see step 2 of the procedure, and the difference between **(F4) Vehicle** and **(F5) Empty Vehicle** in the Editor Objects List).
- Make sure that all the vehicle crew members are AI-controlled. For more information, see the AI options in [Edit Vehicle Options](#) in the VBS4 Editor Manual.
- Link the convoy vehicles into a group. For more information, see [Creating and Adding to Groups with Links](#) in the VBS4 Editor Manual.
- Add convoy Waypoints. For more information, see [Waypoints \(on page 41\)](#).

5. **AI and Player Convoy** - In the case of a convoy with a mix of AI and player-controlled units, do the following:

- a. Make sure that all crew members are in the convoy vehicles (see the previous procedure step, and the difference between **(F4) Vehicle** and **(F5) Empty Vehicle** in the Editor Objects List).
- b. Set the vehicle crews to **Player as Role / Playable as Role / Non-Playable**, where **Role** is any of the available roles in the vehicle (for example, Gunner, Driver, and so on) (see Adding Units in the VBS4 Editor Manual).
- c. Link the convoy vehicles into a group.



WARNING

It is not possible to mix Control AI and Player units in a group.

- d. Add a convoy Waypoint for Control AI crew vehicles. For more information, see [Waypoints \(on page 41\)](#).
6. **Full Player Convoy** - In the case of a convoy that consists only of player-controlled units, do the following:

- a. Place vehicles and crews.



NOTE

Vehicles and crews do not need to be linked to form groups, and crews can start the scenario outside the vehicles.

7. **Scripted Convoy** - You can use any SQF scripts to control the convoy.

For example, you can use the **Initialization Statements** of a unit to instantaneously place the unit in a vehicle as:

- Driver - [moveInDriver](https://sqf.bisimulations.com/display/SQF/moveInDriver) (<https://sqf.bisimulations.com/display/SQF/moveInDriver>)
- Gunner - [moveInGunner](https://sqf.bisimulations.com/display/SQF/moveInGunner) (<https://sqf.bisimulations.com/display/SQF/moveInGunner>)
- Commander - [moveInCommander](https://sqf.bisimulations.com/display/SQF/moveInCommander) (<https://sqf.bisimulations.com/display/SQF/moveInCommander>)
- Cargo - [moveInCargo](https://sqf.bisimulations.com/display/SQF/moveInCargo) (<https://sqf.bisimulations.com/display/SQF/moveInCargo>)

For more information, see Using Basic Scripts in the VBS4 Scripting Manual.

8. Preview and save the mission.

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

1.3 Convoy Execution

Once the Convoy Scenario is prepared by the administrator, it can be executed.

Start the Scenario and open VBS Editor.

For more information, see Scenario Execution in the VBS4 Instructor Manual.

Use the Editor UI to modify the scenario as it runs.

A typical convoy scenario has the following phases:

1. If the crew members are not in the vehicles, they enter them, occupying the required positions (driver / commander / gunner / cargo).
 - For AI units, Waypoints can be used to get to and enter vehicles.
For more information, see [Waypoints \(on page 41\)](#).
 - For role-playing, players use movement controls and 3D World Actions (see [Interact with Vehicles Interface \(IWF\) \(on page 47\)](#)) to enter vehicles.
2. The vehicles in the convoy drive.
 - Players can do the following:
 - As drivers, drive the vehicles. For more information, see [Land Vehicle Controls \(on page 57\)](#).
 - As group leaders / vehicle commanders, order AI drivers where to go:
As a group leader, click the map to order a vehicle to move to a position.
As a subordinate vehicle commander, use the Command Menu to order the vehicle driver to return to formation.
For more information, see Commanding Subordinates in the VBS4 Trainee Manual.
 - Switch vehicle positions and assume different roles to control the vehicle. For more information, see [Interact with Vehicles Interface \(IWF\) \(on page 47\)](#).
 - Use radio communication. For more information, see VBS Radio Overview in the VBS Radio Manual.
 - Use road signs to regulate convoy movement. For more information, see [Military Road Signs \(on page 49\)](#).
 - The AI can:
 - Follow Waypoints. See [Waypoints \(on page 41\)](#).
 - Use traffic lights and take civilian traffic and pedestrians into account.
For more information, see Civilian AI in the VBS4 Editor Manual.

2. Convoy AI

You can create a convoy in VBS4 using the (F3) Waypoints Editor Object (see the VBS Control AI Behavior Pack Manual) that simulates the movement of a vehicle convoy. For more information on convoy properties, see [Convoy Order \(on page 29\)](#).

The convoy can be assigned waypoints (see [Waypoints \(on page 41\)](#)) and use branching (see [Branching Waypoints \(on page 44\)](#)).

The convoy Control AI behavior has the following use cases:

- [Fully Autonomous Convoy \(on the next page\)](#) - A convoy that is fully autonomous, with vehicle crews that consist only of Control AI entities.
- [Pause / Resume Convoy \(on page 20\)](#) - A convoy that can pause / resume movement, using the [Convoy SQF Functions \(on page 27\)](#).
- [Player Units in Convoy \(on page 25\)](#) - Transporting player units in a convoy.

3. Fully Autonomous Convoy

You can create a fully autonomous convoy, with vehicle crews that are Control AI entities.

Follow these steps:

1. In the Editor (Prepare Mode), place several vehicles on the map using the **(F4) Vehicle** Editor Object in the Editor Objects List.

These vehicles are used for the convoy.

2. Rotate and position the vehicles so that they face the direction of the convoy movement.

The vehicles set the convoy order autonomously, based on how they are positioned on the road. The vehicle closest to the convoy destination is chosen as the lead.

3. To form the vehicles into a convoy, link the vehicles together, so that they are all in the same group.

NOTE

It does not matter which vehicle is set as the group leader. Also, you can link new vehicles to the convoy group (by linking to the convoy leader) in the Editor (Execute Mode), while the convoy is already driving - the new vehicles follow as part of the convoy.

4. To assign a destination, create a convoy waypoint (see [Waypoints \(on page 41\)](#)) by right-clicking the convoy group marker, selecting **Orders > Assign New Waypoint**, and clicking a position on the map, where the convoy waypoint needs to be created.

WARNING

If you need to create several convoy waypoints connected to one another, position them in such a way that would not require the convoy to turn around. For more information, see the **Convoy** section in Known Issues in the VBS Control AI Manual.

5. Set the convoy properties (see [Convoy Order \(on page 29\)](#)) and click **OK**.

6. Preview the mission.

The convoy starts moving.

Road usage controls whether the convoy drives in the middle of the road (the **Use only roads** option), whether it respects lanes (the **Use only roads, respect lanes** option), whether it drives off the road (the **Ignore roads** option), or whether it prefers driving on roads while also being able to drive off-road (the **Prefer roads** option). The **Use only roads, respect lanes** option should be used in case there are other vehicles on the road, such as civilian traffic (see Define Traffic Flows in the VBS Control AI Manual).

A convoy is able to move through most bushes and fences. All objects which cannot be moved through are excluded from the vehicle navigation mesh.

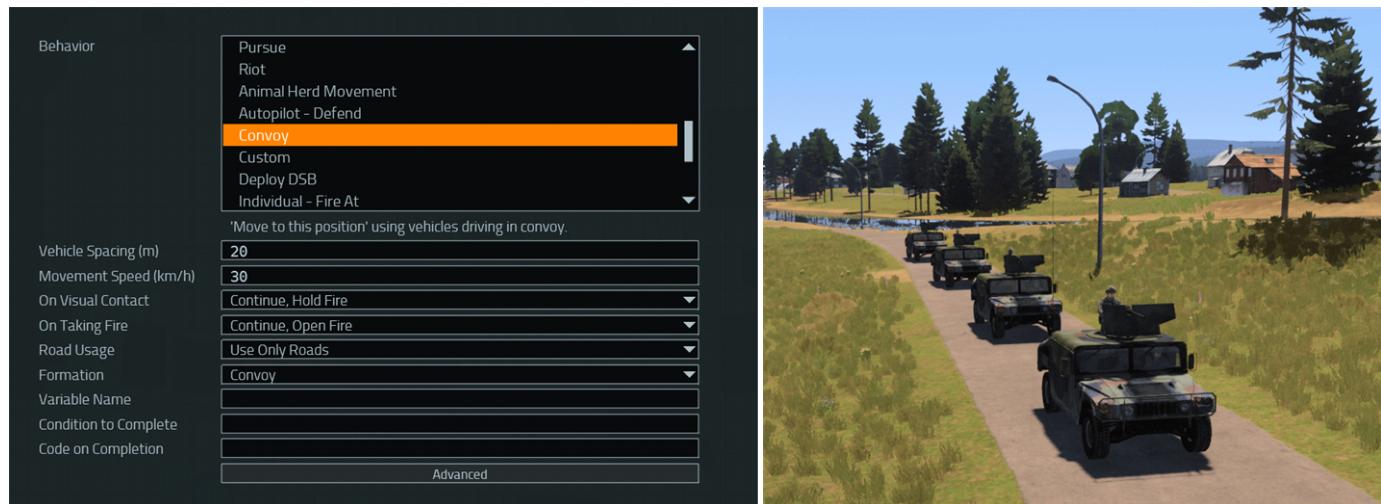
Convoy navigation with the **Ignore roads** option set may be limited in some areas:

Limitation	Solution
Urban area	Setting the convoy to drive on roads through the city or village may avoid issues with navigation through these areas.
High object density area (for example, with small rocks, forests)	Adding intermediate waypoints or removing objects from the high density area improves the navigation.

TIP

For multi-lane traffic, if **Use Only Roads, Respect Lanes** is used, you can either use the **AI Debug** option in VBS Geo (see VBS Geo User Interface in the VBS Geo Manual), or the **Show Roads and Generate Roads** options in the AI Debug Panel (see Control AI Visualization in the VBS Control AI Manual), to see how your road network is set up. Also, to configure road lanes, see **Lanes** in Placing and Editing Roads in the VBS Geo Manual.

Image-1: Convoy dialog and example



4. Pause / Resume Convoy

You can control the convoy behavior during its execution by pausing / resuming its movement. Convoy movement can be paused / resumed using the SQF functions [fn_vbsCon_pauseConvoy \(on page 27\)](#) / [fn_vbsCon_resumeConvoy \(on page 28\)](#) in the following ways (each way is based on the [Fully Autonomous Convoy \(on page 18\)](#) setup), for example:

- [Using a Radio Trigger \(below\)](#)
- [Using an Area Trigger \(on page 22\)](#)
- [Using the Player Quick Menu \(on page 24\)](#)

Using a Radio Trigger

You can create a basic user interface to control the convoy movement using two radio triggers - one to pause the convoy movement, and another to resume it.

Follow these steps:

1. Set up the convoy as described in the [Fully Autonomous Convoy \(on page 18\)](#) section.
2. Set the name of the lead convoy vehicle to `leadVehicle`.



TIP

Alternatively, you can use any other vehicle in the convoy. Since `leadVehicle` can get destroyed during the mission, it is best to save the convoy group of `leadVehicle` in a variable.

```
convoyGroup = group leadVehicle
```

3. Set the **Initialization Statements** of `leadVehicle` to:

```
convoyGroup = group leadVehicle
```

4. To populate the radio menu with a radio call to pause the convoy, create a trigger:

- **Text:** Pause convoy
- **Activation:** Radio Alpha
- **Repeatedly:** true
- **On Activation:**

```
convoyGroup call fn_vbsCon_pauseConvoy
```

5. To populate the radio menu with a radio call to resume the convoy, create a trigger:

- **Text:** Resume convoy
- **Activation:** Radio Bravo
- **Repeatedly:** true
- **On Activation:**

```
convoyGroup call fn_vbsCon_resumeConvoy
```

6. Preview the mission. To view the two radio calls:

- If you are an administrator, switch to the Editor (Execute Mode), then pause / resume the convoy by clicking the radio in the Editor (Execute Mode).
- Any group leader in the scenario can access the same convoy commands by pressing **0-0** to access the radio menu.

The two radio calls pause / resume the convoy movement.

Image-2: The radio trigger dialog

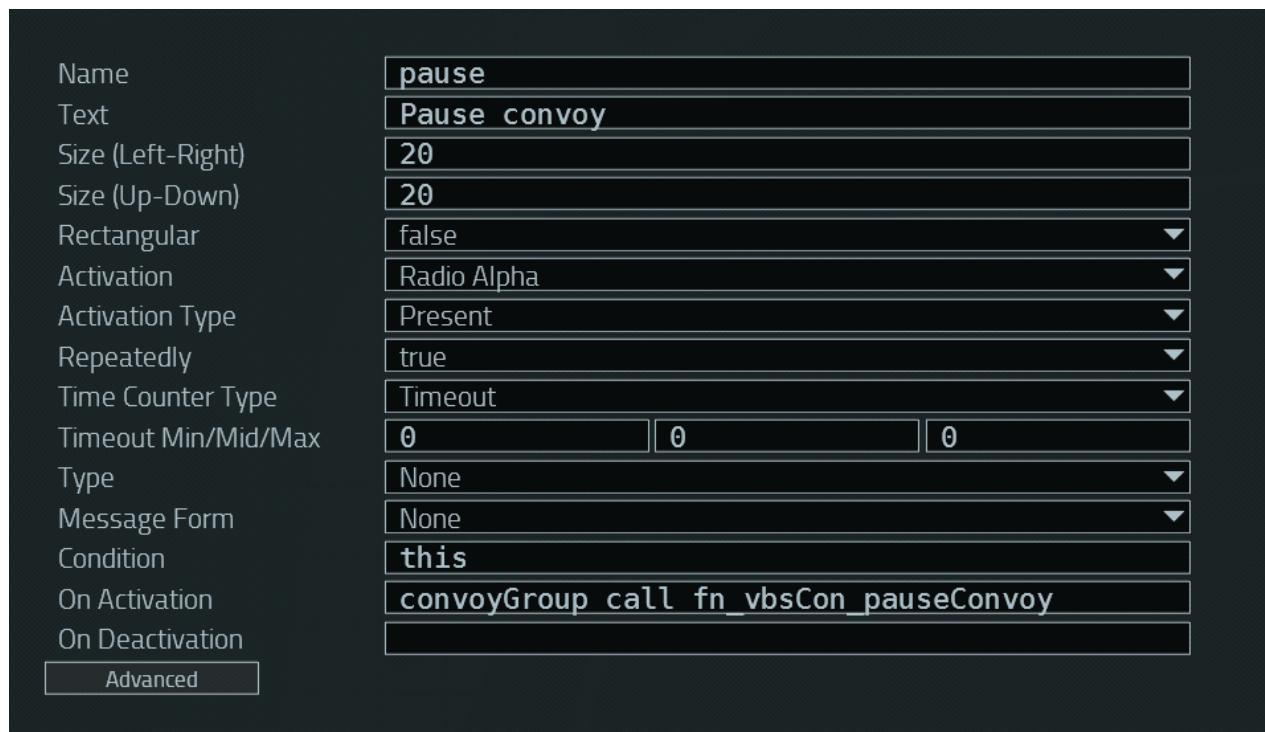


Image-3: The radio menu with the two radio calls



Using an Area Trigger

Alternatively to radio triggers, you can pre-script the convoy to pause / resume movement by using area triggers.

Follow these steps:

1. Set up the convoy as described in the [Fully Autonomous Convoy \(on page 18\)](#) section.
2. Set the name of the lead convoy vehicle to `leadVehicle`.



TIP

Alternatively, you can use any other vehicle in the convoy. Since `leadVehicle` can get destroyed during the mission, it is best to save the convoy group of `leadVehicle` in a variable.

```
convoyGroup = group leadVehicle
```

3. Set the **Initialization Statements** of `leadVehicle` to:

```
convoyGroup = group leadVehicle
```

4. Create a stopping zone for `leadVehicle` to enter, using an area trigger.

Set the area trigger to:

Size: Can be relatively small to avoid triggering the area by some other unit.

Activation: BLUFOR

Activation Type: Present

On Activation:

```
convoyGroup call fn_vbsCon_pauseConvoy
```

5. Preview the mission.

The convoy stops moving whenever any BLUFOR vehicle or unit enters the zone designated by the area trigger.



TIP

To modify the trigger so that it only causes the convoy to stop when `leadVehicle` enters the trigger, change the trigger **Condition** to:

```
this and (leadVehicle in thislist)
```

To resume convoy movement, run [fn_vbsCon_resumeConvoy \(on page 28\)](#).

Image-4: The area trigger dialog

Name	convoyIn		
Text	Pause convoy once arrived		
Size (Left-Right)	20		
Size (Up-Down)	20		
Rectangular	false ▾		
Activation	BLUFOR ▾		
Activation Type	Present ▾		
Repeatedly	false ▾		
Time Counter Type	Timeout ▾		
Timeout Min/Mid/Max	0		0
Type	None ▾		
Message Form	None ▾		
Condition	this		
On Activation	convoyGroup call fn_vbsCon_pauseConvoy		
On Deactivation			
Advanced			

Using the Player Quick Menu

You can create user actions in the Quick Menu to pause / resume the convoy movement.

Follow these steps:

1. Set up a convoy as described in the [Fully Autonomous Convoy \(on page 18\)](#) section.
2. Set the name of the lead convoy vehicle to `leadVehicle`.



TIP

Alternatively, you can use any other vehicle in the convoy.

3. Create an `init.sqf` file in the mission, with the following code to add to user actions (pause and resume) to the player:

```
_i1 = player addAction ["Pause convoy", "pause.sqf", leadVehicle];  
_i2 = player addAction ["Resume convoy", "resume.sqf", leadVehicle];
```

For more information, see [addAction](#) (<https://sqf.bisimulations.com/display/SQF/addAction>).

4. Create a `pause.sqf` file in the mission, with the following code:

```
_leadVehicle = _this select 3;  
_leadVehicle call fn_vbsCon_pauseConvoy
```

5. Create a `resume.sqf` file in the mission, with the following code:

```
_leadVehicle = _this select 3;  
_leadVehicle call fn_vbsCon_resumeConvoy
```

6. Preview the mission and use `Pause convoy` and `Resume convoy` user actions to pause / resume the convoy movement.

The convoy pauses / resumes its movement when the user action resumes.

5. Player Units in Convoy

You can transport player units in a Control AI convoy. The player can have different roles in a convoy vehicle:

- [Player Start as Driver \(below\)](#)
- [Player Entry as Cargo \(below\)](#)
- [Player Entry as Gunner or Commander \(on the next page\)](#)

NOTE

Switching positions in Control AI convoy vehicles at runtime is not fully supported.

Player Start as Driver

Players can start the mission as drivers in Control AI convoys.

Follow these steps:

1. In the Editor (Prepare Mode), place several vehicles on the map using the **(F4) Vehicle** Editor Object in the Editor Objects List, and make sure to select **Player** or **Playable** (if you want to allow Administrator / Instructor players to switch to Control AI drivers at mission runtime) in the Object Properties dialog for each vehicle.
2. Follow the process from Step 2 onwards in the [Fully Autonomous Convoy \(on page 18\)](#) section.

Players start the mission as convoy drivers.

Player Entry as Cargo

Players can enter Control AI convoy vehicles as cargo at mission runtime.

Follow these steps:

1. Set up a convoy as described in the [Fully Autonomous Convoy \(on page 18\)](#) section.
2. Set the name of the lead convoy vehicle to `leadVehicle`.

NOTE

Alternatively, you can use any other vehicle in the convoy. Make sure there are unoccupied seats in some of the convoy vehicles.

3. The goal is to keep the convoy paused at the beginning - so players have time to enter some of the vehicles. To achieve this, do one of the following:
 - Unlink the convoy waypoint from the group until the players are in the cargo.

- Use one of the three [Pause / Resume Convoy \(on page 20\)](#) techniques.
4. Players can now get in the convoy vehicles using the I WV menu.

The players are in the convoy as cargo.

Player Entry as Gunner or Commander

Players can enter Control AI convoy vehicles as gunners or commanders at mission runtime.

To set up a scenario where players are gunners or commanders in vehicles, use the same setup as with players as cargo.

Follow these steps:

1. Create a convoy that can be paused and pause it.
2. Players in the mission can enter the vehicles using the I WV interface (see [Interact with Vehicles Interface \(I WV\) in the VBS4 Trainee Manual](#)) and occupy any position in the vehicle (except the driver position), including gunner and commander positions.

NOTE

If a position is already occupied by an AI unit, the unit is removed from the vehicle, according to the vehicle entry rules in VBS4. Control AI drivers can be created next to empty vehicles and moved into the these vehicles on mission start, using SQF commands. This prevents some positions from being already occupied.

3. Resume the convoy once all the players are inside the vehicles.

The players are in the convoy as gunners / commanders.

Image-5: The I WV interface in one of the convoy vehicles



6. Convoy SQF Functions

The SQF functions that pause / resume convoy movement are:

- [fn_vbsCon_pauseConvoy \(below\)](#)
- [fn_vbsCon_resumeConvoy \(on the next page\)](#)

6.1 fn_vbsCon_pauseConvoy

Pauses convoy movement.

The pause is executed as follows:

1. Convoy lead vehicle stops.
2. Other convoy vehicles continue driving until they reach the correct spacing distance from the vehicle before them.

NOTE

Gunner behavior remains unchanged. If the convoy reacts to lost vehicles, the reaction is completed before the convoy stops.

Syntax:

```
vehicle call fn_vbsCon_pauseConvoy
```

Alternative Syntax:

```
convoyGroup call fn_vbsCon_pauseConvoy
```

Parameters:

- vehicle: Object - Lead convoy vehicle.
- convoyGroup: Group - Convoy vehicle group.

Return Values:

Nothing

EXAMPLE

```
// Pauses convoy maneuver assigned to the group of vehicle leadVehicle1  
(group leadVehicle1) call fn_vbsCon_pauseConvoy  
  
// The same as the previous example, but the group is selected automatically  
leadVehicle1 call fn_vbsCon_pauseConvoy
```

6.2 fn_vbsCon_resumeConvoy

Resumes convoy movement after a pause.

The movement has to be paused using [fn_vbsCon_pauseConvoy](#) (on the previous page), otherwise, the function does nothing.

Syntax:

```
vehicle call fn_vbsCon_resumeConvoy
```

Alternative Syntax:

```
convoyGroup call fn_vbsCon_resumeConvoy
```

Parameters:

- vehicle: Object - Lead convoy vehicle.
- convoyGroup: Group - Convoy vehicle group.

Return Values: Nothing



EXAMPLE

```
// Resumes convoy maneuver assigned to the
(group leadVehicle1) call fn_vbsCon_resumeConvoy

// The same as the previous example, but the group
leadVehicle1 call fn_vbsCon_resumeConvoy
```

7. Convoy Order

Assigns a convoy movement behavior to a group of vehicles. The convoy destination is the location of the (F3) Waypoints Editor Object (see the VBS Control AI Manual).

For convoy uses cases, see [Convoy AI \(on page 17\)](#).

Image-6: Convoy Order settings



Follow these steps:

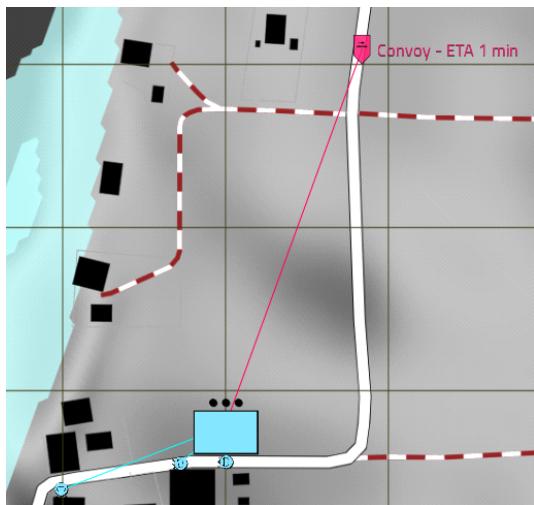
1. Select the **(F3) Waypoints** Editor Object from the Editor Objects List, and place it on the map.
2. In the **Behavior** list, select **Convoy**.
3. Set the [Convoy Settings \(on the next page\)](#).
4. Set the [Waypoint Completion Settings \(on page 32\)](#).
5. Click **OK** to confirm.
6. Once the Convoy Order is configured, you need to link it (see [Waypoints \(on page 41\)](#) for more information) to the lead convoy vehicle.

The Convoy Order behavior is set up.

While the convoy is moving, an ETA is displayed next to the Editor Object on the map for the current order. If the convoy stops (for instance during an engagement), the information about the stop is indicated instead of the ETA:

NOTE

Waypoint name types and any waypoint status information is only displayed, if the waypoint is selected.



Convoy Settings

Setting	Description
Vehicle Spacing (m)	Desired spacing (in meters) between the vehicles in the convoy.
Movement Speed (km/h)	Suggested travel speed (in km/h) of the convoy (limited by the vehicle with the smallest maximal speed and / or the smallest acceleration).
On Visual Contact	Controls the reaction when spotting the enemy. <ul style="list-style-type: none"> Continue, Hold Fire (default) - Convoy continues moving towards the destination and gunners do not fire at the enemy. Continue, Open Fire - Convoy continues moving towards the destination and gunners open fire at enemy entities.
On Taking Fire	Controls the reaction to incoming enemy fire (defined by shots impacting or passing near the convoy at a short distance) - has a higher priority than On Visual Contact . <ul style="list-style-type: none"> Continue, Hold Fire - Convoy continues moving towards the destination and gunners do not fire at enemy entities. Continue, Open Fire (default) - Convoy continues moving towards the destination and gunners open fire at enemy entities. Halt Until Clear, Open Fire - Convoy stops while the gunners open fire at the enemy. The convoy automatically resumes its movement as the engagement is concluded.

Setting	Description
Road Usage	<p>Controls whether the convoy should use roads for moving.</p> <ul style="list-style-type: none">• Use Only Roads - Drives in the middle of the road, without respecting road lanes or directions.• Use Only Roads, Respect Lanes - Drives on the road, respecting road lanes and directions.• Ignore Roads - Ignores roads and moves directly to the waypoint.• Prefer Roads - Prefers to move on the road, but can move off-road to bypass obstacles, take shortcuts, or when otherwise required.
	NOTE
	<p>It is necessary to select Use Only Roads, Respect Lanes, if you want to use military convoys together with civilian vehicles (see Define Traffic Flows in the VBS Control AI Manual). Only convoys respecting lanes can encounter civilian vehicles on the same road, without the risk of collision.</p>
	<p>Off-road convoys cannot drive through areas with a high density of obstacles.</p>
	TIP
	<p>For multi-lane traffic, if Use Only Roads, Respect Lanes is used, you can either use the AI Debug option in VBS Geo (see VBS Geo User Interface in the VBS Geo Manual), or the Show Roads and Generate Roads options in the AI Debug Panel (see Control AI Visualization in the VBS Control AI Manual), to see how your road network is set up. Also, to configure road lanes, see Lanes in Placing and Editing Roads in the VBS Geo Manual.</p>
Formation	<p>Used to define the convoy formation.</p> <p>The available formations are:</p> <ul style="list-style-type: none">• Convoy (parallel to the direction of the convoy movement)• Staggered Column• Line (perpendicular to the direction of the convoy movement)• Wedge• Vee
Variable Name	In Variable Name , enter the Order waypoint name, which can be used in SQF scripts.

Setting	Description
Advanced	<p>The advanced settings are:</p> <ul style="list-style-type: none">• Burst - Sets the number of rounds fired in each burst by the convoy gunners during an engagement.• Dispersion (degrees) - Sets the dispersion of convoy weapons, allowing you to decrease / increase convoy weapon accuracy.• Visibility Range (m) - Can override the default line-of-sight settings for each soldier, allowing you to increase / decrease visual contact reaction distance. <p>Click OK to confirm.</p>

Waypoint Completion Settings

Set the Order waypoint completion settings:

Option	Description
Condition to Complete	Condition that needs to be fulfilled to complete the waypoint for the selected Order behavior.
Code on Completion	SQF code to execute on waypoint completion.

Aspects of Convoy Behavior

Behavior Aspect	Description
Convoy Ordering	The convoy vehicles are ordered automatically based on distance to destination. The vehicle closest to the destination is selected to drive on point, with the other vehicles being organized in a logical order.

Behavior Aspect	Description
Driving Towards Goal	<p>The convoy uses the following driving behavior:</p> <ul style="list-style-type: none">• The lead vehicle uses the shortest path to the destination, while other vehicles follow, maintaining a distance based on Vehicle Spacing (m).• If the destination is not on the road and the convoy uses roads, the convoy drives to a point on the road that is closest to the actual destination. If the convoy ignores roads, it drives directly to the destination.• If the destination is not on the road, the convoy drives to a point on the road that is closest to the actual destination.• The convoy tries to reach the destination at all costs. This involves autonomous problem solving along the way (automatically dealing with disabled or destroyed vehicles). The behavior can be affected by setting reactions to contact.• Spacing corrections - If the distance between vehicles is higher than the spacing, the vehicles in front may slow down or even stop to let the rest of the convoy catch up.• Reaction to contact (based on the On Visual Contact and On Taking Fire settings).
ETA	<p>The ETA functionality is based on the following:</p> <ul style="list-style-type: none">• Measured in minutes, next to the Editor Object in C2 / Editor (Execute Mode).• ETA is paused if the convoy is paused using fn_vbsCon_pauseConvoy (on page 27).• Disregards convoy stops for other reasons (for example, road blockage, vehicle losses).• The ETA indicates an approximate time that may not be accurate if the convoy has problems driving through the terrain (due to slope or surface conditions).
	NOTE
Waypoint name types and any waypoint status information is only displayed, if the waypoint is selected.	
Movement Interruption	<p>Convoy movement can be interrupted under the following conditions:</p> <ul style="list-style-type: none">• A convoy vehicle becomes disabled. The vehicle crew attempts to mount the nearest vehicle that is not disabled and has free seats, and the disabled vehicle is removed from the simulation after 15 seconds. A vehicle is considered disabled when:<ul style="list-style-type: none">◦ It is damaged to the point of being unable to drive further.◦ It has no Control AI driver, who is alive.◦ It has no fuel.◦ It is overturned.• Any soldier who is a member of the convoy group is dismounted.• There is an obstacle on the road or there is a risk of collision with a moving object.

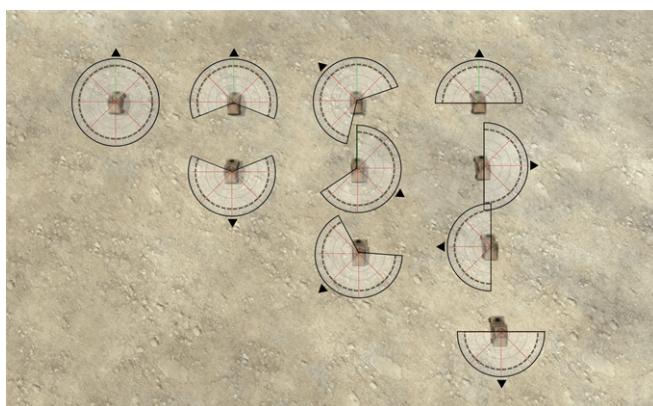
Behavior Aspect	Description
Dismounted Soldier	Any Control AI soldier in the convoy, who ends up dismounted for any reason (vehicle disabled, player occupying the position of the soldier, and so on), boards any other vehicle in the convoy automatically. If no vehicle has free seats, the Control AI soldier is deleted to allow the convoy to keep moving.

Gunner Behavior

Gunner behavior applies to convoys that use the [Convoy Formation \(on page 31\)](#). In all other formations, gunners perform a 360-degree scan.

Gunner fire angles are defined according to the following convoy illustration:

Image-7: Fire angles for convoys consisting of 1, 2, 3, and 4 vehicles



Despite the preferred fire coverage shown in the preceding image, gunners are able to react to threats which get very close to the convoy and are in dead zones not covered by the illustrated firing angles. In such cases, fire coverage can be expanded up to 45 degrees in each direction for a short time, so that very close targets can be intercepted.

When the convoy is engaged and gunners have permission to fire (defined by the **On Visual Contact** and **On Taking Fire** settings), the gunners engage any targets in their arc of fire with bursts of fire from their turret weapon, up to their **Visibility Range (m)**. The length of the burst is determined by the **Burst** setting. When not engaging, the gunners scan their assigned arc of fire.

Gunners that control a turret with a large-caliber cannon (such as tank turrets or self-propelled artillery), or a turret only equipped with rocket or missile launchers (such as anti-air vehicles or anti-tank missile carriers) do not scan their arc of fire, but still turn the turret to engage targets.

NOTE

For more than 4 vehicles, vehicles (other than first or last) alternate in the right / left firing angle, the same way as for 4 vehicles.

7.1 Troubleshooting

Vehicles connected to a Control AI - Convoy waypoint do not move.

Check the following:

- All vehicles are in the same group.
- All vehicles have Control AI drivers (have **Control AI** specified in their object properties).
- Convoy is not intentionally stopped.
- Any of the convoy cars is not blocked by some object on the road.
- Link orientation from the (F3) Waypoints Editor Object (see the VBS Control AI Manual) to the convoy group is correct.

7.2 Limitations

Vehicles do not stop before obstacles that have their object center positioned outside of the road (for example, houses close to the road are ignored). Some rectangle objects (such as **Chernarus - Fortification > Barrier**, **HESCO**, **5 Elements**, or **Scenery - Military > Concertina wire**) have their center at the object edge, so if they are placed across the road with the center outside, vehicles can crash into them.

8. Military Road Signs - Scenario Design

VBS4 includes temporary military road signs used to guide vehicle convoys. Road sign equipment can be added to a scenario for assembly by player units in-game. Alternatively, pre-assembled road signs can be placed in a scenario by an Administrator / Instructor.

WARNING

Using large numbers of road signs in a scenario may significantly impact graphical performance.

This topic discusses the following:

- [Road Sign Equipment \(below\)](#)
- [Road Sign Equipment in Vehicles \(on the next page\)](#)
- [Pre-Assembled Road Signs \(on page 38\)](#)
- [Customize Road Sign Crates \(on page 40\)](#)

How military road sign equipment is used by Trainees is discussed in Military Road Signs in the VBS4 Trainee Manual.

8.1 Road Sign Equipment

The following road sign equipment is available:

- [Road Signs and Signposts \(below\)](#)
- [Road Sign Crates \(on the next page\)](#)

Road sign equipment can also be placed in vehicles, see [Road Sign Equipment in Vehicles \(on the next page\)](#).

8.1.1 Road Signs and Signposts

Road signs and signposts are usually added to the Equipment Inventory of a unit like any other equipment (see Edit Equipment Loadout in the VBS4 Editor Manual), and are found in the **Ammo** tab of the **Available** window. Click in the window and type **Sign** to search for them.

TIP

Units can carry as many signposts and road signs as their total weight allowance permits.

8.1.2 Road Sign Crates

VBS4 provides crates that contain road signs and signposts that are accessed by player units in-game. They are too heavy for units to carry, so they are usually placed on the ground or in vehicles. For placement in vehicles, see [Road Sign Equipment in Vehicles \(below\)](#). For placement on the ground, you can find them in the Editor Objects List under **(F8) Objects > VBS Ammo**. The following crate types are available:

Crate Type	Description
Crate, Basic Signs	Contains 150 arrow signs, and 100 signposts.
Crate, Basic Signs, Small	Contains 30 arrow signs, and 30 signposts.
Crate, Signs	Contains a selection of standard and customizable road signs, and 50 signposts.

If necessary, you can customize your own crates, see [Customize Road Sign Crates \(on page 40\)](#).

8.2 Road Sign Equipment in Vehicles

Road signs, signposts, and crates are added to vehicles by creating a customized version of the vehicle you want to use. For the procedure that explains how to do this, see [Customize Vehicle Cargo](#) in the VBS4 Editor Manual.

WARNING

Loadouts configured for new vehicles in Execute Mode (RTE) are not retained. Configure new vehicle loadouts during in Prepare Mode (OME).

Search for road sign equipment in the **Available** window of the Vehicle Template dialog:

- **Objects** - Pre-configured road sign crates:
 - **Crate, Signs**
 - **Crate, Basic Signs**
 - **Crate, Basic Signs, Small**
- **Ammo** - Individual road signs and signposts:
 - **Sign - Sign Name**
 - **Signpost**

WARNING

Player units must first transfer signposts and road signs to their own inventories before they can assemble them.

8.3 Pre-Assembled Road Signs

Road sign assembly is normally done by player units in a scenario (see Using Military Road Signs in the VBS4 Trainee Manual), with road signs assembled using the road signs and signposts they have in their inventory.

However, if required, Administrators / Instructors can place pre-assembled road signs on the map in Prepare Mode.

Follow these steps:

1. In the Editor Objects List, click **Road Signs**.



Adding / deleting this Editor Object in the VBS Editor during a multiplayer scenario may not be reflected on other clients.

2. Double-click the **map** where you want to place the road sign.

The Road Sign icon is placed on the map and a signpost is placed in the ground at the same time.



3. Double-click the **Road Sign** icon to open the Road Signs Editor dialog.



4. Select the **slot** you want to add a road sign to using the tabs (**Top / Middle / Bottom**). The following Sign Configuration options are available.

Slot	Sign Type	Facing (Front / Back)	Orientation (%)	Text
Top Middle Bottom	Arrow	One-sided, front facing only.	Use the slider to adjust.	Add up to 4 alphanumeric characters.
Top Middle	Direction	Double-sided	Use the slider to adjust.	Add 1 alphanumeric character.
Top	Sign - Square Shape	One-sided, front facing only.	Cannot be adjusted.	Add up to 15 alphanumeric characters (using the Text sticker). This road sign is customizable, see Stickers on Customizable Road Signs in the VBS4 Trainee Manual.
Top	Sign - Rectangular Shape	One-sided, front facing only.	Cannot be adjusted.	Add up to 15 alphanumeric characters (using the Text sticker). This road sign is customizable, see Stickers on Customizable Road Signs in the VBS4 Trainee Manual.
Middle	Standard Road Signs (below)	One-sided and double-sided road signs available.	Some can be adjusted, some cannot.	Add up to 1 alphanumeric character to the Direction road sign. Add up to 4 alphanumeric characters to the Deviation Direction, Arrow, and Deviation road signs.
Bottom	Label - Blank sign you can add text to.	One-sided, front facing only.	Cannot be adjusted.	Add up to 10 alphanumeric characters.

5. Once you have configured the slots and road signs, click **OK**.

When the scenario starts, your pre-assembled road sign appears in the scenario where you placed the Road Sign icon.

Standard Road Signs

Include the following: Direction, No Way, Deviation Direction, Narrow Passage, Crossing, Danger, Curve, Bifurcation T / Y, Stop, Arrow, Deviation, Deviation End.

8.4 Customize Road Sign Crates

VBS4 enables you to create customized road sign crates. You can add your own choice of signposts and signs to a crate, and save them for use in other scenarios. Customized road sign crates can be created in Prepare Mode or Execute Mode.

Follow these steps:

1. In the Editor Objects List, select (**F8**) **Objects**.
2. Right-click a position on the map, and select **New Object** in the context menu.
3. In the Object Properties dialog, select **VBS Ammo > Crate, Signs**, and click **New Object**.

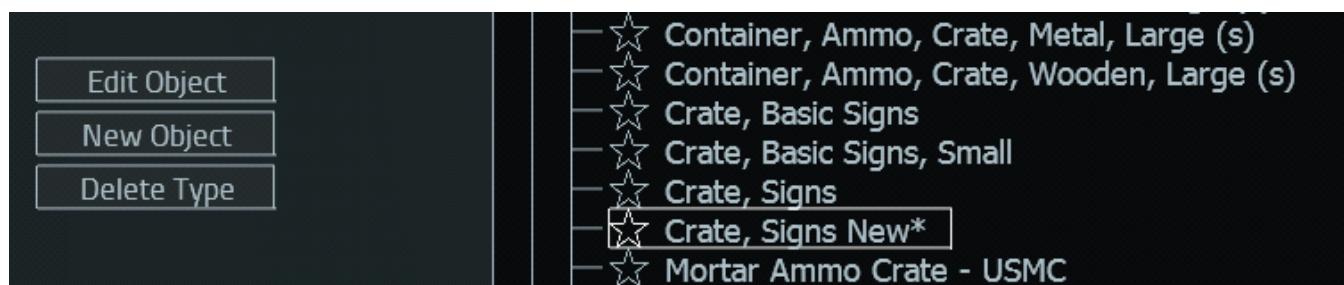
The Vehicle Template dialog opens (see Customize Vehicle Weapon Loadouts in the VBS4 Editor Manual).

4. In the **Available** window of the dialog, click the **Ammo** tab, click in the window and type **Sign** to search for the available road signs and signposts.
5. Left-click and drag road signs and signposts from the **Available** window to the **Inventory** window, to add them to the crate. Type an amount in the **How Many?** dialog, and click **OK**.
6. When you have placed all the road signs and signposts you want into the crate, click **OK**.

The Save Object dialog opens.

7. In the Save Object dialog, enter a name for your new crate in the **Object Name** field, and click **OK**.

The Save Object dialog closes returning you to the Object Properties dialog, where you can see your new crate in the list, marked by an asterisk (*).



8. In the Object Properties dialog, click **OK**.

Your new crate is placed on the map, and is added to VBS4 as a custom Editor Object for use on the same computer. To transfer the customized crate to another computer, see Export Custom Object Variants in the VBS4 Editor Manual.

9. Waypoints

Link an AI entity / group to a (F3) Waypoints Editor Object (see the VBS Control Manual) to use it as a waypoint. You can link several waypoints to create a complex path.

WARNING

The (F3) Waypoints Editor Object behaviors are not fully optimized for VBS4, and can cause reduced performance, when used in large quantities in the Scenario.

Waypoints are divided into the following waypoint-behavior categories:

- AI on Rails
- Military AI
- Convoy AI
- Bridge Laying
- Convoy AI
- Aircraft AI
- Civilian Riot AI
- Animal AI

For more information, see (F3) Waypoints Editor Object in the VBS Control AI Manual.

For SQF waypoint functions and their parameters, see Waypoint Functions and Parameters in the VBS Control AI Manual.

WARNING

These SQF functions and their parameters are experimental and subject to change in future releases of VBS4.

Create an AI entity / group by adding units or vehicles using (F1) Unit / (F4) Vehicle / (F2) Group in the Editor Objects List (to link the units / vehicles to create a group, see Creating and Adding to Groups with Links in the VBS4 Editor Manual).

To create a waypoint for an entity / group in the Editor (Prepare / Execute Mode), choose one of the following approaches:

- Using only an entity / group object:
 1. Right-click the entity / group and select **Orders > Assign New Waypoint**, then click a position on the map to create a waypoint.
 2. In the **Behavior** list, select the AI Order (waypoint behavior), set the Order properties, and click **OK**.

- Using two Editor Objects - an entity / group object and a (F3) Waypoints Editor Object:
 1. Make sure that **(F3) Waypoints** is selected in the Editor Objects List (you can press **F3** to select it) and place it on the map to indicate the position of the waypoint.
 2. In the **Behavior** list, select the AI Order (waypoint behavior), set the Order properties, and click **OK** to create the waypoint.
 3. Right-click the entity / group and select **Orders > Assign Existing Waypoint**, then click the waypoint.

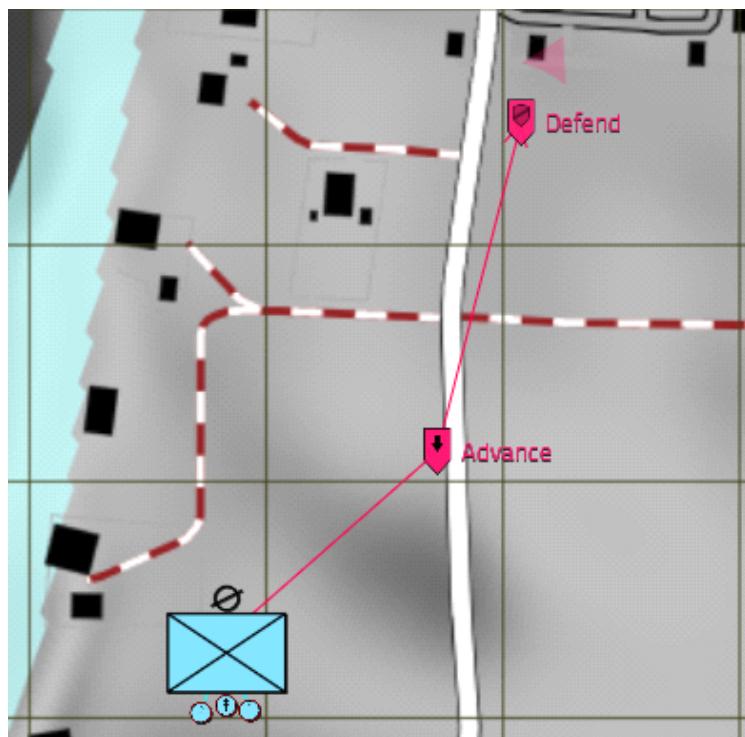
The entity / group has a waypoint.

To create a path / chain that consists of waypoints, choose one of the following approaches:

- Using one waypoint:
 1. Create a waypoint based on the previous procedure.
 2. Right-click the waypoint and select **Assign Next Waypoint**, then click a position on the map for the next waypoint.
- Using two or more waypoints:
 1. Create two or more waypoints based on the previous procedure.
 2. Press **Shift + LMB** on the first waypoint, and click the second waypoint to create a link that defines the order in which the waypoints are completed. Proceed in the same fashion with the remaining waypoints.
 3. (Optional) You can also create a loop / cycle of waypoints: right-click the last waypoint, select **Create Cycle**, then click the first waypoint.

The two or more waypoints are linked to create a more complex path.

Image-8: An example path of two waypoints



For information on how to link existing (F3) Waypoints Editor Objects and other Editor Objects, see [Linking Existing Waypoints to Other Editor Objects \(below\)](#).

9.1 Linking Existing Waypoints to Other Editor Objects

You can link existing (F3) Waypoints Editor Objects to the following Editor Objects (EOs) in the Editor Objects List:

- **(F1) Unit** - Assigns a waypoint to a unit (see Adding Units in the VBS4 Editor Manual).
- **(F2) Group** - Assigns a waypoint to a group (see Adding Groups in the VBS4 Editor Manual).
- **(F4) Vehicle** - Assigns a waypoint to a vehicle (see Adding Vehicles in the VBS4 Editor Manual).
- **(F7) Trigger** - Synchronizes a waypoint with a trigger (see Triggers in the VBS4 Editor Manual).
For waypoint-to-waypoint synchronization, see [Waypoint Synchronization \(on page 45\)](#).

Follow these steps:

1. Do one of the following:
 - For the **(F1) Unit** / **(F2) Group** / **(F4) Vehicle** EOs, right-click the (F3) Waypoints Editor Object, select **Link to Entity**.
 - For the **(F7) Trigger** EO, right-click the (F3) Waypoints Editor Object, select **Link to Trigger**.
2. Click the EO.

The link between the (F3) Waypoints EO and the other EO is established.

9.2 Branching Waypoints

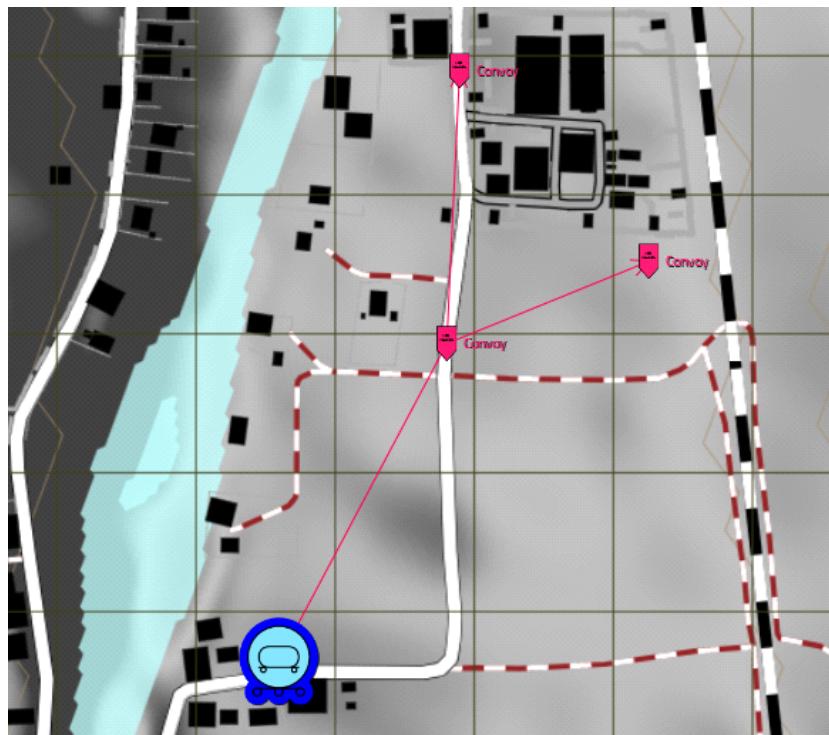
You can create branching waypoints for AI entities / groups to choose from (for example, based on trigger conditions).

Follow these steps:

1. Create an AI unit (or a vehicle that contains AI units, if creating a convoy) and select it.
2. Right-click the unit and select **Orders > Assign New Waypoint**, and then click the map where you want the branching waypoint to be.
3. In the **Behavior** list, select the AI Order (waypoint behavior), set the Order properties, and click **OK**.
4. Right-click the branching waypoint and select **Assign Next Waypoint**, and click the map, where a branch of the waypoint should be. Update the branch settings as required and click **OK**.
5. Repeat step 4, until you have all the waypoint branches.

The AI now has a branching waypoint. For a more detailed example, see Branching Orders in the VBS Control AI Manual.

Image-9: Convoy branching waypoints



9.3 Waypoint Synchronization

You can synchronize the execution of one waypoint / Order with another.

Follow these steps:

1. Create two waypoints.
2. Right-click one waypoint, and select **Sync to Waypoint**.
3. Click the other waypoint you want to synchronize with the first one.

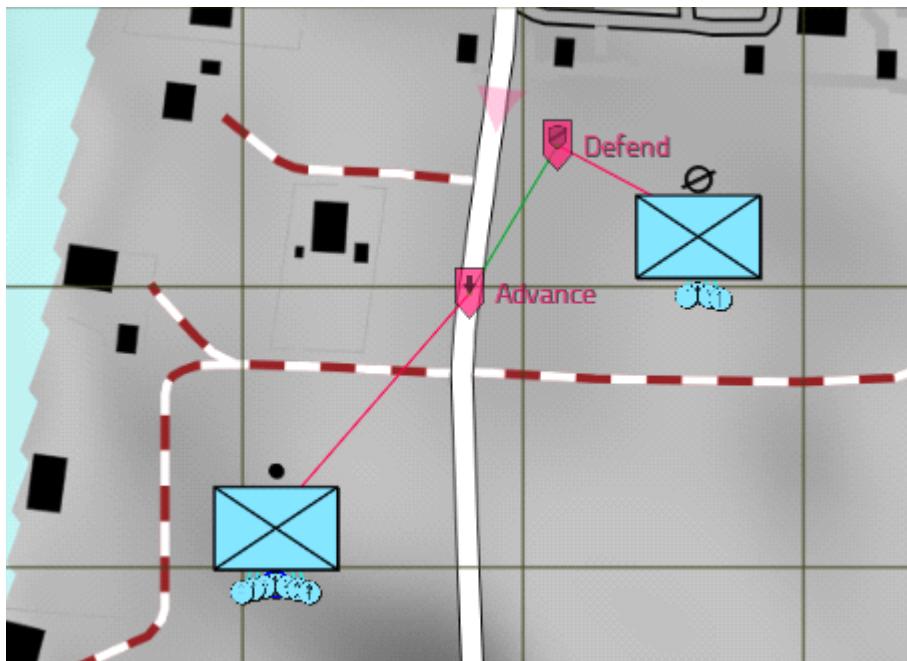
The two waypoints are synchronized.

NOTE

You can synchronize one waypoint to more than one waypoint.

To remove the waypoint synchronization, right-click the waypoint you want to unsynchronize and select **Sync to Waypoint**, then either click the specific waypoint you want to unsynchronize from, or click an empty location on the map to unsynchronize the former waypoint from all the waypoints it is synchronized with.

Image-10: Synchronized Advance and Defend waypoints



9.4 Waypoint Considerations

The following considerations apply to waypoints:

- It is possible to create chains of waypoints.
- Waypoint chains can contain branching waypoints.
- Deleting a waypoint in a chain automatically links the other waypoints to the next waypoint (if there is any).
- Waypoint name types and any waypoint status information is only displayed, if the waypoint is selected.

10. Interact with Vehicles Interface (IWV)

To open the Interact with Vehicle (IWV) interface, approach the vehicle and do one of the following:

- Use the **Interact** 3D World Action.
- Press **Interact with Vehicle (U)**.

The IWV view displays a top-down view of the vehicle with small icons representing positions in the vehicle and large icons representing vehicle functions.

Image-11: Interact with Vehicles (IWV) Interface



The position icon colors indicate the current availability of each vehicle position:

Position Icon	Description
A green icon indicates that the position is empty and available for use.	
A yellow icon with Ai indicates that an AI unit occupies the position and that it is available for use. If you select an AI occupied position, the AI either takes your previous position, moves to an empty position, or exits the vehicle.	
A red icon with Hu indicates that another player occupies the position and that it is not available for use. You can take the position if the player is dead.	

Position Icon	Description
	<p>An icon with a cross marker indicates that a dead unit occupies the position. If you occupy the position, the body is placed in an empty position or outside the vehicle.</p> <p>If the dead unit is a player, you must use Vehicle Clearance to move the body before you can occupy the position.</p>
	<p>An icon with a padlock is locked by the administrator and not available for use. For more information, see Vehicle Management Actions in the VBS4 Instructor Manual.</p>
	<p>A greyed out position indicates that the position is unavailable because the player is not near the appropriate access point or does not have access from their current position due to compartment access restrictions.</p> <p>For more information, see Realistic Vehicle Entry in Simulation Settings in the VBS4 Administrator Manual.</p>

Perform any of the following actions in the IWV interface:

IWV Actions	Description
Click a vehicle position icon	<p>Occupy the position in the vehicle and access its controls. See Vehicle Positions and Vehicle Controls in the VBS4 Trainee Manual.</p>
Click a vehicle function icon	<p>Perform the vehicle function. See Vehicle Functions in the VBS4 Trainee Manual.</p>
Click Cancel , or press Interact with Vehicle (U) , or Esc	<p>Exit the IWV view.</p>
2 x U	<p>Quick Enter. If the Realistic Vehicle Entry simulation option is on (see Simulation Settings in the VBS4 Administrator Manual), vehicle compartments and ramps are taken into account, disabling quick vehicle entry if there are no available positions or access points, or if the ramp is closed.</p>
Mouse Wheel	<p>Zoom the IWV view.</p>
Hold LMB and drag	<p>Drag the IWV view.</p>
Hold RMB and drag	<p>Rotate the IWV view.</p>

NOTE

The available positions and functions vary according to the vehicle and your position in the vehicle.

11. Military Road Signs

Temporary military road signs are available in VBS4 as a special convoy feature. In a scenario, units ride ahead of a vehicle convoy and erect road signs to inform the convoy of direction changes, or other details about the route the convoy is traveling.

The road signs and their accompanying signposts are either available in your inventory (see Equipment Inventory in the VBS4 Trainee Manual), or are added to a vehicle or crate placed in the scenario by an Administrator / Instructor. For more information, see [Military Road Signs - Scenario Design \(on page 36\)](#).

WARNING

Using large numbers of road signs in a scenario may significantly impact graphical performance.

In this topic various aspects of road sign assembly are discussed, including:

- [Road Sign Crates and Vehicles \(below\)](#)
- [Placing Signposts \(on the next page\)](#)
- [Adding Road Signs to Signposts \(on page 51\)](#)
- [Stickers on Customizable Road Signs \(on page 54\)](#)

11.1 Road Sign Crates and Vehicles

Crates or vehicles containing signposts and road signs are placed in the scenario by the your Administrator / Instructor, see [Military Road Signs - Scenario Design \(on page 36\)](#). To assemble road signs, you must first retrieve the components you require from a crate or vehicle, and add them to your inventory.

NOTE

Road signs can only be assembled by you from your inventory. Therefore, road signs and signposts in crates or vehicles must be added to your inventory first before assembly is possible.

Follow these steps:

1. Walk up to the crate / vehicle.
2. Press **Inventory (I)** to open your Equipment Inventory.
3. In the **Containers** window, left-click the **Crates / Vehicle**.

The contents of the crate / vehicle appear in the Available window.

4. Click and drag road signs and signposts from the **Available** window to the **Inventory** window to add them to your inventory. Select an amount in the **How Many?** dialog, and click **OK**.
5. Click **Close**, to close your inventory.

You can now follow the procedures in [Placing Signposts \(below\)](#) and [Adding Road Signs to Signposts \(on the next page\)](#) to assemble the signs.

Image-12: Adding road signs to your inventory



11.2 Placing Signposts

If signposts are available in your inventory, you can place them at the desired location.

Follow these steps:

1. Walk to the location where you want to place the road sign.
2. Press **Inventory (I)** to open your Equipment Inventory.
3. Right-click **Signpost, 35mm**, and click **Assemble Signpost**.

The inventory closes and you are switched to Signpost Placement Mode. The signpost is colored **green**, and the following informational text appears at the top-right of your screen.

Use "Space" or "XBox Y" or "Prim".
Mouse Btn." or "XBox Right Trigger" to
confirm placement and "Escape" to
cancel.

- Move the mouse from left to right until you find the position where you want to place the signpost.

 **NOTE**

If the signpost turns **red**, the location is unsuitable, so you must move to a more suitable location.

- When you have found a suitable location for the signpost, press **Fire (LMB)** or **Toggle Weapons (Spacebar)**.

The signpost is assembled (placed in the ground) and returns to its normal color.

 **TIP**

To abort the placing operation, press **Esc**. The signpost is automatically returned to your inventory.

To disassemble the signpost, select **Disassemble Signpost** using the 3D World Actions. The signpost disappears and is automatically placed in your inventory.

11.3 Adding Road Signs to Signposts

When your signpost is in position, you can add road signs to it. The road signs that are available to you depends on the road signs that you have in your inventory, see [Road Sign Crates and Vehicles \(on page 49\)](#).

 **TIP**

The actual number of each road sign that you are carrying is shown in the **Inventory** window of your Equipment Inventory dialog, if you have more than one (2 x, 3 x, 4 x and so on), and in brackets after the road sign name in the **Sign Type** drop-down list of the Road Signs Editor dialog.

 **WARNING**

Road signs cannot be added to a signpost until the signpost is assembled and in position (see [Placing Signposts \(on the previous page\)](#)).

Multiple users cannot place the same road sign at the same time.

Follow these steps:

1. Using the 3D World Actions, click **Edit Signpost** to open the Road Signs Editor dialog.



2. Signposts have three slots for road sign attachment, each represented by a tab in the dialog (Top / Middle / Bottom). Click a **tab** to attach a road sign to the corresponding slot.

Slot	Description
Top	Accepts Arrow , Direction , and Rectangular Shape / Square Shape customizable road signs.
Middle	Accepts Direction , and all of the Standard road signs.
Bottom	Accepts Arrow and Label road signs.

NOTE

Direction road signs are attached to the Top or Middle slot tabs, but they occupy the Top and Middle slots and the Middle and Bottom slots, respectively.

The **Square Shape** road sign is attached to the Top slot tab, but occupies the Top and Middle slots.

The **Rectangular Shape** road sign is attached to the Top slot tab, but occupies all three slots.

This means that if you attach any of these road sign combinations, the tabs of the occupied slots become grayed-out, preventing you from attaching road signs to them.

3. Click the **Sign Type** drop-down to select the road sign you want to attach to a slot.

NOTE

If you selected either the **Square Shape** or the **Rectangular Shape** road sign, see [Stickers on Customizable Road Signs \(on page 54\)](#) for information about how to configure them.

4. If the road sign you want to attach is double-sided, use the **Facing** radio buttons to select the **Front** or **Back** face of the road sign. If a road sign is one-sided only, the **Back** radio button is grayed-out.



5. Use the **Orientation** slider to rotate the road sign. If necessary, small increment adjustments can be made using the arrow keys next to your number keypad. The orientation is shown in degrees, and an arrow icon provides a visual guide as to how the road sign is positioned.



 **WARNING**

The prohibited icon indicates that the orientation of the road sign cannot be adjusted.



6. Use the **Text** field to add text to the road sign. The maximum number of alphanumeric characters that can be used is displayed next to the Text field.

 **NOTE**

Not all road signs accept text. If **Max Length is 0** is displayed, text cannot be added to the road sign.

7. **Optional:** Click **Clear Slot** to clear the settings / road sign from the active slot.

8. Click **OK**.

The road signs are attached to the signpost. To disassemble the road sign, select **Disassemble Signpost** using the 3D World Actions. The road signs and the signpost are automatically placed back in your inventory.

 **NOTE**

If a road sign has stickers applied (see [Stickers on Customizable Road Signs \(on the next page\)](#)), they are removed when the road sign is disassembled.

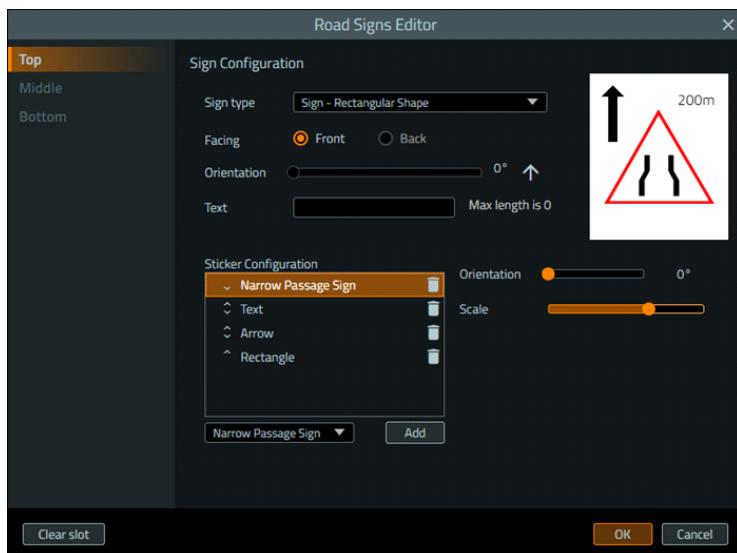
Image-13: Assembled military road sign

11.4 Stickers on Customizable Road Signs

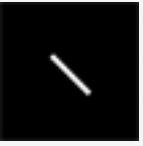
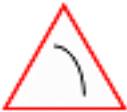
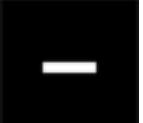
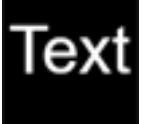
The **Rectangular Shape** and **Square Shape** road signs are blank, and are customizable using stickers.

Follow these steps:

1. In the Road Signs Editor dialog, go to the **Sticker Configuration** section.



2. Click the **drop-down** below the Sticker Configuration box, and select a sticker from the list. The available stickers are:

Sticker	Description	Sticker	Description	Sticker	Description
	Arrow		Danger		Crossroad
	Bend Left		Narrow Passage		Main Road
	Bend Right		No Entry		Rectangle (usually scaled up to create a background for other stickers).
	Crossing		Stop		Text (up to 15 alphanumeric characters permitted).

3. Click **Add**.

The sticker is added to the Sticker Configuration box. An image of the road sign, with the sticker attached, is shown at the top-right of the dialog.

 **NOTE**

Stickers are placed on the road sign in the order that they are added to the list in the Sticker Configuration box. So the first sticker appears on the road sign, and at the bottom of the list. The second sticker appears on top of the first sticker on the road sign, and above the first sticker in the list, and so on.

4. Adjust the dimensions and position of the sticker.

Follow these steps:

- Select the **sticker** entry in the Sticker Configuration box, so that it is highlighted.
- Adjust the settings that may appear, depending on the selected sticker:

Setting	Description
Orientation	Slide from left to right to adjust the orientation of the sticker (degrees of orientation are also shown).
Scale	Appears for stickers that look like standard road signs only. Slide from left to right to increase / decrease the overall size of the sticker.
Length	Slide from left to right to adjust the length of the sticker.
Width	Slide from left to right to adjust the width of the sticker.
Color	Click the radio buttons to change the color of the sticker to Black or White.

- On the road sign image, click and drag the **sticker** to reposition it.
- Use the up / down arrows next to the sticker names to reorder stickers, which can be applied on top of one another.



5. To add further stickers to the road sign, repeat steps 2 to 5.

6. When you have configured all the stickers you want, click **OK**.

The completed road sign appears on the signpost. To make changes to the road sign, open the dialog again, adjust the stickers, and click **OK** to save your changes.

Image-14: Customized Rectangular Shape sign



12. Land Vehicle Controls

VBS4 includes a large number of land vehicles, including motorbikes, civilian, wheeled and tracked combat vehicles, and specialist construction vehicles.

Take direct movement control of land vehicles from the Driver position:



The following table lists the Land Vehicle Controls, defaults, and option names from the **Vehicle Controls** and **Infantry Controls** category filters in the Controls Settings in the VBS4 Administrator Manual:

Default Control	Description	Control Option Name
W	Forward	Car Forward
<div style="border: 1px solid #0070C0; padding: 5px;"><p>NOTE</p><p>W does not reach the maximum speed. Use Car Fast Forward.</p></div>		
S	Brake / Reverse	Car Back
A / Mouse Left	Turn Left	Car Left / Car More Left
D / Mouse Right	Turn Right	Car Right / Car More Right
Q	Slow Forward	Car Slow Forward
E / LShift + W	Fast Forward	Car Fast Forward / Vehicle Turbo + Car Forward
LMB	Horn	Fire

NOTE

For Microsoft Xbox land vehicle controls, see Microsoft Xbox Controls in the VBS4 Trainee Manual.

For Logitech 3D Extreme controls, see Controls Settings in the VBS4 Administrator Manual.

13. Commanding Subordinates

You can command AI subordinates. For more information about grouping units and vehicles, see Adding Groups in the VBS4 Editor Manual.

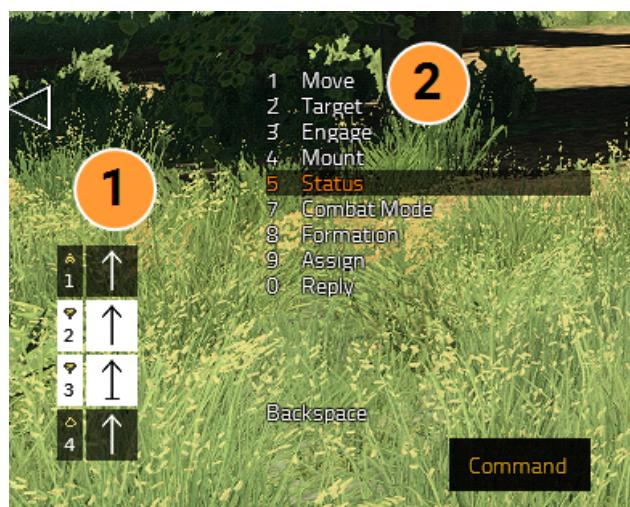
The Command Bar and the Command Menu are available, depending on the following commander types:

- **Group Leader** - A leader of flat group, containing infantry and / or vehicle crews.
- **Vehicle Commander** - A unit with the Commander role in a vehicle (other vehicle roles include the Driver, Gunner, and so on).

NOTE

The following considerations apply:

- A **Group Leader** and **Vehicle Commander** can be the same person.
- A **Group Leader** can only issue orders to specific vehicle crew members, but not the entire vehicle, unless the entire vehicle crew is designated as a Subordinate Team (see [Subordinate Teams \(on page 65\)](#)).
- A **Vehicle Commander** who is not a **Group Leader**, and only has his vehicle crew to command, does not have the Command Bar (therefore, no unit selection). Instead, issuing an order using the Command Menu delegates the order to a specific crew member with the role to follow that order.
- A **Vehicle Commander** has additional vehicle commander controls for their crew - see [Vehicle Command Controls](#) in the VBS4 Trainee Manual.



1 Command Bar

2 Command Menu

The Command Bar is present in the HUD for group leaders and shows detailed information about the units under their command:

HUD Key	Icon	Description
Basic Unit Info		Unit Rank - Top-left Unit Number - Bottom-left Unit Type - Right-side icon
Ordered to Not Fire		Red Line
Selected Characters		White Background
Vehicle Mounted Unit		Unit Rank - Top-left Unit Number - Bottom-left Crew Position Indicator - Middle Vehicle Type - Right Vehicle Commander Number - Lower-Right

NOTE

If a unit is killed, their icon is removed from the HUD only if they are observed to be dead, which is determined using the following methods:

- If **AI** units in the same group (which includes the **Player** unit and the killed unit) see that a unit is dead. In this case, the dead unit is removed from the HUD and the group.
- As a **Player** unit, hold the **RMB** while aiming your cursor at the body.
- As a **Player** unit, attempt to make units you think may be dead report their status:



FEATURE NOTICE

Temporarily disabled for AI. See One AI in the VBS4 Release Notes.

1. Select units from the group using the **F** keys (**F1**, **F2**, **F3** and so on) or press **Select All Units (~)** to select them all.
2. Press **5** at the top of your keyboard twice.

If the units are dead, they do not report back, and they are removed from the HUD after a period of time.

You can command subordinates in the following ways:

- [Commanding in First / Third Person \(below\)](#)
- [Commanding Using the C2 Screen \(on page 64\)](#)

For Subordinate Team command specifics, see [Subordinate Teams \(on page 65\)](#).

In addition, the following command tools can be used:

- Logistics Report - Allows you to generate reports on subordinate-group logistics.
For more information, see Logistics Report in the VBS4 Trainee Manual.
- Platoon Commander Notebook - Allows you to generate reports for platoon commanders.
For more information, see Platoon Commander Notebook in the VBS4 Trainee Manual.

Since area fire suppression is frequently used as an order, Suppress Area (see the VBS4 Trainee Manual) describes the specifics of commanding a team to suppress a given area.

13.1 Commanding in First / Third Person

You can command subordinates while in First / Third Person View.

NOTE

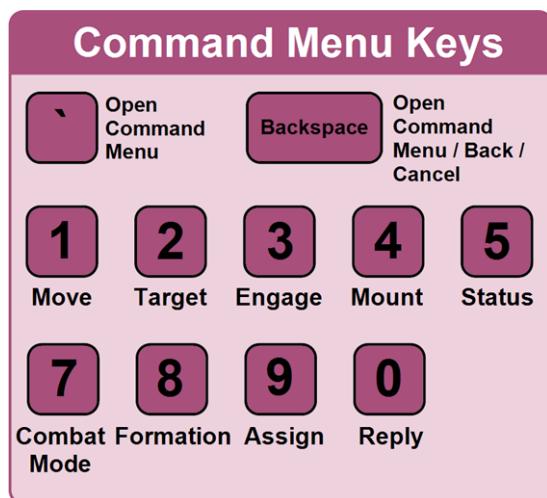
You must be a leader of a group to command subordinates.

To access the Command Menu, press **Backspace** or select one or more subordinates. To select all subordinates, press **Select All Units (~)**.

To issue orders to specific members of your group, press the function key that corresponds to the subordinate number. For example, the unit listed as number 2 in the Command Bar is selected by pressing **F2**.

For groups with more than nine members, press **F11** / **F12** to scroll back / forward in the Command Bar.

The available Command Menu options are:



NOTE

The execution of each command takes some time.

★ FEATURE NOTICE

Some Command Menu options are temporarily unavailable to AI subordinates. Control AI is the single AI type in this VBS4 release (see One AI in the VBS4 Release Notes). The original Command Menu option numbering is preserved (the numbers for unavailable Command Menu options are not present).

Command	Description	Options
1. Move	<p>Order subordinates to move in a specific way. Select Move and click then click the LMB at location to order the move.</p> <div style="border: 1px solid #0070C0; padding: 5px; margin-top: 10px;">NOTE<p>In some cases, the Next Waypoint behavior is similar to Return to Formation.</p></div>	<ul style="list-style-type: none">1. Return to Formation6. Stop8. Find Cover9. Next Waypoint
2. Target	<p>Assign targets to subordinates.</p> <div style="border: 1px solid #0070C0; padding: 5px; margin-top: 10px;">NOTE<p>Targets are available only if the unit is aware of them.</p></div>	<ul style="list-style-type: none">1. No target2. Unit at ...0. More (allows targeting non-enemies - friendly, neutral, or unidentified targets)
3. Engage	<p>Order subordinates to engage the enemy in a certain way.</p>	<ul style="list-style-type: none">1. Open Fire2. Hold Fire9. Suppress Area (see the VBS4 Trainee Manual)

Command	Description	Options	
4. Mount	Order subordinates to mount / dismount vehicles.	1. Disembark 2. Vehicle at ...	
	<p> NOTE Menu option available only if vehicle is present.</p>		
	<p> FEATURE NOTICE Assigning mount positions does not apply to Control AI.</p>		
5. Status	Order subordinates to provide various status reports.	4. Injured 8. ... is Down	
	<p> FEATURE NOTICE Temporarily disabled for AI. See One AI in the VBS4 Release Notes.</p>		
7. Combat Mode	Order subordinates to switch to any of the available static stances.	6. Stand Up 7. Stay Crouched 8. Go Prone	
8. Formation	<p>Order subordinates to fall in any of the available formations.</p> <p> WARNING Does not set the formation unless Move > Return to Formation is used, after selecting the formation.</p>	1. Column 2. Staggered Column 3. Wedge 4. Echelon Left 5. Echelon Right	6. Vee 7. Line
	<p> NOTE Formation orders are executed with the inclusion of the group leader.</p>		
9. Assign	Assign a color to the subordinate team.	1. Assign Red 2. Assign Green 3. Assign Blue	4. Assign Yellow 5. Assign White 9. Team

Command	Description	Options	
0. Reply	<p>Report to other team members with any of the available replies.</p> <p>Selecting 0. Reply > 0. Radio opens a list of up to 9 available radio channels, in the range of 20 channels, from Alpha to Tango (see Radio Alpha - Radio Tango in Triggers in the VBS4 Editor Manual).</p> <p>Click 0 More to see more radio channels. Click Backspace to return to the main menu.</p>	1. Done 2. Fail 3. Ready to Fire 4. Cannot Fire 6. Repeat	7. Copy 8. Communication 9. Custom 0. Radio

**NOTE**

Uninitialized or inactive triggers show as disabled.

**FEATURE NOTICE**

The following **Reply > Radio** option does not apply to AI (radio triggers do).

13.2 Commanding Using the C2 Screen

If you are a squad / section leader in a mission, you have the additional ability to command subordinates in the C2 screen.

★ FEATURE NOTICE

Temporarily disabled for AI. See One AI in the VBS4 Release Notes.

Follow these steps:

1. Select your units in the same way as in First / Third Person View.

Image-15: Commanding subordinates using the C2 screen



2. Order units to move to a specific location by double-clicking the map to specify the location. To order units to rejoin formation, use the **Return to Formation** Command Menu item (press 1, select **Move**, and then the 1 again, to select **Return To Formation**).

The subordinates follow the issued command.

Higher Echelon Command

★ FEATURE NOTICE

Temporarily disabled for AI. See One AI in the VBS4 Release Notes.

If you are higher-echelon commander, you have the following additional command functions:

- Right-click a group / echelon to issue **Command**, **Formation**, and **Waypoint** orders.
- Select a group / echelon to enable the Command Menu for it. The Command Menu displays a group icon, in addition to the unit icons, with a number indicating the number of groups your commands currently control.
- Issue **Move** and **Formation** orders for the selected groups in C2, First / Third Person, and Command Views (see Command View in the VBS4 Trainee Manual). You can select the groups to command in C2 view, and then switch back to First / Third Person, or Command View, to issue the command.
- To make your own group break formation, give movement orders to your group, not the echelon. Echelons move in their designated formation unless individual groups and units have their own movement orders.
- Use the **Return to Formation** command to bring groups back into the echelon formation.
- You can set the direction the echelon formation should face for the final waypoint. If this is not set, the echelon faces the movement direction. To set the direction, rotate the waypoint in the 2D map view (use **Shift + RMB + drag**), with the waypoint direction indicated by an arrow.
- You can enable / disable the command structure lines on the 2D map, using the **Draw Subordinate Group Links** drop-down in the Editor Settings, see View Menu in the VBS4 Trainee Manual.

 **NOTE**

If you reassign your own command authority, you lose access to these functions.

13.3 Subordinate Teams

Allocate subordinates to 5 different Subordinate Teams within the group to further group and save subordinate selections.

 **FEATURE NOTICE**

Only works for flat AI groups (not for higher-echelon AI ones).

All members start in team **White**. The other team options are teams **Red**, **Green**, **Blue**, and **Yellow**.

 **NOTE**

If you assign members to an already existing team, the team is not overwritten. Instead, new members are added to the team, if there are any.

Action	Command Menu	Keyboard
Assign to a Team	Select units to allocate as a team. 9. Assign <ul style="list-style-type: none">• 1. Red team• 2. Green team• 3. Blue team• 4. Yellow team• 5. White team	Select units to allocate as a team. LCtrl F1 - F5 to assign to a team. <ul style="list-style-type: none">• F1 - Red team• F2 - Green team• F3 - Blue team• F4 - Yellow team• F5 - White team
Select a Team	Press Backspace to open the Command Menu. 9. Assign 9. Team <ul style="list-style-type: none">• 1. Red team• 2. Green team• 3. Blue team• 4. Yellow team• 5. White team	LShift F1 - F5 to select a team. <ul style="list-style-type: none">• F1 - Red team• F2 - Green team• F3 - Blue team• F4 - Yellow team• F5 - White team