IED Ambush

VBS4 24.1.1

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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

Contents

1. Improvised Explosive Device Ambush

This use case simulates an Improvised Explosive Device (IED) Ambush, when IEDs / mines explode and enemy forces ambush the detonation location.

The IED Ambush use case is related to the Route Clearance use case.

For a walkthrough example of a simple IED Ambush scenario, see:

- Command-Detonated IED Ambush Example (below)

The general workflow of an IED Ambush simulation in VBS4 contains two parts:

- IED Ambush Preparation (on page 10)
- IED Ambush Execution (on page 12)

For IED Ambush examples that have Preparation and Execution phases, see the following:

- Victim-Initiated IED Ambush (on page 13)
- Suicide Bomber IED Ambush (on page 14)

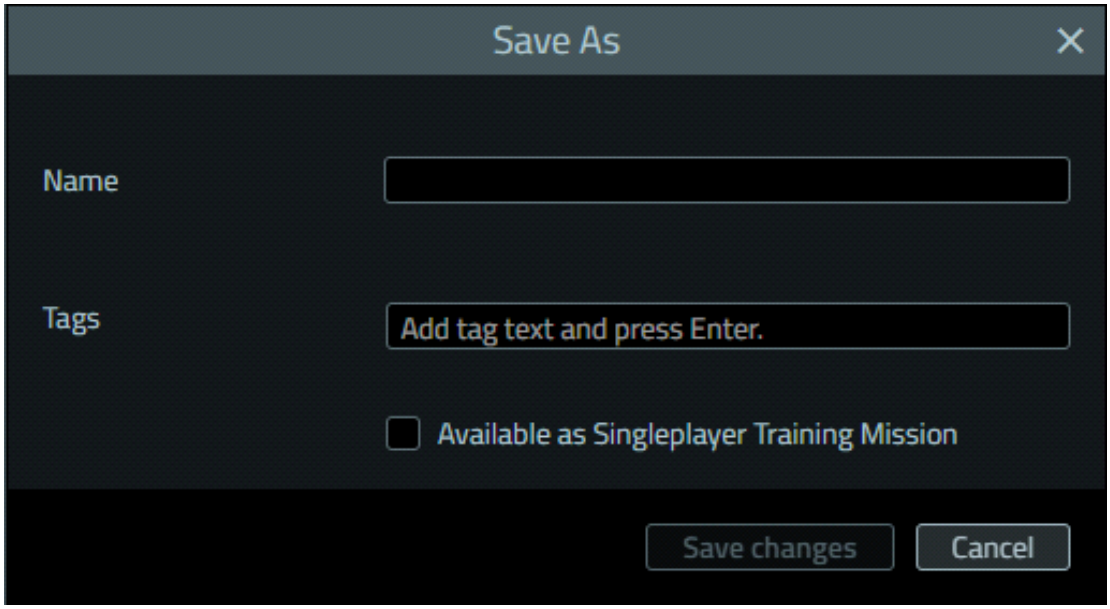
1.1 Command-Detonated IED Ambush Example

A command-detonated IED Ambush expands the AI on Rails Enemy Ambush Example Scenario in the Enemy Ambush Use Case, by adding an IED, which is detonated prior to an enemy ambush.

Follow these steps:

1. Follow the steps 1 - 35 in the AI on Rails Enemy Ambush Example Scenario.
2. Expand the **Main Menu**, and under **Battlespaces**, select **Save As**.

   The Save As dialog opens.

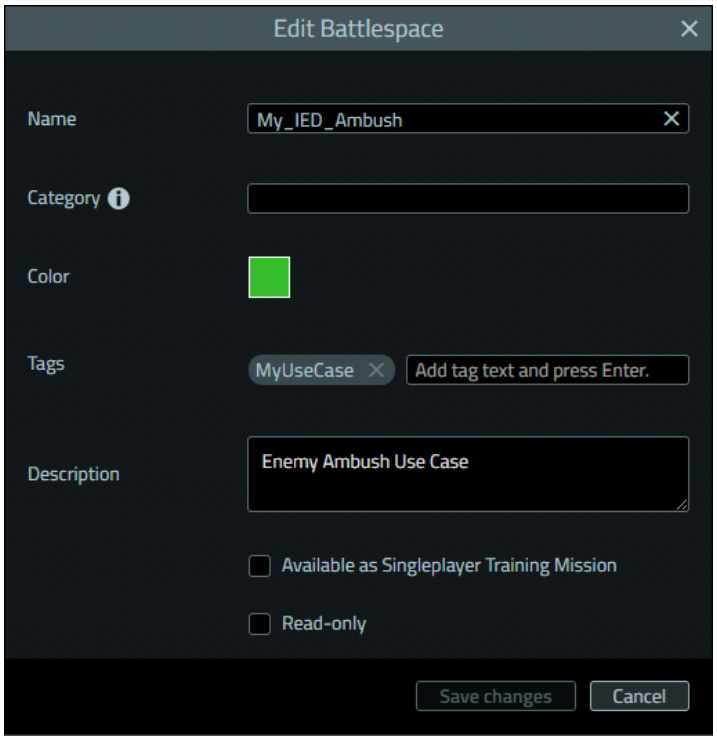


3. In **Name**, type **My_IED_Ambush**.
4. In **Tags**, type **MyUseCase**.
5. Click **Save Changes**.
6. Expand the **Main Menu**, and select **Close Prepare** and click **Save and Close**.

   VBS4 returns to Battlespaces Mode.
7. In the **Battlespaces** tab, select the **My_IED_Ambush** Battlespace, and click the **Edit** icon.

   The Edit Battlespace dialog opens.



8. Input the following details in the Edit Battlespace dialog:

Parameter	Value
Description	IED Ambush Use Case

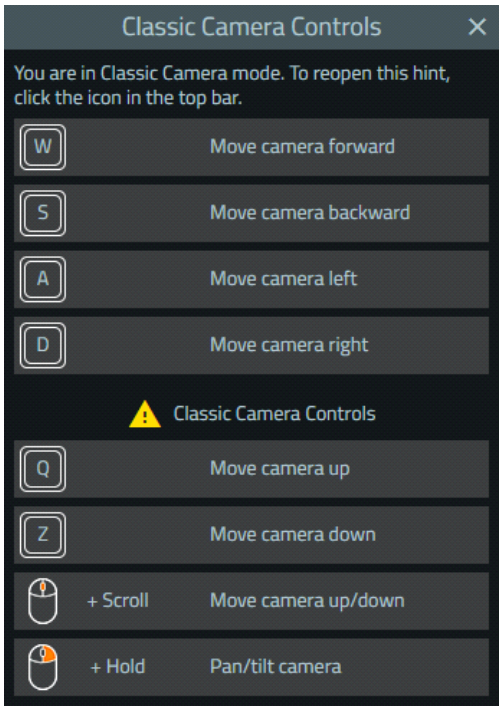
9. Click **Save Changes**.

10. Select the **My_IED_Ambush** Battlespace, and under **Prepare > Editor**, click **Open**.

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

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

Use the Classic Camera Controls to move the camera:



11. Drag the BLUFOR vehicle, and place it north up the road.

    This gives the vehicle more time to reach the Trigger.

12. In the Tools Panel, select **IED**, and double-click a location, left of the road, next to the Trigger.

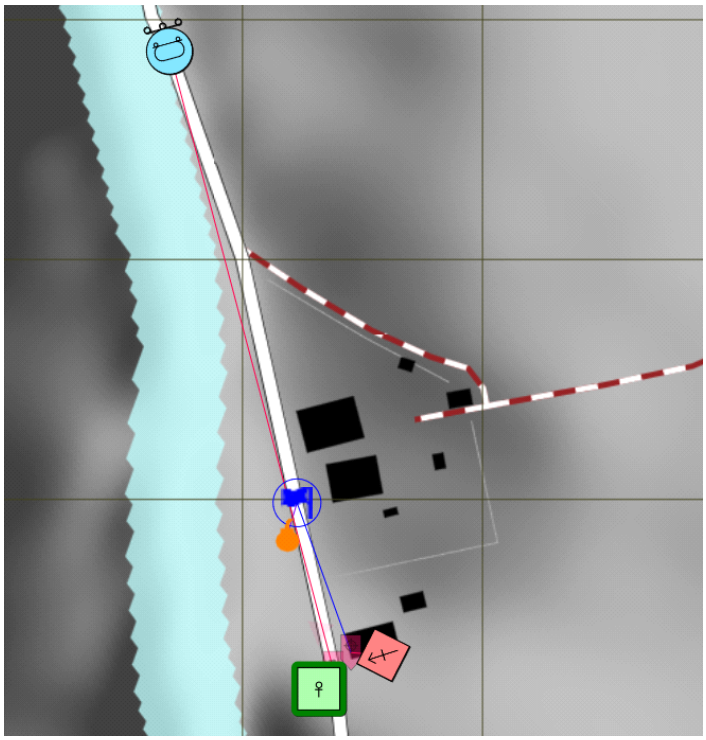
    The IED Object Properties dialog opens.

13. In the Object Properties dialog, set the following properties:

    - **Type:** Soda Can 2
    - **Explosion Size:** Small
    - **Explosion Type:** Wound Only
    - **Trigger Type:** Admin and Bomb Carrier

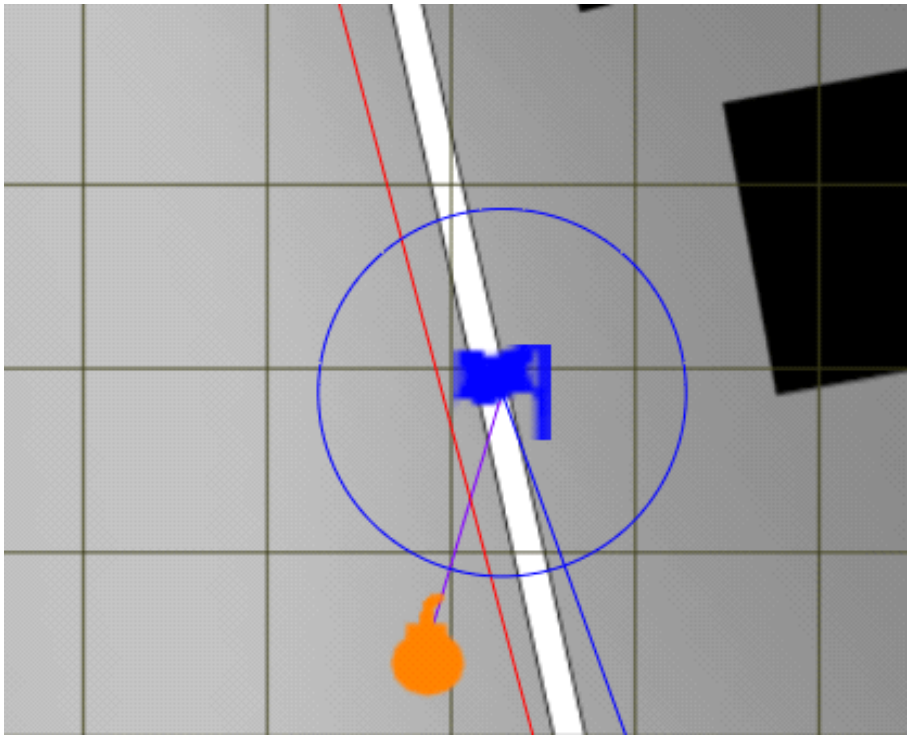
14. Click **OK**.

    The IED is placed.



15. Hold **LShift**, click the IED, and click the Trigger.

    The Trigger is linked to the IED, which makes the IED detonate when the BLUFOR vehicle enters the Trigger area. Since the IED **Trigger Type** setting is set to **Admin and Bomb Carrier**, you can also detonate the IED as the Scenario Administrator before the vehicle enters the Trigger area (see step 17).



16. Click **Preview** to preview the Scenario.
17. Press **Pause** (**Esc**) and in the VBS4 Toolbar, select **Editor** and press **Map** (**M**), to switch to the 3D View.
18. As an Administrator, you can detonate the IED before the BLUFOR vehicle enters the Trigger area, by right-clicking **Soda Can 2** in the Scenario Objects Panel and selecting **Explode IEDs**.

Observe how the IED detonates either by the Administrator or by the BLUFOR vehicle entering the Trigger area, after which, the OPFOR unit crouches to attack the BLUFOR vehicle.

NOTE

The IED Ambush Scenario is 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 IED Ambush Preparation

As an administrator, use VBS Editor in Prepare mode to prepare an IED Ambush mission.

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. Add any of the following standalone hazards to the IED Ambush scenario:

Hazard	Description
Mines	Place mines in your scenario. For more information, see Placing Mines (on page 15).
IEDs	Place IEDs in the scenario. For more information, see Placing Improvised Explosive Devices (on page 19).

3. VBS4 has units with specific functionality for IED Ambush, including the following:

Unit	Description
Suicide Bomber	Any OPFOR unit with "Suicide Bomber" in its name. For example: • **AF Civilians > Female Suicide Bomber - Light Blue** • **IQ Civilians > Suicide Bomber 1 - Suicide Bomber 6** OPFOR units, such as the Taliban, have explosive belts. For example: • Any unit in the **AF Taliban** category.
Triggerman	Any unit that activates the IED.
Observer	Any unit that watches for targets, and signals the triggerman and / or the ambush unit. You can equip the observer with binoculars. For more information, see Edit Equipment Loadout in the VBS4 Editor Manual.
Ambush Unit	Any OPFOR unit.

For more information on how suicide bombers and / or triggermen can be attached to activate an IED, see Attaching IEDs to Units and Vehicles (on page 26).

Add personnel to the scenario.

For more information on placing units, see Adding Units in the VBS4 Editor Manual.

4. VBS4 includes specific functionality for vehicles for IED Ambush, including the following:

Vehicle	Description
Any Vehicle	Attach an IED to any vehicle to create a VBIED. For more information, see Attaching IEDs to Units and Vehicles (on page 26).

Add vehicles to the scenario.

For more information on placing vehicles, see Adding Vehicles in the VBS4 Editor Manual.

5. Add additional objects and equipment.

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

Additional Object / Equipment	Description
IED Indicators	You can use visual indicators, to designate IEDs: • **Objects > Objects - IED** You can also use decoys and clutter objects, to hide IEDs: • **Objects > Objects - Outdoor** • **Objects > Scenery - Misc**

   For more information, see the respective topics in the VBS4 Editor Manual.

6. Add Waypoints and Triggers to IED Ambush personnel and vehicles.

   You can add Waypoints for the enemy forces to attack (both for personnel, such as the ambush units, and vehicles, such as the VBIED vehicles). The Waypoint execution uses Triggers.

   For more information, see Waypoints and Triggers in the VBS4 Editor Manual.

7. Add additional BLUFOR units and / or vehicles.
8. Preview and save the mission.

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

1.3 IED Ambush Execution

Once the IED Ambush 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 IED Ambush scenario has the following phases:

1. BLUFOR units and / or vehicles pass through an area.
2. An enemy observer spots the BLUFOR units / vehicles, signals to the triggerman, and the latter detonates the IED.

   The spotting is usually done with binoculars. For more information, see the use of binoculars in Standard Equipment (infantry units) and Personal Equipment Controls (vehicle crew) in the VBS4 Trainee Manual.

   The following detonation types are available:

IED Detonation Type	Description
Administrator Triggered	As an administrator, you can detonate IEDs manually. For more information, see Detonating an IED (on page 28).
Role-Play Detonation	The player, in the role of a triggerman, detonates the IED. For more information, see IED Trigger Type (on page 22).
Automatic Trigger	Automatic triggering (for example, by proximity, using a timer, or driving over a mine). For more information, see IED Trigger Type (on page 22) and Attaching IEDs to Triggers (on page 27).

3. OPFOR units ambush the BLUFOR units / vehicles at the detonation site.

   An IED Ambush uses either an enemy group on foot or in vehicle (VBIED).

   For more information on how to simulate enemy ambush, see the Enemy Ambush use case.
4. Wounded units can request medical assistance from medics.

1.4 Victim-Initiated IED Ambush

A victim-initiated IED Ambush occurs when BLUFOR units and / or vehicles step on / drive over, or come within a detonation-proximity range of the mine / IED.

For AI and player-controlled units / vehicles, follow these steps:

1. Place an IED.
2. Set **Trigger Type** (see IED Trigger Type (on page 22)) to one of the following:
   - **Proximity** - Set **Prox. Side** to BLUFOR or Any.
   - **Pressure Plate**

1.5 Suicide Bomber IED Ambush

A suicide bomber IED Ambush involves a suicide bomber on foot or a VBIED vehicle:

> **NOTE**
> This example only has a player-controlled part.

For a player-controlled suicide bomber and VBIED vehicle, follow these steps:

1. Place an IED.
2. Set **Trigger Type** to one of the following:
   - **Admin and Bomb Carrier** for role-play **Detonate IED** User Action.
   - **Proximity** with **Prox. Side** set to BLUFOR.

     > **NOTE**
     > The **Detonate IED** User Action is also available.

   - **Admin Only**, which can be detonated from VBS Editor by right-clicking the IED in the Scenario Objects Panel, and selecting **Detonate IED**.
3. Select one of the following suicide bomber unit types:
   - Suicide bomber on foot:
     a. Right-click the IED, select **Attach to Unit**, and click the suicide bomber unit.
   - VBIED:
     a. Right-click the IED, select **Attach to Vehicle**, and click the VBIED vehicle.
     b. Position the IED object within the vehicle, or right-click the IED and select **Hide IED**, to make it invisible.
4. In the OME, set the unit as **Player** or **Playable**. In VBS Editor, right-click the unit and select **Switch to Unit** to take control of the AI unit.
5. To detonate the IED, select one of the following.
   - A role-play unit on foot selects the **Detonate IED** User Action.
   - A role-play VBIED vehicle driver selects the **Detonate VBIEDs** User Action.

2. Placing Mines

VBS4 includes a variety of land and sea mines for use in missions.

WARNING

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

You can do the following with mines:

- Create a Mine (below)
- Create a Minefield (on page 17)

NOTE

Mines that you want Trainees to place themselves during a scenario should be added to the Equipment Inventory (see Equipment Inventory in the VBS4 Trainee Manual) of units, see Edit Equipment Loadout in the VBS4 Editor Manual. How Trainees then place them is discussed in Placing Mines Simulation in the VBS4 Trainee Manual.

2.1 Create a Mine

In the **Editor Objects List**, select **Mine** and click the map, where you want to place the Mine Editor Object.

Image-1: Mine Editor Object Properties

In the Object Properties dialog, set the following options:

For land mines:

Option	Description
Presence Condition	The condition for the mine to be present. **NOTE** Only available in Prepare mode.

Option	Description
Type	Drop-down list of possible mines to place. Land mines (anti-tank or anti-personnel) can be hidden or observable.
Placement Radius	The distance from the placement point of this Editor Object that the mine could randomly spawn within.

For sea mines:

Option	Description
Presence Condition	The condition for the mine to be present. **NOTE** Only available in Prepare mode.
Type	Sea mines have the following types: • **Sea Mine Bottom** - Snaps to the seabed. • **Sea Mine Floating** - Floats on the surface of the sea. • **Sea Mine Tethered** - Held in place by a tether stretching down to the sea-bed. Once the height in the water is set by the user (with the transform tool) the mine remains in this position until it is deleted or triggered. Each sea-mine type has the following fuse types: • **Contact** - Contact fuses work when a collision occurs between an object and the mine. The object must meet the trigger mass of the mine, which is set in the model configuration of the mine (see the Configuration Manual in the VBS Developer Reference). Currently all supported large vessels (Ferry+) trigger the mine. **NOTE** The Developer Reference is in the `\docs\` folder of the VBS Developer Suite installation. • **Magnetic** - When a vessel of the specified mass (see **Contact**), and with magnetic mine detonation enabled, enters the model-configuration assigned trigger radius of this mine, the mine detonates. • **Seismic** - The seismic mine is triggered much in the same way as the magnetic mine above. However, this mine does NOT check for magnetism, and detonates purely on vessel mass and proximity.

Option	Description
Placement Radius	Sea-mine types have the following placement considerations: • **Sea Mine Bottom** - Cannot be raised above sea-bed. • **Sea Mine Floating** - Can be raised above sea-level but falls back down. Can be placed below sea-level but floats up. • **Sea Mine Tethered** - Cannot be placed above sea-level. If placed below the surface, it remains in position (does not float to surface).

Click **OK** to confirm.

The Mine Editor Object is placed on the map.

Image-2: A visible M15 Anti-Tank mine and a floating sea mine

2.2 Create a Minefield

You can create a minefield, using the Script Editor Object.

Follow these steps:

1. Add a trigger (see Triggers in the VBS4 Editor Manual) to the map.

   WARNING

   The trigger must be of a certain size to define the minefield area. Also, the trigger area can only be rectangular. Circular areas are converted to rectangular ones.

2. In the Editor Objects List, select **Script** and place the Script Editor Object on the map.
3. In the **Filter** drop-down, select **Special Scripts**.
4. In the **Script File** drop-down, select **Minefield**.
5. In the **Type** drop-down, select the type of mine to use.
6. In the **Warning Signs** drop-down, select one of the following:
   - **Don't Show Signs** - Does not show any warning signs about the minefield, to indicate it.
   - **Show Signs** - Shows warning signs about the minefield, to indicate it.

7. In the **Density** drop-down, select the mine density of: **Normal**, **Low**, or **Very Low**.
8. In **Grid Spacing**, specify the spacing (in meters) between the mines, as they are arranged into a grid.
9. In the **Execute Globally?** drop-down, select whether the script should run locally or globally in a multiplayer scenario:
    - **Execute Only on Client Where Condition is True** - Runs the script only on clients, where the **Condition** setting (see step 9) is true.
    - **Execute on Every Client, Even if Condition is False on Some** - Runs the script on all the clients.
10. In **Condition**, specify the Boolean condition for the minefield to be created.
11. In the **Repeatedly** drop-down, set whether the condition should be evaluated repeatedly or not:
    - **Do Not Repeat** - Evaluate the condition only once.
    - **Repeat When Condition is True Again** - Evaluate the condition every time it returns true.
12. Right-click the Script Editor Object, select **Link to Trigger (Creates Minefield)**, drag the arrow and click the trigger you created in step 1, to link.

When the scenario runs, the Script Editor Object creates a minefield, according to the set condition.

For more information, see the Script Editor Object in the VBS4 Editor Manual.

For a demonstration of some Mine Clearance functionality in action, see the VBS4 Instructor Series - Mine Clearance Demonstration video at https://youtu.be/f2bXHSdA2cE.

NOTE

Videos may not show the latest versions of the features they demonstrate.

3. Placing Improvised Explosive Devices

VBS4 includes Improvised Explosive Devices (IEDs) to enable the simulation of explode-on-demand roadside bombs, suicide bombers, and vehicle-borne IEDs.

Image-3: IED Object Properties

Follow these steps:

1. In the **Editor Objects List**, select **IED** and click the map, where you want to place the IED Editor Object.
2. Set the IED Options (on page 21).
3. Set the IED Trigger Type (on page 22).
4. Click **OK** to confirm.

   The IED Editor Object is placed on the map.

5. **Optional:** To rotate the IED in the 2D or 3D View, hold **Shift + RMB** and release to confirm.

   Pressure Plate Rotation

   If you are using an IED with a Pressure Plate (see IED Trigger Type (on page 22)), it is possible to rotate the Pressure Plate area separately from the IED itself:

   a. In the 2D or 3D View, click the **Pressure Plate** to select it.

   b. To rotate the Pressure Plate, hold **Shift + RMB** and release to confirm.

   Image-4: IED and Pressure Plate in the 2D and 3D Views (left to right)

In addition, see the following IED-related functionality:

- Equipment Inventory (on page 26)
- Attaching IEDs to Units and Vehicles (on page 26)
- Attaching IEDs to Triggers (on page 27)
- Detonating an IED (on page 28)
- Knock-Out Effect (on page 29)
- On Explode Code (on page 30)

3.1 IED Options

The IED Editor Object has the following options that can be set:

> **NOTE**
>
> To obtain the IED functionality as described in the following table, use the IED Editor Object. Placing individual IED objects in the mission using the Quick Menu (see Quick Menu Actions in the VBS4 Trainee Manual), for example, does not provide the same functionality.

IED Option	Description
Name	Variable name of the IED. Only relevant if you intend to reference the IED in script code.
Type	Defines the 3D model that is used to visualize the IED in VBS4.
Explosion Size	Size of the explosion that the IED generates.
Explosion Type	Sets the type of explosion. The options are: • **Deadly** - Kills units that are close to the explosion. • **Wound Only** - Does not kill units. Useful for EVAC type missions. • **Fake (No Damage)** - The IED does not do any damage. See Knock-Out Effect (on page 29) for information on how different explosion types affect characters.
Disarm Duration	Time (in seconds) it takes to disarm an IED, using the **DISARM IED** option in the Quick Menu for vehicles, or the **Disarm Bomb** 3D World Action for units. **NOTE** Can only be set in Prepare Mode. For more information, see User Actions in the VBS4 Trainee Manual.
Manipulated By	Administrator can specify which side can pick up and plant the IED. **NOTE** Can only be set in Prepare Mode. All other sides only get the **DISARM IED** / **Disarm Bomb** option in the Quick Menu / 3D World Action.

IED Option	Description
Booby Trapped?	IED explodes on pickup unless disarmed first. An unarmed IED placed in VBS Editor does not offer this option. Player placed IEDs can use user actions to add and remove a booby trap. Administrators can toggle a booby trap using the right-click context menu in Execute Mode. **NOTE** If an IED is attached to a unit with the **Booby Trapped?** setting set to true, then it explodes instantly if done so in the Execute Mode, and if done in the Prepare Mode, then it explodes instantly upon mission start. This happens with any IED Type (on the previous page) and any Trigger Type (below).
Trigger Type	Enables you to set what triggers the IED, see IED Trigger Type (below). **NOTE** Can only be set in Prepare Mode.
Radio Range	This field appears when **Radio** trigger types are selected, see IED Trigger Type (below).
Prox. Distance / Side	These fields appear when **Proximity** trigger types are selected, see IED Trigger Type (below).
Can Be Jammed?	This field appears when **Radio**, **Cell Phone**, and **Proximity** trigger types are selected, see IED Trigger Type (below). If set to **true**, these IED trigger types can be jammed by a CREW device (see Enabling CREW in the VBS4 Editor Manual) to prevent detonation. **NOTE** If the IED is carried by a suicide bomber or is attached to a vehicle (VBIED), it cannot be jammed.
On Explode Code	Script to run when the IED explodes (see On Explode Code (on page 30) for further details).

3.2 IED Trigger Type

Use the **Trigger Type** drop-down to select how to trigger the IED:

Admin and Bomb Carrier

Only an administrator or the bomb carrier can set off the IED. Can be moved by players if the **Manipulated By** field allows the side of the player to do so. Players can also shoot the IED or disarm it.

Admin Only

Only an administrator can detonate the IED. Can be moved by players if the **Manipulated By** field allows the side of the player to do so. Players can also shoot the IED or disarm it.

Cell Phone

Similar to the Radio IED except that there is no range setting. The cell phone has an unlimited detonation range.

Passive IR

Detonation of the IED using an infrared tripwire mechanism.

> **NOTE**
>
> If an IED of this **Trigger Type** is attached to a unit (see Attaching IEDs to Units and Vehicles (on page 26)), the IED Editor Object disappears from the Editor Objects List and is instead placed in the unit Equipment Inventory.

Follow these steps:

1. With the IED in your Inventory, select user action **Place Passive IR IED x** (**x** represents the number of the IED if there are multiple IEDs).

   You are now using a wire laying device similar to the Wire Controlled IED, which you can use to move to the placement area of the IR laser device.
2. When you are at your destination, select user action **Place IR Laser x** to place the device (it appears as a wire coil, similar to the Wire Controlled IED. This represents the beginning of the IR tripwire).
3. Move to the position where you want to place the other end of the IR tripwire.
4. Select user action **Place IR Reflector x**.

   The wire coil object disappears and no further objects are visible. The Passive IR is an invisible trigger object.
5. Select user action **Activate IR IED x** to activate the device.

Pressure Plate

Setup a pressure plate to trigger the IED. You can change the size (**Plate Dimension L / W**) and relative position to the IED (**Plate Pos X / Y**). In addition, set the **Activation Weight**, the options are:

- **Every Weight (Even Humans)**
- **Light Vehicles**
- **Heavy Vehicles**

To rotate the Pressure Plate, see Pressure Plate Rotation (on page 20).

> **NOTE**
>
> If an IED of this **Trigger Type** is attached to a unit (see Attaching IEDs to Units and Vehicles (on page 26)), the IED Editor Object disappears from the Editor Objects List and is instead placed in the unit Equipment Inventory.

Proximity

Enables you to define whether or not the IED explodes automatically when a unit of side **Proximity Side** approaches within **Proximity Distance** meters of the device. You can also select whether or not the IED can be jammed, see Can Be Jammed? (on page 22).

> **NOTE**
>
> If an IED of this **Trigger Type** is attached to a unit (see Attaching IEDs to Units and Vehicles (on page 26)), the IED Editor Object disappears from the Editor Objects List and is instead placed in the unit Equipment Inventory.

Radio

Detonation of the IED by radio signal, up to the maximum distance set in the **Radio Range** box.

> **NOTE**
>
> If an IED of this **Trigger Type** is attached to a unit (see Attaching IEDs to Units and Vehicles (on page 26)), the IED Editor Object disappears from the Editor Objects List and is instead placed in the unit Equipment Inventory.

Follow these steps:

1. With the IED in your Inventory, select user action **Place Radio IED x** (**x** represents the number of the IED if there are multiple IEDs).
2. Select user action **Detonate Radio IED x** to detonate the IED.

The IED detonates.

> **NOTE**
>
> You can only detonate IEDs you placed. This action works for vehicles also. If you are outside the range specified in **Radio Range** field, the IED does not detonate.

Wire Controlled

Detonation of the IED using a wire connection.

NOTE

If an IED of this **Trigger Type** is attached to a unit (see Attaching IEDs to Units and Vehicles (on the next page)), the IED Editor Object disappears from the Editor Objects List and is instead placed in the unit Equipment Inventory.

Follow these steps:

1. With the IED in your Inventory, select user action **Place Wire Controlled IED x** (**x** represents the number of the IED if there are multiple IEDs).

   The IED is placed on the ground and a wire coil object is floating in front of you.

2. Move to another position.

   The wire spools off as you move and there is a HUD indication of how much wire you have spooled off, and how much of the 200 meter length is left.

3. When you have reached your destination you can do one of the following:

   - Select user action **Detonate Wire Controlled IED x** to detonate while still holding the coil.
   - Select **Drop Wire IED x** to drop the coil on the ground. This allows you to move about while the wire remains in place. If you remain within 5 meters of the coil, the **Detonate Wire Controlled IED x** is still available.

   Image-5: Wire Controlled detonation

Timer

A type of fuse. When selected, the **Timer** field appears. The administrator can specify the time to detonation from scenario start.

NOTE

If an IED of this **Trigger Type** is attached to a unit (see Attaching IEDs to Units and Vehicles (below)), the IED Editor Object disappears from the Editor Objects List and is instead placed in the unit Equipment Inventory.

NOTE

The timer cannot be adjusted by players in the scenario.

Timer Player Activated

A type of fuse. Allows the administrator to place an IED that can be picked up, replaced, and detonated by a player-specified timer. For more information on how the player can set the IED timer, see Improvised Explosive Devices (on page 31).

NOTE

If an IED of this **Trigger Type** is attached to a unit (see Attaching IEDs to Units and Vehicles (below)), the IED Editor Object disappears from the Editor Objects List and is instead placed in the unit Equipment Inventory.

NOTE

For the **Radio**, **Cell Phone**, **Passive IR**, and **Wire Controlled** IED trigger types, some form of in-game action is required before they become active. Merely placing them using VBS Editor is not sufficient to activate them.

3.3 Equipment Inventory

Picking up the IED using the Equipment Inventory (see Equipment Inventory in the VBS4 Trainee Manual) or the user action has exactly the same result.

However, the same does not apply to dropping the IED, because there is a difference between just dropping it on the ground and placing (arming) it. If you drop the IED using the Inventory, you are merely dropping it. The only way to set / arm an IED is to use the **Place IED** user action.

3.4 Attaching IEDs to Units and Vehicles

You can attach IEDs to units or vehicles using standard linking techniques (see Linking Editor Objects in the VBS4 Editor Manual), bearing the following in mind:

- Position the IED at a suitable location near the vehicle or unit.
- Remember that the IED object is attached to the other entity – so when the unit or vehicle moves, the IED does too.

- You can hide or unhide the IED by right-clicking it and selecting **Hide / Unhide IED** from the context menu.
- IEDs can be linked to other IEDs to form a daisy-chain using the **LShift + Drag** shortcut. Double-headed arrows on the connecting lines indicate that IEDs affect each other.

3.5 Attaching IEDs to Triggers

IEDs can be attached to triggers, so that they explode when the trigger condition becomes "true".

Follow these steps:

1. Create a trigger with the desired condition (for example, a radio call).
2. Right-click the **IED** and select **Attach to Trigger** from the context menu.
3. Drag the linking line to the respective trigger.

The IED is attached to the trigger.

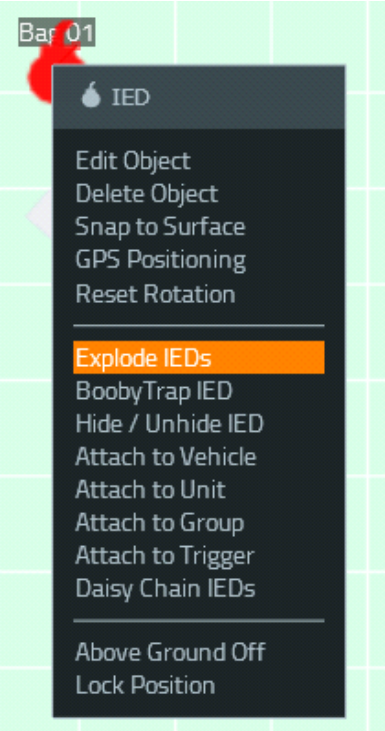
> **NOTE**
>
> A linked IED can still be detonated manually (using the VBS Editor context menu) or, if set to **Proximity**, by an approaching unit or vehicle.

3.6 Detonating an IED

In Execute Mode administrators can detonate an IED at any time using the **Explode IED** context menu option.

Also, a player driving a vehicle with an attached IED or acting as a suicide bomber has the **DETONATE IEDS** option in their Quick Menu (see Quick Menu Actions in the VBS4 Trainee Manual), meaning they can blow themselves up at any time.

Image-6: Detonating an IED



You can activate multiple triggers / detonate IEDs, using the Script Editor Object.

Follow these steps:

1. In the Editor Objects List, select **Script** and place the Script Editor Object on the map.
2. In the **Filter** drop-down, select **Special Scripts**.
3. In the **Script File** drop-down, select **Activate Trigger(s)** or **Explode Linked IED**.
4. In the **Execute Globally?** drop-down, select whether the script should run locally or globally in a multiplayer scenario:
    - **Execute Only on Client Where Condition is True** - Runs the script only on clients, where the **Condition** setting (see step 5) is true.
    - **Execute on Every Client, Even if Condition is False on Some** - Runs the script on all the clients.

5. In **Condition**, specify the Boolean condition for the linked triggers / IEDs (see step 8) to be executed.
6. In the **Repeatedly** drop-down, set whether the condition should be evaluated repeatedly or not:
   - **Do Not Repeat** - Evaluate the condition only once.
   - **Repeat When Condition is True Again** - Evaluate the condition every time it returns true.
7. Click **OK**.
8. Right-click the Script Editor Object, select **Link to Condition Trigger** / **Link IED**, drag the arrow and click the trigger / IED you want to link.

   Repeat this step for as many triggers / IEDs as you need.

When the scenario runs, the Script Editor Object activates / detonates the linked triggers / IEDs, according to the set condition.

For more information, see the Script Editor Object in the VBS4 Editor Manual.

3.7 Knock-Out Effect

Blast wave effects from IEDs and other explosions can knock out a unit, causing the screen to black out for a period of time. This effect is based on explosion size and proximity to the blast. Units can also experience dizziness (screen movement) for a period of time after they regain consciousness. Even if a unit is not knocked out they may still experience dizziness.

The listed IED settings produce the following effects in VBS4:

IED Setting	Description
Deadly	Causes severe damage and knockout at farther ranges.
Wound Only	Causes damage and knockout for units close to the explosion.
Fake (No Damage)	Causes no damage but causes a knockout.

NOTE

When units are in a vehicle they do not experience knockout.

Vehicles with larger caliber weapons can cause knockout when a person stands close enough to the weapon barrel. Explosions from weapons can cause knockout at close range.

3.8 On Explode Code

It is possible to run a script when the IED explodes. This script can access several parameters passed in through `_this`:

```
[
- THE IED OBJECT
- ASSIGNED VEHICLE VARIABLE NAME IF ANY - STRING
- TYPE OF IED CHARGE - STRING (class name)
- TYPE OF EXPLOSION - STRING  "normal"/"wounding"/"fake"
- WAS IED BOOBYTRAPED? - BOOLEAN
- DISARM DURATION - SECONDS
- CAN THE IED BE JAMMED BY CREW? - BOOLEAN
- DETONATION TYPE - STRING "proximity"/"PressurePlate"/"Admin"
- PROXIMITY DETONATION RADIUS - SCALAR (IF "proximity")
- PROXIMITY DETONATION SIDE - STRING "West"/"East"/"All"...
- PRESSURE PLATE SIZE A - SCALAR
- PRESSURE PLATE SIZE B - SCALAR
- PRESSURE PLATE SIZE X - SCALAR
- PRESSURE PLATE SIZE Y - SCALAR
- WEIGHT OF PRESSURE PLATE - SCALAR
- PROXIMITY TRIGGER - IF EXISTS LOCALLY, ELSE NULL
]
```

4. Improvised Explosive Devices

IEDs allow you to simulate explode-on-demand roadside bombs, suicide bombers, and vehicle-borne IEDs. For more information about configuring IEDs, see Placing Improvised Explosive Devices (on page 19).

Approach the IED to disarm or arm it.

To disarm the IED, look at it, until the **Disarm Bomb** 3D World Action appears (see 3D World Actions in the VBS4 Trainee Manual). Then, select it.

The IED is being disarmed.

> **NOTE**
>
> An IED takes some time to disarm (the actual time is set by the scenario designer). Not all IEDs can be disarmed. If the bomb is set to explode on proximity, it detonates as you approach it. There are no visual indicators to signify whether the bomb is set to proximity or not (only the administrator knows the status of the IED).

Image-7: An EOD disarms an IED

To arm the IED by setting a time fuse, select the **Set Time Fuse** 3D World Action, set the time to detonation in the time dialog, and click **OK**.

The IED timer is set, and the IED detonates after the set time elapses.