ATAK

Vehicle Navigation System (VNS)

Plug-in Version: 3.10

ATAK 5.5.0

11 July 2025

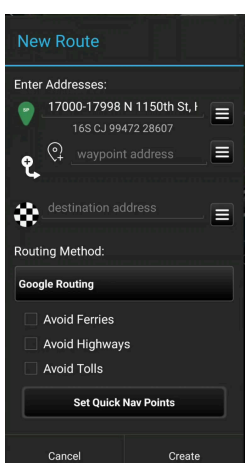
Contents

Overview

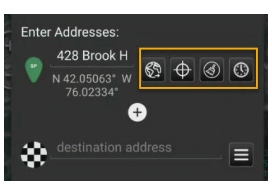
The Vehicle Navigation System (VNS) Plug-in provides enhancements to the route planning features of ATAK. VNS adds vehicle routing engines to enable new and existing routes to be snapped to roadways and generates audio and visual cues for navigation. It also provides navigational enhancements such as on-the-fly re-routing. VNS supports three routing options; Google Routing (requires a Google API key), Offline routing, or routing using a Private Routing Server.

Route Creation - VNS Route

An offline data set needs to be downloaded to the local device for VNS to be able to use the Offline Routing engine for route planning and for on-the-fly re-routing. Please see the section Setup – Offline Areas for more information.

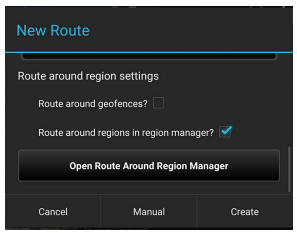


VNS allows for point to point, over the road route planning. To begin a new VNS route, open the Routes tool and select +. When VNS is active and a new route is selected, the Route Planning dialog box appears instead of the manual placement dialog. To manually create a route with the ATAK core feature, select **Manual**. Otherwise, use the text entry fields to enter the start location, one or more Waypoints and destination addresses for the route creation.



Selecting the **Menu** button beside each address field displays address choice options. Available options are location entry via GoTo, map select, clear a selected address, choose an address from a list of recent addresses. Select from **Google Routing Offline Routing** or **Private Routing Server** for the routing method. For Google Routing, check any of the avoidance boxes as desired. For offline routing, select the local data set to use. When information is correct, select **Create** and the VNS route will calculate and display.

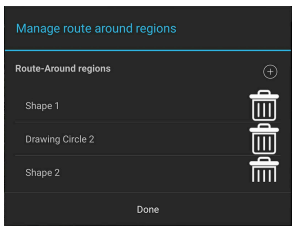
Route Creation - VNS Route (continued)

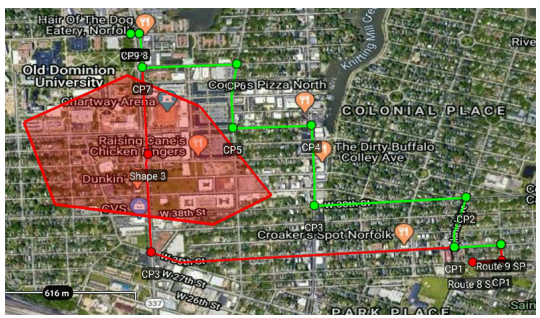


The offline routing planner provides the option to specify "route around regions," which are regions that the route planner will attempt to avoid when planning a route. To access the list of regions to be routed around, select **Open Route Around Region Manager** under the route planner options for offline routing.

Existing shapes can be selected to be routed around, and new regions (shapes) can be created directly from this interface.

Note: "Route around regions" only applies to the offline routing method and only if the option is enabled during the route's creation.

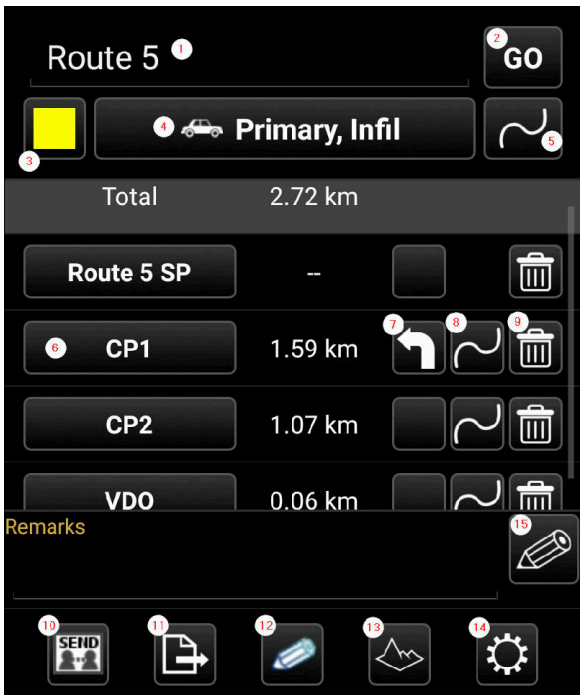




Additionally, the user can choose to select to route around geofences, which will treat any geofence as a route around region.

Route Creation - VNS Route (continued)

Number	Button	Action
1	Route Name	Rename the route
2	GO	Begin navigation
3	Color	Select route color
4	Route Details Dropdown	Change route type, infiltrate/exfiltrate, primary/secondary, checkpoint order
5	VNS Recalculate	Recalculates the VNS route (full route)
6	Checkpoint Name	Set checkpoint names
7	Navigation Cue	Set visual/audio navigation cue for checkpoint
8	VNS Recalculate	Recalculates the VNS route (ONLY the route segment prior to the checkpoint)
9	Delete	Removes checkpoint
10	Send	Send route to other device
11	Export	Export to local file
12	Edit	Opens route for editing
13	Elevation Profile	Displays the Elevation Profile
14	Settings	Opens the Route Preferences
15	Remarks	Add remarks and hashtags

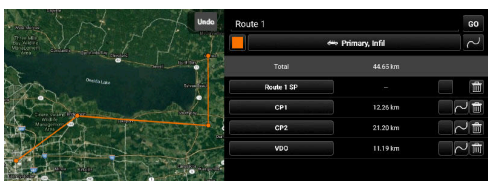


Route Creation - Converting Manual Route

VNS can convert manual placement routes to VNS-aligned routes. The whole route can be VNS routed, or only certain segments of a route.

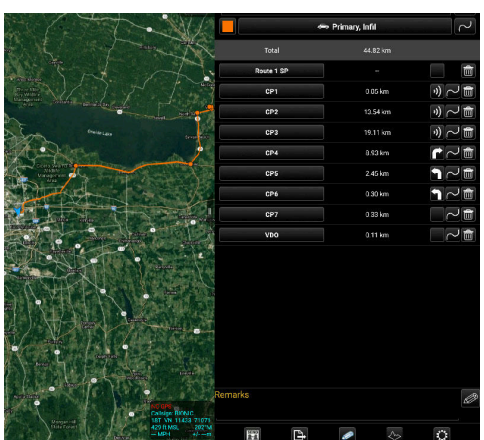
Full VNS Routing:

To perform VNS routing for the full route, open the Details for the manual route. Select the **Route Details Drop-down** and set the route to be a driving route if it is not already. Select **VNS Recalculate** at the top right of the Details panel to perform VNS routing for the whole route. Checkpoints and audio/visual navigation prompts will be added to the route.



Partial VNS Routing:

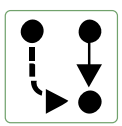
Performing partial VNS routing for only some route segments is very similar to performing the full routing. Open the details of the manual route and ensure that it is set to be a driving route. Identify which route segments need to be VNS routed. For each such segment select **VNS Recalculate** that is present on the checkpoint row that ends that route segment. Only that segment will be VNS routed while the other segments remain as they were.



Navigation - Re-Routing and Quick Navigation

On-the-fly re-routing and Quick Nav are added to ATAK core navigation when the VNS plug-in is loaded. These re-routing features require access to routing engines and data sets, so a network connection to server (Google, Private Server) or a local download of routing data (Offline) is required.

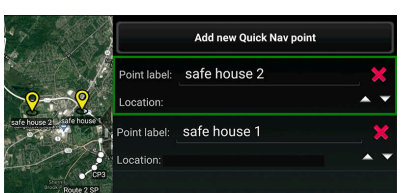
On-the-fly Re-routing:



While navigating a driving route the **Re-routing** icon will appear on the right side of the display. At navigation start, this icon will have a red border to indicate that it is inactive. While re-routing is inactive, navigation will only follow along the planned route, even if the driver goes off that route. Selecting **Re-routing** and responding to the dialog box will enable this feature, denoted by the green border around the icon. While enabled during navigation, ATAK will recalculate the route if the driver should go off route. The new route is displayed on the map and audio/visual navigation cues are updated.

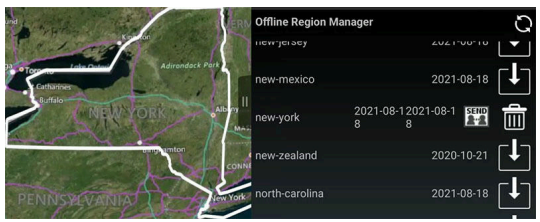
Quick Nav:

Once navigation re-routing is active the **Quick Nav** icon becomes available on the right side of the map display. This feature allows for quick re-routing to a predetermined safe location. The Quick Nav location can be defined prior to navigation by selecting **Additional Tools** > **VNS** > **Set Quick Nav Points**. Multiple Quick Nav points can be defined, and all defined points will be listed on this screen. Select **Add new Quick Nav point** to map select a point and add it to the list. Use the text field to name the point. The **Red X** deletes the Quick Nav point and the **Up/Down Arrows** move that point up and down the list.



Selecting **Quick Nav** during route navigation will bring up the list of predetermined points. Selecting a point from the list will cause the route to recalculate navigation. The new route is drawn on the map and the audio/visual cues are updated. Long pressing **Quick Nav** will automatically route to the first predetermined point on the list.

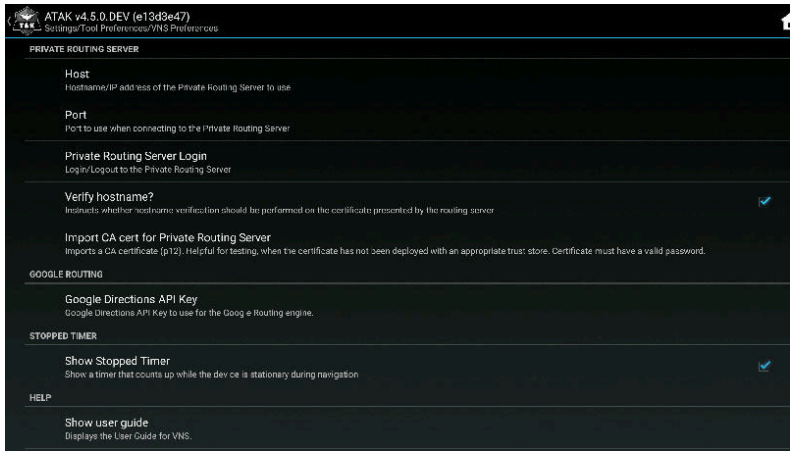
Setup - Offline Areas



The use of the Offline routing engine for route planning and re-routing requires the presence of a local data set prior to navigation. Data sets are available via the server connection which is preconfigured on each device. View, download and share these data sets by selecting **Additional Tools** > **VNS** > **Manage Offline Areas**. The server will query and list all available data sets. A local data set will have the **Send** and **Delete** icons in its row, while an available remote data set will have **Download**. Select **Delete** or **Download** to remove or add local data sets to the device. Select [Send] to package and send the data set to others.

When a local data set for offline use is available on the device a white outline is drawn on the map to indicate the boundaries of available data. This outline appears in Overlay Manager > Offline Routing Regions and is titled the name of the data set. This outlined region will regenerate at each startup if deleted, so long as the dataset is available on the local device.

Preferences



VNS has three categories of preferences – private routing server preferences, Google Directions API Key and stopped timer preferences. The VNS user guide is also listed here. Preferences can be found under Settings > Tool Preferences > Specific Tool Preferences > VNS Preferences.

The Host and Port preferences are used to define the IP address and communications port for an alternate private routing server. The private routing server login preference is used to provide authentication information. Verify Hostname can be toggled on/off. These preferences should be left blank/default unless an alternate private routing server is available and desired.

Selecting **Google Directions API Key** allows the user to add their own API key.

Toggle the Show Stopped Time preference on or off to set the presence of the stopped timer. When stopped during a route navigation the stopped timer will appear if this preference is enabled. The timer disappears once the vehicle starts moving again.