

## What's new in Carmenta Server version 4.4

**Carmenta Server provides all the necessary functionality for managing, publishing and distributing maps and other geospatial data to end users via Internet and intranet services.**

The new release includes several improvements to Carmenta Server's core capabilities. High-capacity websites can now be further boosted through increased performance and better control of the tile cache. System administrators will be pleased to find new tools for monitoring and controlling server and security settings.

This minor update also introduces Carmenta Web Explorer, a feature-packed and ready-to-use JavaScript client, based on the OpenLayers 3 framework. The web client has a modular structure, making it easy to maintain and extend with custom tools. Out-of-the-box, it can run on anything from display walls to mobile devices.

A number of server-side geoprocessing functions have been added and are available for any client application capable of handling OGC WMS layers. The functions were carefully selected to provide basic support for Command & Control (C2) type applications.

With Carmenta Server 4.4 comes a set of powerful web-based tools and services for downloading, processing and displaying weather forecast data.

Below is a more detailed summary of the improvements and new features.

### **Better Performance**

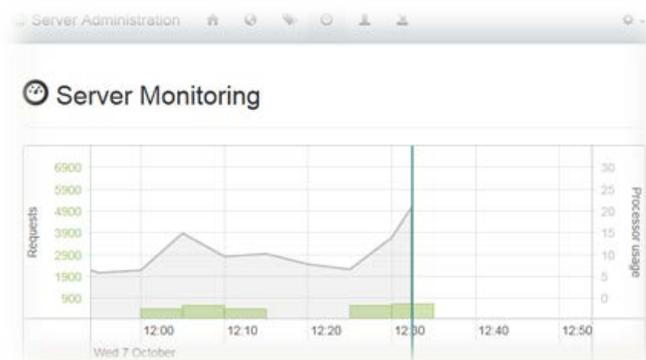
Several new additions have increased Carmenta Server's performance and ability to support high-capacity websites. A new tile cache management tool – the Tile Store Populator – has been added to the administration utility, providing detailed control of the tile caching process and enabling select areas to be pre-populated. Pre-population is carried out as a low-priority background task, enabling it to be run in a production environment. The tool can also be used to easily inspect the cache, to determine which areas and zoom levels it contains, or to manually purge the cache if necessary. The Tile Store function has also been upgraded, further improving performance and control over disk space allocation.

There is a significant improvement in performance when reading large raw raster datasets in this new version. A built-in function enables users to automatically generate overviews for most raster data formats, resulting in services with very quick map rendering – regardless of scale. In addition, the new dataset means much better scalability in a multi-core environment, due to an optimised threading model.

## Increased Reliability and Tighter Security

Carmenta Server 4.4 comes with a number of improvements for setting up, managing and operating Carmenta Server sites in a more robust and secure way. The service validation step, before final publication of services, has been extended for better verification of data connections and confirmation of correctly set properties. The surrounding IT environment can now be reconfigured without affecting published services.

A new feature on the statistics and log page is a live graph presentation of server usage. This provides web administrators with an instant overview of the server and enables them to quickly find and analyse time segments that are showing an irregular load.



**Figure 1.** Live graph presentation of server usage.

Support for https is now better integrated in the setup process and general use of https in all web interfaces has been improved. The web-based administration tool for Secure Mode settings has been extended to simplify security restriction management for individual layers.

## Greater Interoperability

As part of Carmenta's dedication to the use of international standards, the new version 4.4 of Carmenta Server contains a number of improvements for even greater interoperability, including:

- Extended support for OGC Web Feature Service (WFS) interfaces to now fully support the latest WFS 2.0 version.
- Mapviewer has been upgraded and can now also preview content from WFS services.
- Improved support for the 'update sequence' function used to notify clients about service changes. This function can now be used for automatic client updates and to create versioned cache data in Tile Store.
- Added support for PostGIS spatial databases.
- Improved support for the WMS TIME parameter.

- Support for several new SLD text formatting options.
- Detailed control over the image formats used in WMS and WMTS, via a server administration property setting.
- Extended support for the MIL-STD-2525C military symbol standard, with the addition of full support for tactical graphics (Appendix B).

## New Functions for Geoprocessing and C2 Support

This minor update launches a number of server-side geoprocessing functions, which are available for any client application capable of handling OGC WMS layers. The following functions have been carefully selected to provide basic support for Command & Control (C2) type applications:

- The Line-of-Sight analysis service returns a WMS layer displaying the areas which are visible from a given number of points defined by the client.
- The Slope analysis service calculates the slope gradient, based on terrain information, and returns a WMS showing a map layer with colour-coded slope intervals.

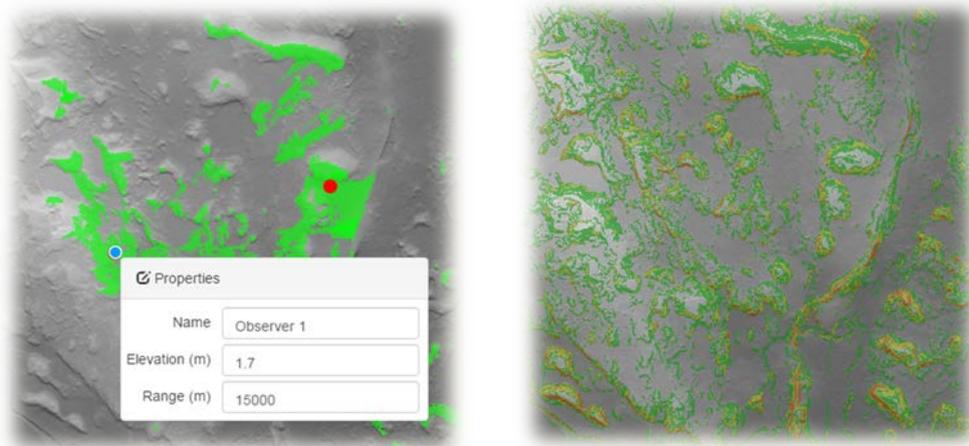


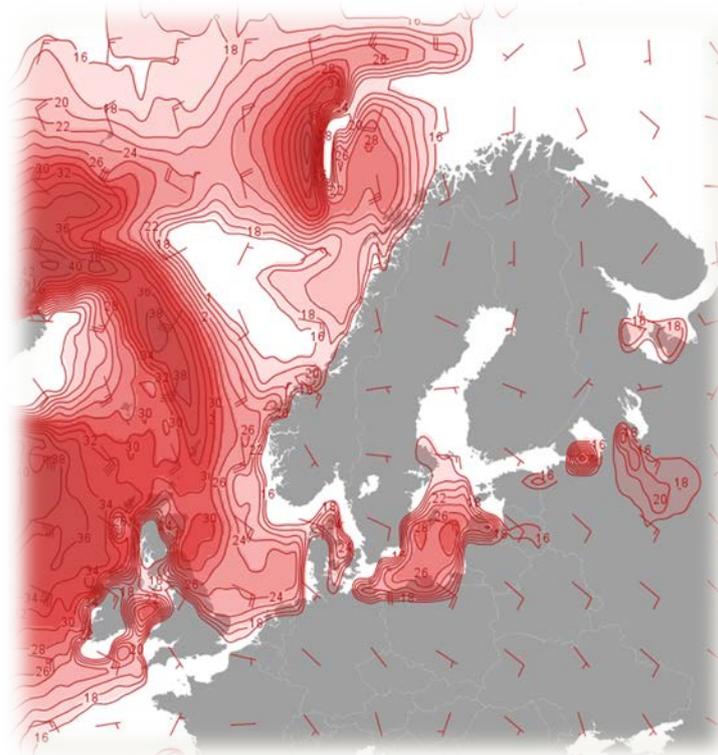
Figure 2. Results of a Line-of-Sight analysis (left) and a colour-coded Slope analysis (right).

- The Highest Points analysis service returns a WMS layer showing the highest terrain points, including elevation, within a specified area.
- The Terrain Relief analysis service returns a WMS layer showing a hill-shaded elevation map, in which the artificial sun's position can be adjusted by the client in real-time.
- The Text Search service adds new functionality for rapid text searches of attribute fields in vector datasets. It takes input strings from the client and returns objects with matching attribute text, as GeoJSON or GML features through OGC WFS.

- Services that display feature data with a hierarchical structure can use scale-dependent visualisation to avoid cluttering. This is particularly useful when displaying ORBAT views in military C2 systems.
- The web map service end-points (URLs), for connecting to the new analysis services, can be easily copied from a panel in the Carmenta Web Explorer client.

## Web-Based Weather Forecast Services

In connection with the release of Carmenta Server 4.4, Carmenta is launching a set of powerful web-based tools and services for downloading, processing and displaying weather forecast data. These include full support for reading and decoding GRIB format data, the international standard for distributing meteorological forecast data, and full support for reading forecast data from Jeppesen Marine Weather Services.



**Figure 3.** Presentation of wind forecast data as points, lines and areas.

Other functions available as part of the new Carmenta Weather Services are:

- Scheduled and automatic download and caching of forecast data.
- On-the-fly generation of iso lines and areas from gridded data.
- Complete rendering of weather parameters as annotated points, lines and areas.

## Introducing Carmenta Web Explorer – A New Rich Web Client

Version 4.4 comes with Carmenta Web Explorer, a brand new web browser application based on the Openlayers 3 javascript library. A Catalogue Panel displays a list of connected services, and individual services or combinations can be switched on and off. A Layer Panel enables the user to interact with the layer hierarchies of specific services. The modular design makes it easy to modify, extend and maintain the client.

A number of ‘utility layers’ are included with the client and will always be available to support the display of services. Default utility layers include a global background map and a number of graticules (WGS84, MGRS, etc.). An advanced bookmark tool, based on the OGC OWS Context standard, can be used to save and distribute client status and settings.

Carmenta Web Explorer has been adapted for responsive behaviour and can be used on a wide range of HW platforms, including mobile devices. Last, but by no means least, it also comes bundled with a number ready-to-use tools:

- Client-side management of CRSs and scales.
- Drawing and editing of vector features, with the option to save and load features directly in GeoJSON, KML or plain text format.
- Search and display feature, which matches text strings of attribute fields in server-side vector datasets.
- Management of, and interaction with, all of the new server-side analysis functions described above (Line of Sight, Slope, Highest Point and Terrain Relief).
- Management of time in services implementing the WMS TIME parameter.
- Full handling of WFS layers.



Figure 4. Screen shot of the Carmenta Web Explorer GUI with the Catalogue Panel to the left and Layer Panel and utility layer controls to the right.

## Carmenta Server SDK additions

Carmenta Server version 4.4 SDK has a lot of new features. The map configuration tools used to create and maintain the content map services have been extended, thereby making it quicker and easier to create advanced map configurations. Carmenta Explorer, the SDK map preview application, has been extended with features that enable the user to add data files directly onto a map configuration. The user can now start building a map configuration simply by selecting data files in Carmenta Explorer, and then continue the more advanced configuration work in Carmenta Studio. The Properties Panel in Carmenta Explorer has also been updated, and users are now able to inspect the properties of loaded datasets.

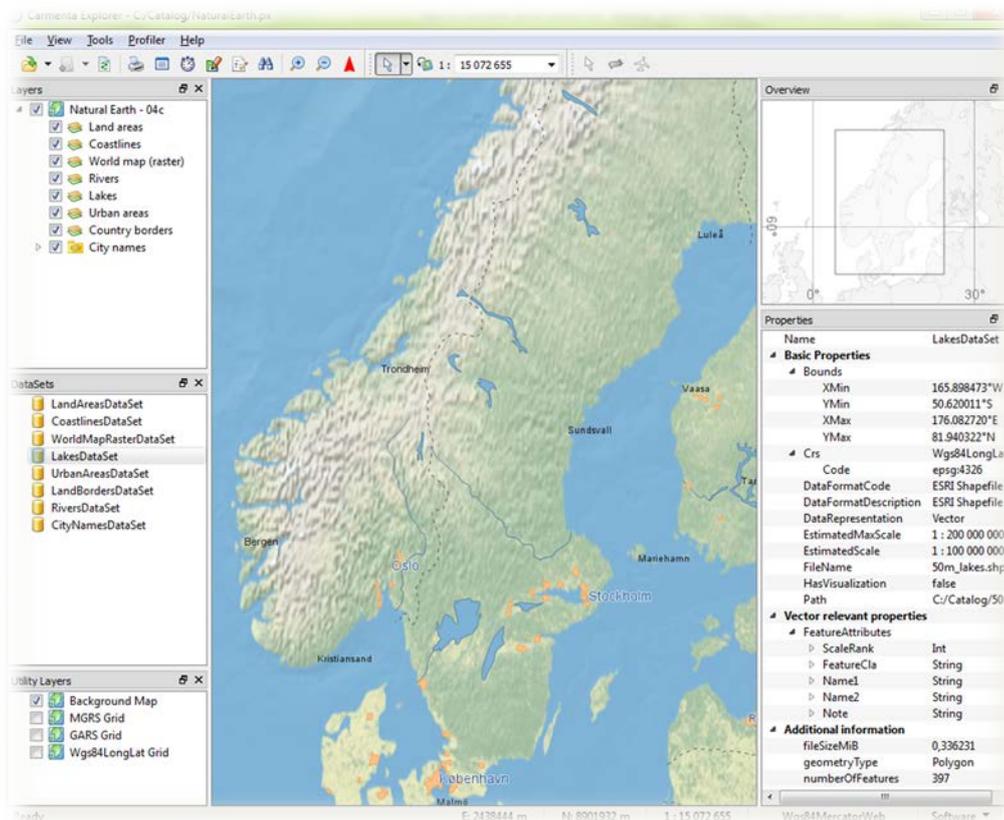


Figure 5. Screen shot of the new Carmenta Explorer GUI. Note the new Properties Panel to the right.

## Other significant improvements and additions

- A new browser-based GUI has been added for coordinated conversion based on the WPS service.
- A new 'clear settings' option is now available during reinstall/uninstall.
- A new Atom/RSS service for news feed functionality has been added. This service is based on OGC's OWS Context standard.

- A new service type has been added to support RESTful WMTS.
- Support for rapid attribute searches of file data sources, via a new text indexing feature.
- Added support for catalogue dataset functionality, usable for download services using WFS and WCS and for the reuse of datasets in services.
- Added support for GARS, the Global Area Reference System defined by NGA, in addition to the option to generate a GARS grid as a WMS layer.
- Improved text formatting features provides more options for creating customised text labels.