mmVu® Server is a real-time GNSS deformation monitoring software that processes baselines from dual-frequency GNSS receivers. It is one of the most advanced and sophisticated software that can deliver up to sub-millimetre level accuracy in real-time even at a high data rate. It has been especially designed to overcome serious GNSS challenges imposed on various project sites. The mmVu® Server is highly scalable and easily configurable. In addition, GNT’s dual-processing engines can be easily tuned-up so that the mmVu® Server can be applied to most GNSS monitoring projects regardless of the time period, distance and scale of the project.

Features
The mmVu® Server uses redundant processing modules to ensure the integrity of its results. Customized processing modules are available for unique applications.

- Provides TDD and DDC solutions by adjustable, selectable filters
- Detects sudden displacements and long-term stability trends
- Delivers up to sub-millimetre level accuracy
- Designed to overcome GNSS challenges such as high multipath, longer baselines, and ionospheric and tropospheric errors
- Flexible system deployment regardless of the time period, project scale or distance
- Archives solutions, observations, and server activity
- Upgradeable and expandable to cover a growing project scale
- Supports structure specific coordinate system

Application
The mmVu® Server fits in most real-time deformation monitoring applications such as civil structures, localized natural features and industrial applications, and is designed for challenging GNSS environments.

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Structures</td>
<td>Bridges, Dams, Weirs, Dykes, Buildings, Towers, Breakwaters, Wind turbines</td>
</tr>
<tr>
<td>Natural Features</td>
<td>Volcanoes, Glaciers, Avalanches, Landslides, Ground subsidence</td>
</tr>
<tr>
<td>Industrial Applications</td>
<td>Construction sites, Offshore oil platforms, Mines, Railways, Roads, Tailings ponds,</td>
</tr>
</tbody>
</table>

System Deployment Diagram
- Dual-frequency GNSS receivers are located at the monitored structure.
- Dual-frequency reference station is located outside of the deformation zone.
mmVu® Server

GNSS Deformation Monitoring Software

Performance
The mmVu® Server delivers mm-level accuracy in real-time even in challenging GNSS environments. Sub-mm level accuracy is also achievable under certain conditions.

Note:
Based upon repeated displacement detection tests in a controlled environment. System performance may vary depending upon the GNSS monitoring station environments.

mmVu® Server Products
GNT offers three different types of mmVu® Server products for customers to choose the right one that fits ideally for their monitoring needs.

- mmVu® Server Basic: an economical solution for small scale projects
- mmVu® Server Plus: an optimal solution for complex projects
- mmVu® Server Premium: for extreme GNSS environments with special requirements

mmVu® Server Basic
- Economical: suitable for all budgets
- Generic Applications: fits most of the deformation monitoring applications
- Simple Configuration: fits small scale projects
- Easy site implementation, maintenance and operation

mmVu® Server Plus
- Optimal: suitable for medium budgets
- Oriented Applications: fits complex monitoring applications
- Medium Configuration: longer baselines and higher data rate

mmVu® Server Premium
- mmVu® Server Premium is available for applications that require customization of the license options for their special needs.

Capabilities

<table>
<thead>
<tr>
<th>License Options</th>
<th>mmVu® Server Basic</th>
<th>mmVu® Server Plus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter Type</td>
<td>TDD, DDC</td>
<td>TDD, DDC</td>
</tr>
<tr>
<td>Monitoring Application</td>
<td>Real-time, Static</td>
<td>Real-time, Static</td>
</tr>
<tr>
<td>Data Rate</td>
<td>Up to 1 Hz</td>
<td>Up to 10 Hz</td>
</tr>
<tr>
<td>Baseline Length</td>
<td>Up to 10km</td>
<td>Up to 30km</td>
</tr>
<tr>
<td>No. of Baseline</td>
<td>Up to 5 baselines</td>
<td>Up to 20 baselines</td>
</tr>
<tr>
<td>GNSS Environmental Challenge</td>
<td>Lower</td>
<td>Medium</td>
</tr>
</tbody>
</table>

Local Server Computer and GNSS Stations
The mmVu® Server can be integrated with customer’s existing system or operated as a stand-alone system. GNT offers GNT’s hardware solutions for customers who look for pre-configured hardware products.

The local server computer PS100 is a dedicated computer on which mmVu® Server is preloaded and configured for individual applications.

DGS100 is used to monitor a location of interest or serve as a reference station. DGS100 consists of a geodetic quality GNSS receiver and antenna, wired or wireless Ethernet-to-serial device server and an optional high-volume data logger.