

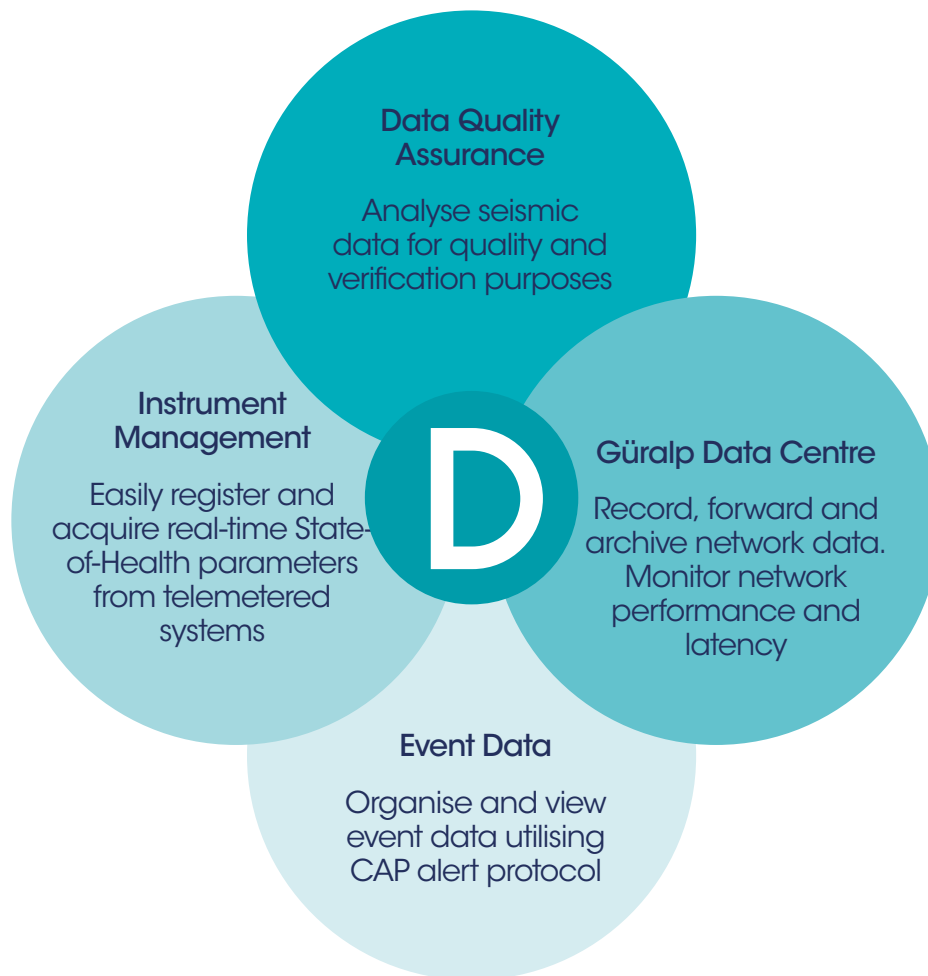
DISCOVERY

SIMPLE SEISMIC NETWORK AND DATA MANAGEMENT



DISCOVERY

A single unified interface to a range of powerful tools for managing your seismic network.



KEY FEATURES

IP address discovery of instrumentation on LAN or Internet.

Simple instrument and data management with access to hardware State-of-Health (SoH); data streaming; GNSS location; instrument response and calibration values.

Perform advanced analysis on waveform data, including plotting power spectral density graphs (PSDs) and spectrograms.

Display a map of triggered events from Common Alert Protocol (CAP) receiver.

Facility to remotely update the digitisers' firmware and upload configuration files to multiple units simultaneously

Quick access to locally recorded data saved to SD card, downloadable at differing sample rates to streamed data if desired.

Stream SEEDlink data to cloud based data centre with multiple redundant data centres supported.

Time-based data download from SD card at differing sample rates to streamed data.

Available for Windows, iOS and Linux operating systems.

Instrument Management

Registering Your Instruments

IP address discovery and network connectivity are handled automatically by a registry server that operates 'behind the scenes' to register the presence and IP address of running instruments. This eliminates the requirement for static instrument IP addresses.

Monitoring State-of-Health

Discovery displays a range of key parameters indicating the instruments' 'health', gathered and displayed in a simple list with a traffic light status for rapid assessment. In the event of communication failure with an instrument, the system will alert the operator via text and email. This list can be logged over time if required.

| Status | Label | System | Name | Serial | Firmware ver | Connection Type | WAN Address | LAN Address | Uptime | Last Contact | Latitude | Longitude | Altitude | Timing quality | Voltage | Humidity | Temperature | Free space |
|--------|-----------------------------------|-----------------|------------|--------|--------------|-----------------|-------------|-------------|-----------------------------|--------------|----------|-----------|----------|----------------|---------|----------|-------------|------------|
| Active | Comet Khanon But Test | Cartina | CERT-APSC | 44893 | 2.1.12779 | CERT-APSC | 0.0.0.0 | 10.30.0.85 | 255.255.0.0 29:53:48 | Just Now | 51.3612 | -1.1642 | 12.34 | 0 | 0.000 | 0.000 | 0.00 | 0.00 |
| Active | Comet NO LABEL | Cartina | CERT-APSC | 34672 | 2.1.12779 | CERT-APSC | 0.0.0.0 | 10.30.0.8 | 255.255.0.0 8 days 8 Hrs | Just Now | 51.3689 | -1.1632 | 12.34 | 0 | 12.199 | 32% | 20.29°C | 96.86% |
| Active | Comet Fishkiffransky | Affinity | DRS-405549 | 405549 | 1.0-15757 | (DRS-405549) | 0.0.0.0 | 10.30.0.32 | 255.255.0.0 27 days 2 Hrs | Just Now | 0.0000 | 0.0000 | 0.00 | 0 | 0.00V | 8% | 6.00°C | |
| Active | Comet Platium | Affinity | DRS-405512 | 405512 | 1.0-15667 | (DRS-405512) | 0.0.0.0 | 10.30.0.10 | 255.255.0.0 124 days 1 Hrs | Just Now | 0.0000 | 0.0000 | 0.00 | 0 | 0.00V | 8% | 6.00°C | |
| Active | Comet Test Back | Cartina | DRS-5054 | 22610 | 2.1.12715 | (DRS-5054) | 0.0.0.0 | 10.30.0.46 | 255.255.0.0 15 days 22 Hrs | Just Now | 51.3612 | -1.1642 | 107.30 | 100 | 12.799 | 20% | 27.89°C | 50.13% |
| Active | Comet NO LABEL | Cartina | DRS-9019 | 30953 | 2.1.12832 | (DRS-9019) | 0.0.0.0 | 10.30.0.26 | 255.255.0.0 2 days 2 Hrs | Just Now | 51.3612 | -1.1640 | 113.50 | 100 | 12.509 | 10% | 18.59°C | 90.14% |
| Active | Comet Test cable identified | Cartina | DRS-0251 | 13054 | 2.1.12096 | (DRS-0251) | 0.0.0.0 | 10.30.0.67 | 255.255.0.0 09:12:19 | Just Now | 51.3666 | -1.1635 | 12.34 | 0 | 12.199 | 20% | 31.29°C | 0.00% |
| Active | Comet NO LABEL | High Temp Plate | HTF-736A | 29670 | 0.00-10000 | (HTF-736A) | 0.0.0.0 | 10.30.0.97 | 255.255.0.0 18 days 3 Hrs | Just Now | 0.0000 | 0.0000 | 0.00 | 0 | 0.00V | 8% | 6.00°C | |
| Active | Comet NO LABEL | Minimus | MIN-0556 | 854 | 2.1.12790 | (MIN-0556) | 0.0.0.0 | 10.30.0.47 | 255.255.0.0 3 days 19 Hrs | Just Now | 50.9688 | 86.1990 | 12.34 | 0 | 14.299 | 14% | 30.80°C | 96.60% |
| Active | Comet N50 Shaban | Minimus | MIN-0556 | 1360 | 2.1.12790 | (MIN-0556) | 0.0.0.0 | 10.30.0.87 | 255.255.0.0 15 days 8 Hrs | Just Now | 51.3344 | -1.2243 | 12.34 | 0 | 25.799 | 10% | 30.40°C | 90.83% |
| Active | Comet Pin-character serial number | Minimus | MIN-12345 | 74567 | 2.1.12790 | (MIN-12345) | 0.0.0.0 | 10.30.0.11 | 255.255.0.0 13 days 10 Hrs | Just Now | 51.3612 | -1.1640 | 115.20 | 100 | 12.199 | 12% | 30.30°C | 91.80% |
| Active | Comet Silver | Minimus | MIN-2752 | 10671 | 2.1.0-8207 | (MIN-2752) | 0.0.0.0 | 10.30.0.123 | 255.255.0.0 231 days 8 Hrs | Just Now | -58.9600 | 82.2170 | 12.34 | 100 | 24.000 | 10% | 37.50°C | 51.83% |
| Active | Comet BEN-REN | Minimus | MIN-2857 | 11093 | 2.1.11400 | (MIN-2857) | 0.0.0.0 | 10.30.0.5 | 255.255.0.0 02:00:24 | Just Now | 51.3612 | -1.1640 | 117.89 | 100 | 13.099 | 11% | 33.00°C | 0.00% |
| Active | Comet PinIP-Official | Minimus | MIN-4156 | 18726 | 2.1.0-8207 | (MIN-4156) | 0.0.0.0 | 10.30.0.82 | 255.255.0.0 104 days 22 Hrs | Just Now | 51.3614 | -1.1642 | 12.34 | 100 | 20.999 | 11% | 37.50°C | 2.43% |
| Active | Comet Murray Test | Minimus | MIN-3857 | 28501 | 2.1.1.30 | (MIN-3857) | 0.0.0.0 | 10.30.0.83 | 255.255.0.0 154 days 22 Hrs | Just Now | 51.3611 | -1.1643 | 97.19 | 100 | 15.799 | 7% | 37.00°C | 0.00% |
| Active | Comet PL | Minimus | MIN-3857 | 38293 | 2.1.0-8202 | (MIN-3857) | 0.0.0.0 | 10.30.0.72 | 255.255.0.0 14 days 22 Hrs | Just Now | 51.3611 | -1.1642 | 12.34 | 100 | 24.599 | 11% | 32.29°C | 45.19% |
| Active | Comet STUFF | Minimus | MIN-7957 | 12063 | 2.1.12710 | (MIN-7957) | 0.0.0.0 | 10.30.0.49 | 255.255.0.0 01:20:24 | Just Now | 51.3612 | -1.1640 | 110.30 | 100 | 11.199 | 12% | 40.40°C | 0.00% |

The traffic light status system provides for rapid network assessment

State-of-Health information

- > Host name and label
- > System and product types
- > Digitiser IP address
- > Time since last contact
- > Supply voltage
- > System temperature, internal humidity
- > GNSS status for time acquisition
- > MicroSD cards recording status and available storage space
- > Solar charge status/battery status when using Guralp Power Pack Modules

Rapid instrument configuration

Instrument/digitiser configuration pages can be accessed directly via an integrated VPN/Tunnel that circumvents network address translations (NATs) present in internet modems and ADSL connections. Operators can remotely update firmware and upload configuration files to multiple units simultaneously for rapid application to multiple systems.

System type: Minimus | Host label: NO LABEL | Host name: MIN-C555 (10.10.0.13) | Serial number: 35517

Digitiser Config Please reboot this Minimus if you have changed any setting

Mon 04 Dec 2017 1:52:45 PM Auto Refresh Auto Reboot On Err

label: NO LABEL Station Name: TEST Network Code: 00 Filter quality: High

Bluetooth PIN: 0000 Filter quality: High

Reply mode: Normal Deploy

Applied Rotation

Inclination 0 Radian 1 Radian 2 Radian 3 Radian 4 Radian 5 Radian 6 Radian 7 Radian 8

Analogue Sensor

Input Gain: Unity Sensor Type: Fortis Calibration Select: Disable Calibration Signal: Disable Calibration Level: Full

Recorder: Sensor Gain: External Switch: Sensor0 Calibrate: Calibrate Sensor0 Streams: Normal

Radian Sensor

Number of Radars: 0 Outlook status: Ready Displayed Radian Controls: Radian 1

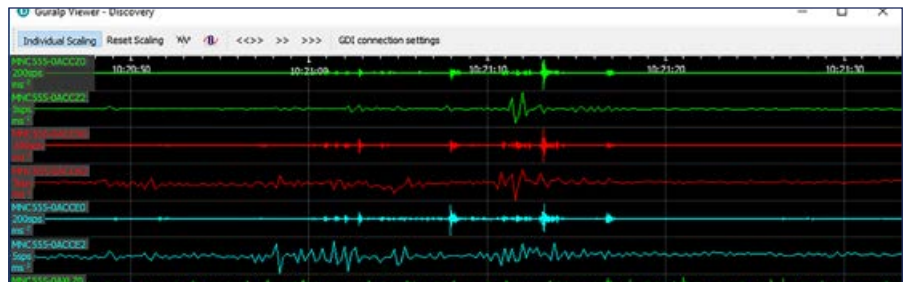
FPGA firmware update FPGA update takes around 15 minutes and requires cold power cycle when finished. Built-in version: 3.1

Seismic Data Quality Assurance

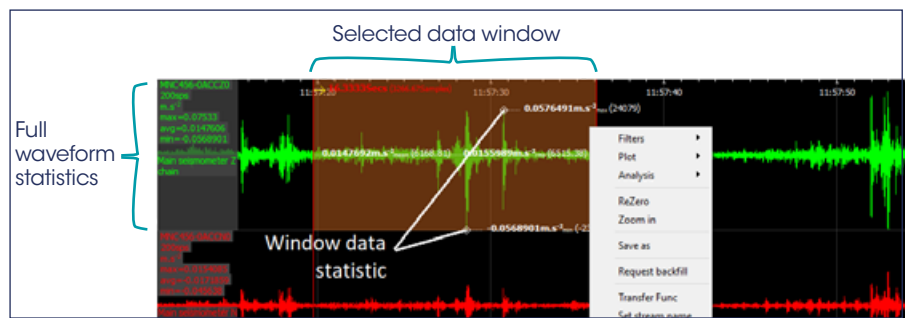
A range of tools to analyse the performance of a seismic sensor.

Versatile waveform viewer

Choose to view live streamed data or loaded Miniseed files. Basic amplitude and time zoom functions with streams easily added or removed.

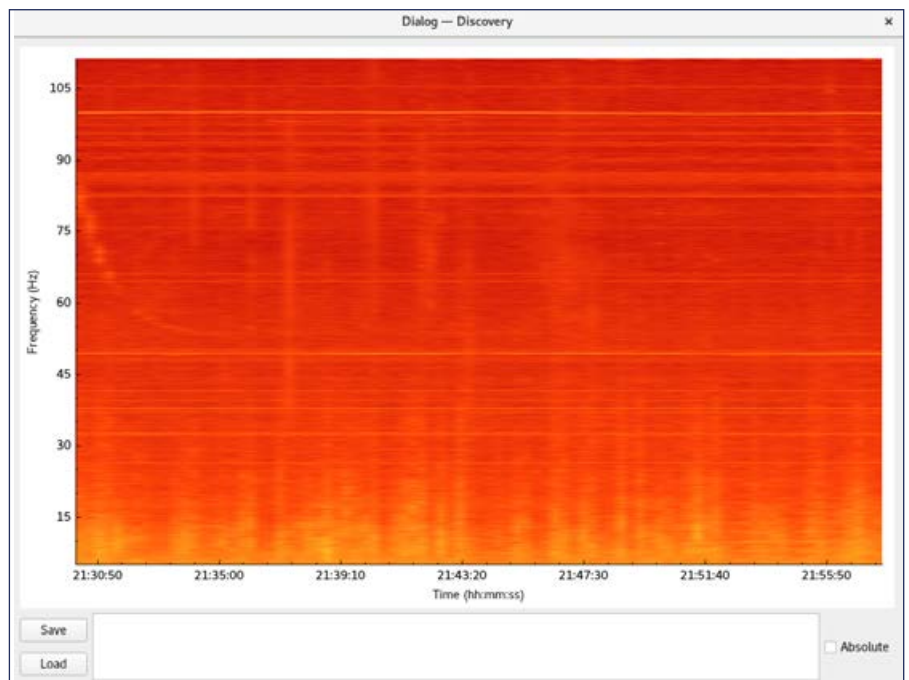


Signal statistics, measurements and comparisons can be performed with ease.



Power spectral density plots (PSDs)

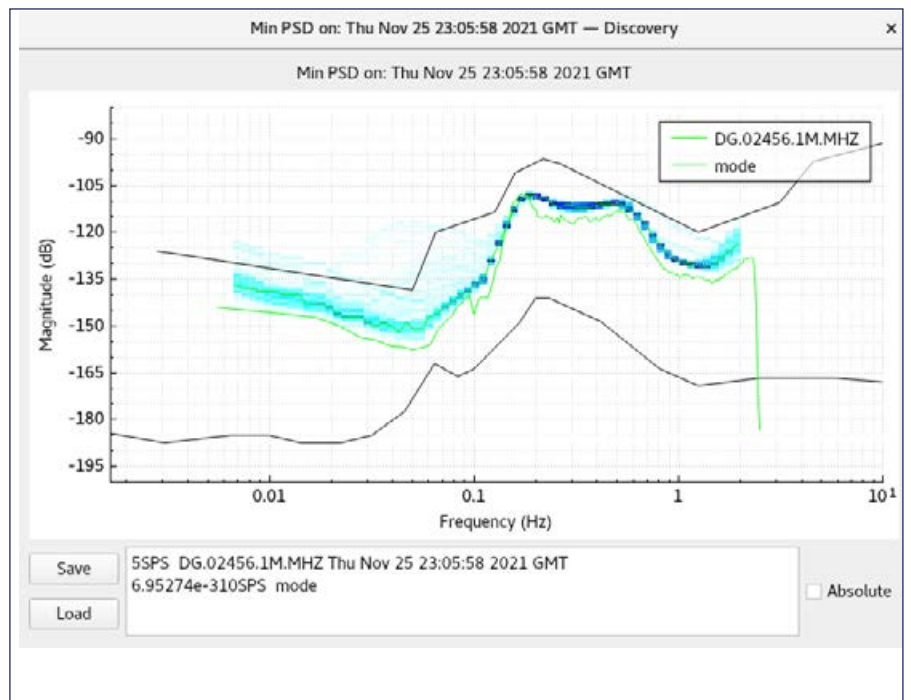
PSDs of individual or groups of instruments forms the basis of a set of tools used to evaluate an instruments performance as well as the quality of the installation.



Min PDS

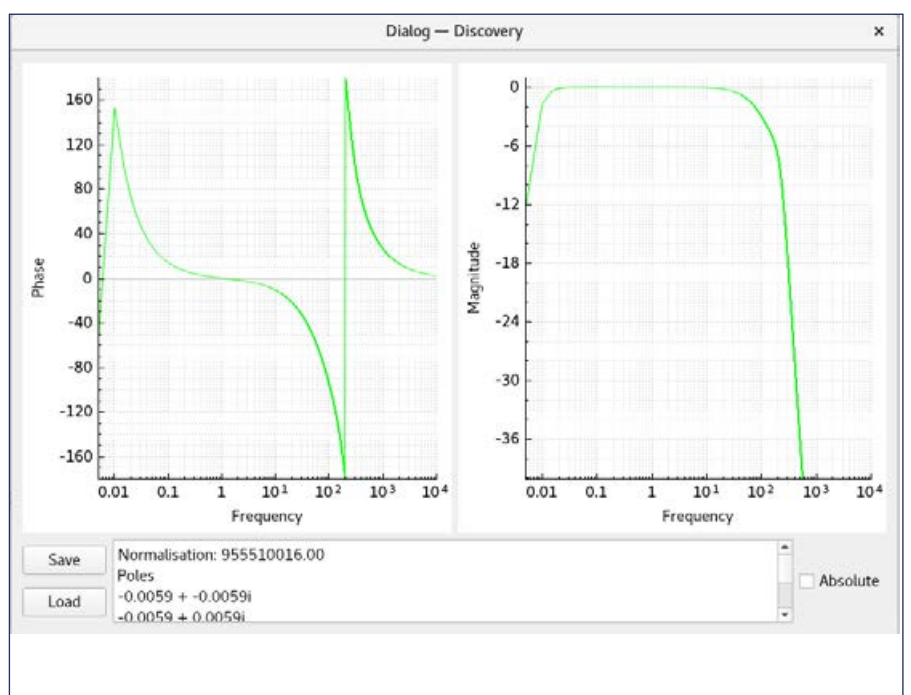
Analysis of instrument data over long periods of time can highlight intermittent faults or installation shortcomings.

The Min PSD function looks for the spread of noise recorded over time.



Instrument Response

New generation Güralp instruments and instruments connected via the Guralp Minimus digitiser have response (Poles/Zeros) and gain parameters recorded internally. This simple tool plots these parameters to verify their integrity.



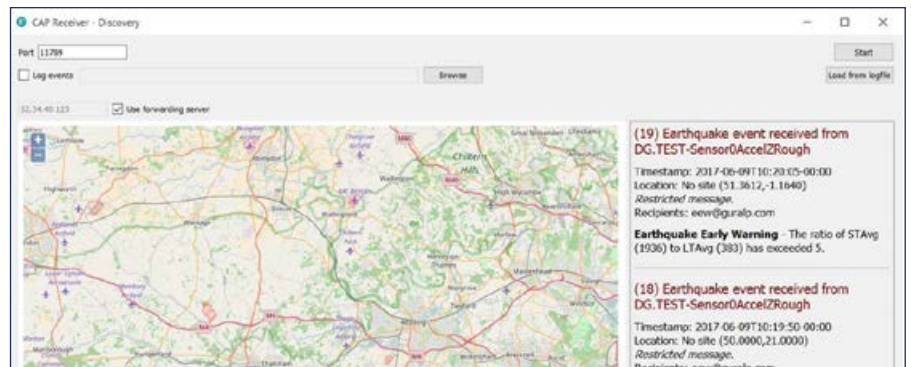
Event Data

Trigger events from instruments can be recorded and displayed on a map as part of a range of features dedicated to EEW implementations. This information is conveyed using the open Common Alert Protocol (CAP).

Event map view

Map of triggered events from CAP receiver

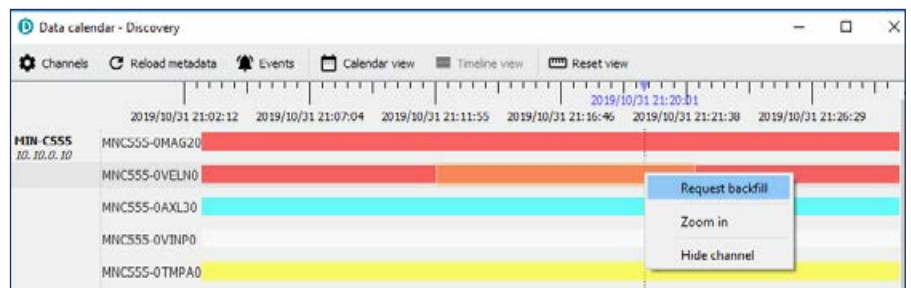
The information contained in the CAP message are displayed at the right-hand side of the window.



Event calendar view

Following an alert triggered by an event, you can view locally recorded data captured over the preceding two weeks.

Additionally, there is an option to back fill gaps in streamed data from the SD card.



Güralp Data Centre

A powerful range of tools for managing seismic network data and performance.

The Güralp Data Centre (GDC) offers simple and robust tools for managers of mission critical networks.

Suitable for seismic networks of every scale, new instruments can be added easily and organised into groups or sub-networks based on any number of common features.

Networked instruments can be mass configured, using 'virtual tunnel', which creates a direct link between the instrument and the registry server. Data is streamed in industry standard SEEDlink to a central, typically cloud-based, server where the data is saved in configurable folder structures.

The GDC can be configured to simultaneously store, archive and forward data using the GDC 'ringbuffer', including to downstream processors such as Earthworm or SeisComP. For example, for Earthquake Early Warning applications, low-latency Causal data can be streamed to an Earthworm processor monitoring for EQ events, whilst Acausal data is saved to file for analysis at a later date.

GDC utilises industry standard protocols managed through a simple interface to ensure that the creation and operation of the seismic network is as simple as possible.

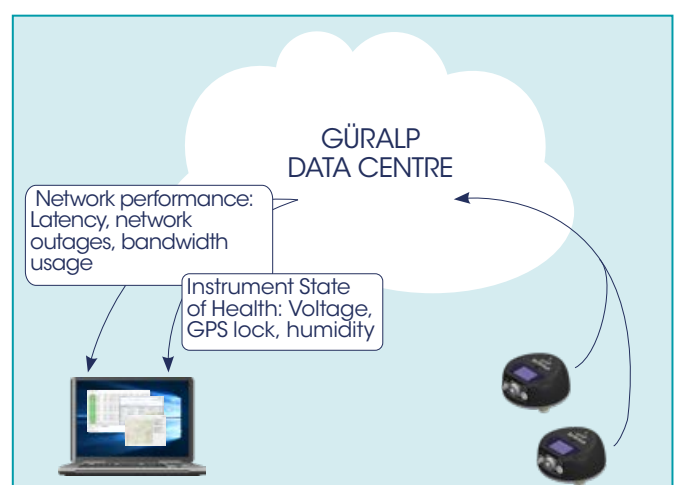
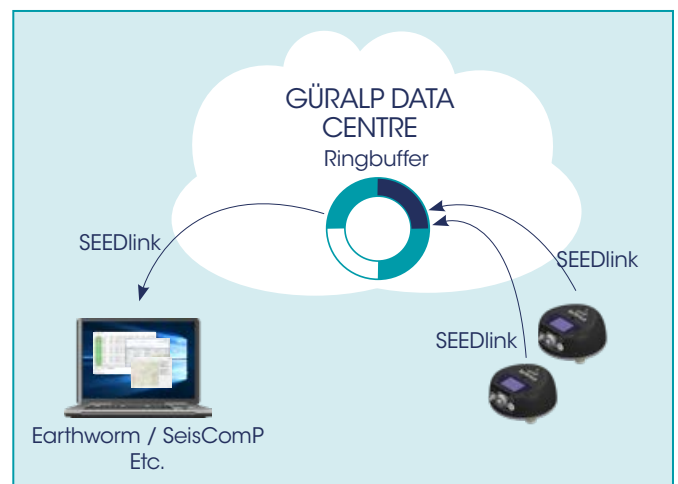
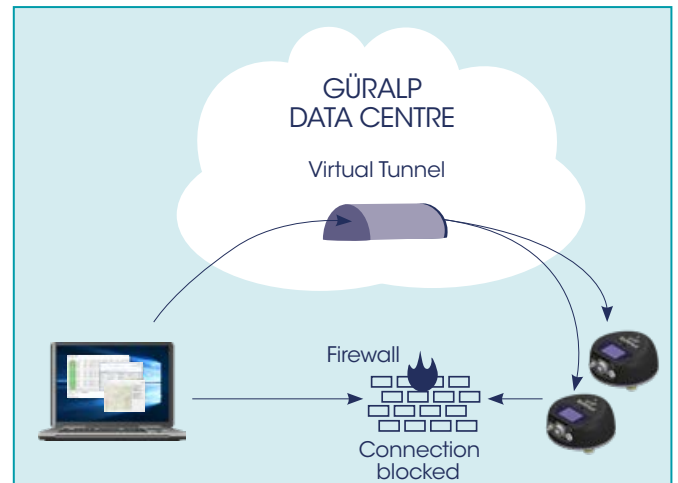
Interrogate network and sub-network state-of-health.

GDC incorporates the capability to analyse station metadata over the long-term. This allows for analysis of long-term latency performance across the network and sub-networks as well as outage instances and bandwidth usage.

The performance data is captured and displayed in a number of applets designed to make the maintenance of large networks as simple as possible, directing resources to stations or sub-networks that require attention.

Güralp GDC System Support

Güralp offers a full installation and configuration service for customers requiring a GDC system and can also provide a fully monitored service for data acquisition projects.





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reliability, function or otherwise, all
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