MEOS™ CONTROL
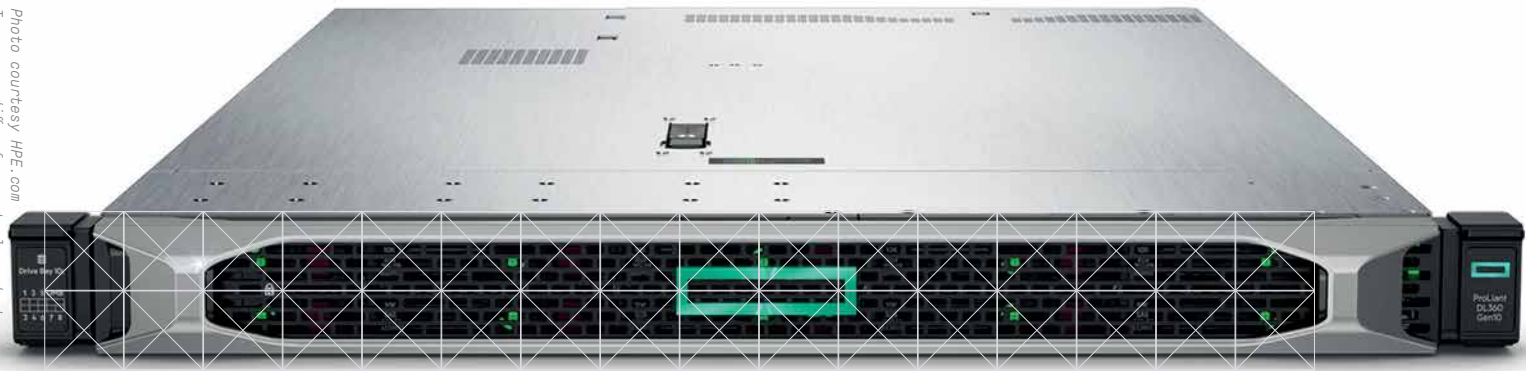
Saving cost in Ground Station operation

MEOS™ Control allows for Ground Station operations with less personnel and improved availability compared to traditional manual operations.

OPERATIONS

A typical Ground Station often consists of a number of specialized units, e.g. demodulators, modulators, antenna control units (ACUs), converters, switch matrices, etc. These units normally have their own Graphical User Interface (GUI), but also a well-defined interface (API).

Instead of handling these units as stand alone units, MEOS™ Control integrates them into one overall system. This allows for efficient operations with minimal personnel, by providing a common user interface.

This provides operations of all equipment as one system, implying that ACUs, demodulators, switch matrices, etc. are scheduled in one operation to handle the mission in question.

In addition, MEOS™ Control provides a common API for external M&C clients.

STATISTICS

During operation, MEOS™ Control collects all available statistics from the connected equipment, and stores it in a database. These statistics are provided in real-time through the MEOS™ Control's external interface, through the embedded GUI, and summarized as post-pass quality reports.

By storing all statistics, and providing necessary tools, MEOS™ Control allows for both historical analysis and diagnostics.

When combined with MEOS™ Connect, the Ground Station components become an integrated part of an overall Ground Station network.

BENEFITS

- One common API and GUI to interface all units.
- Connected units appear as an integrated part of the system, thus providing one common entry point for scheduling and status information.
- Activities can be scheduled immediately or time-based (ahead in time).
- Extensive quality reports summarizing past activities, incorporating status from all units into one XML report.
- The Graphical User Interface can be run locally and remotely on any network attached computer.
- Stand-alone operation or controlled by an external monitoring and control system.

MULTI EQUIPMENT SUPPORT
- Support for existing Ground Station Equipment
- Easy adaption to new equipment

DISTRIBUTION
- Report distribution through FTP, SFTP

SCHEDULING
- Automatic, based on orbit prediction for selected missions
- Time-base, up to weeks in advance
- Immediate

QUALITY REPORTING
- Real-time qualitative and quantitative statistics from all connected units
- Historical view of qualitative and quantitative statistics for previous activities from all connected units, based on satellite and orbit.
  Both as numeric values and graphs.
- Automatic generation of reports, including qualitative and quantitative statistics, events and plots from all connected units.
  Available as file or through standard web browser
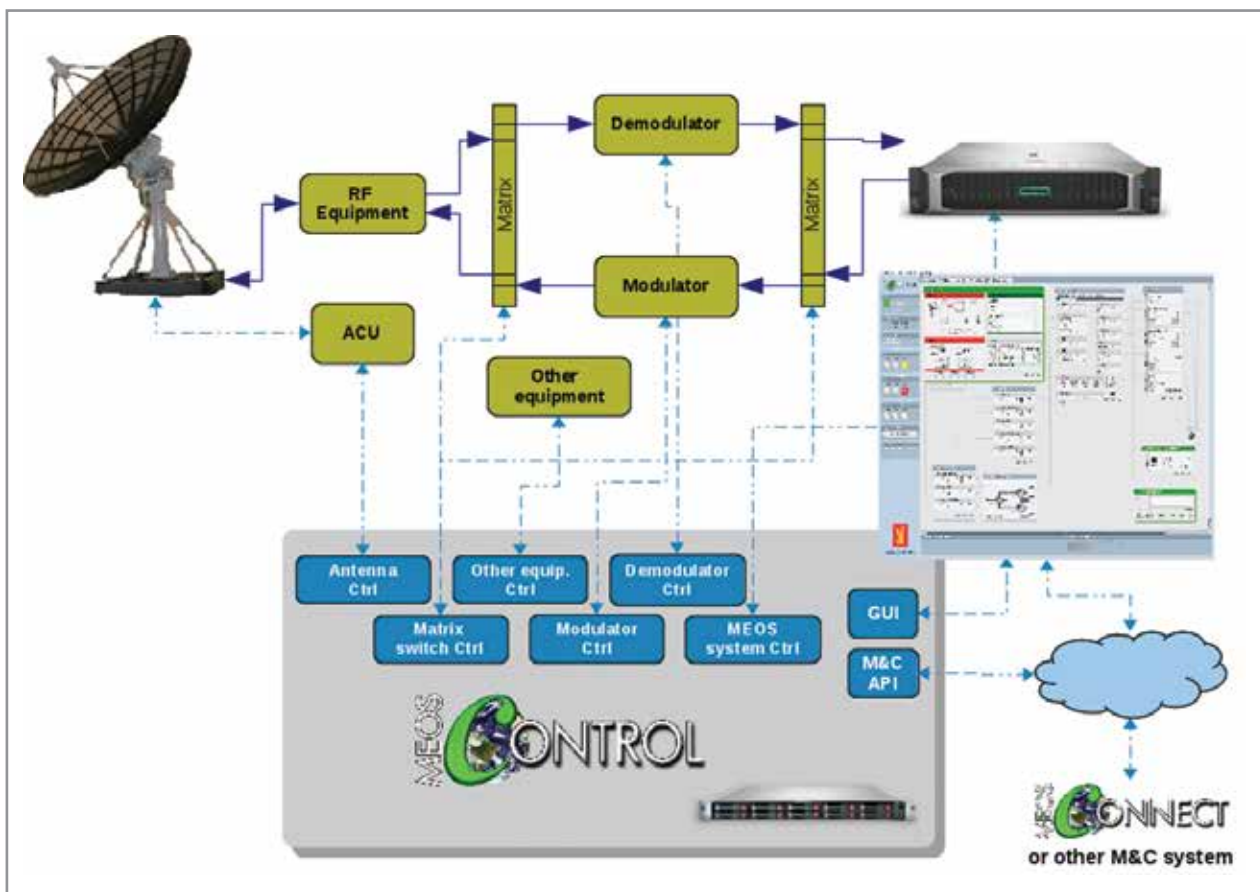
GRAPHICAL USER INTERFACE (GUI)
- Programmable (XML definition).
  Stand alone or Java application through web browser, local or remote

EXTERNAL INTERFACES
- TCP socket and XML/Protobuf based, with minimal bandwidth usage
- Access authentication
- MEOS™ Connect Ready
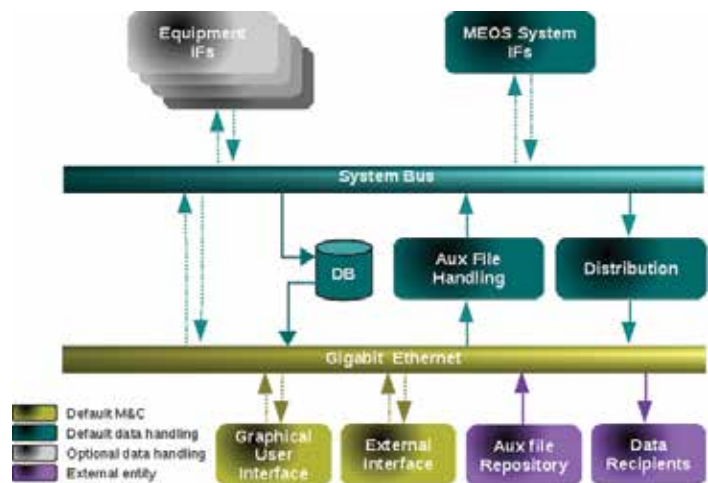
FUNCTIONAL OVERVIEW

SUPPORTED EQUIPMENT

The following equipment are supported by
MEOS™ Control:

Receivers

- MEOS™ Capture , HRDFEP
- InSnec Cortex HDR, CRT, Quantum, DPU
- Quorum DSP and Modis Receivers
- Orbital LRD/HRD-200 demodulator
- LSIMSS CTP (Command and Telemetry Processor)

Modulators

- MEOS™ Capture HRTG

Switch Matrices

- Specialty MicroWave RF-Switch, RF-matrix
- Cytec Matrix Switches, ECL/TTL matrix
- Quintech QRM Matrix Switch, IF matrix
- Mini Circuits RF Switch

Miscellaneous Equipment

- MEOS™ Capture HRFEP, CMDREC
- ADAM modules, relay switch via ADAM 4520
- SMP Up/Down Converter
- Miteq 9800 converters
- LP Technologies LPT-300, Remote Spectrum Analyzer

Antenna Controllers

- MEOS™ Antenna
- Viasat SCC
- L3 Datron GSC, ACA
- Yantai ACU
- Quorum ACU
- Orbital OACP ACU
- Leo antenna

SUPPORTED INTERFACES

The following interfaces are supported by
MEOS™ Control:

Monitoring and Control interfaces

- TCP/IP, XML and Socket based

Equipment interfaces

- RS-232/422, TCP/IP

Data Distribution interfaces

- FTP, FTPS, SFTP

PHYSICAL

- Rack mountable chassis
- Height x Width x Depth:
  (4.32 x 43.47 x 69.85 cm)
- Weight: appr. 15 kg
- Power:
  - 100 to 120 VAC / 200 to
  240 VAC (Dual power supplies)
- Temperature;
  - Operating: 10°C to 35°C
  (non operating: -30°C to 60°C)
- Relative humidity (non condensing):
  - Operating: 10% to 90%
  (non operating: 5% to 95%)
- Separate rack mountable keyboard and
 monitor unit (optional)

Also avalable as VMware

GRAPHICAL USER INTERFACE
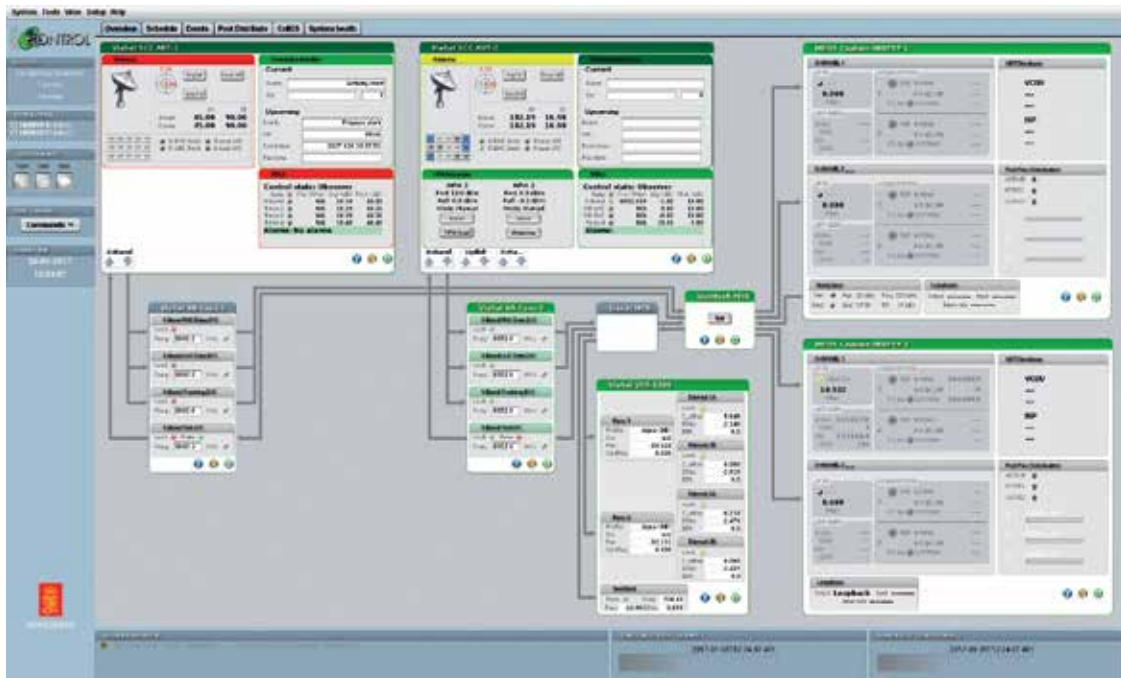
FEATURES

- Common, platform independent, GUI to all integrated products
- Common, socket based external interface (XML/Protobuf format) to all integrated units
- Historical status data kept in SQL database, with several access tools
- Support for external overall monitoring and control system
- Scalable architecture, allowing for new units to be added
- Remote access
- MEOS™ Connect ready
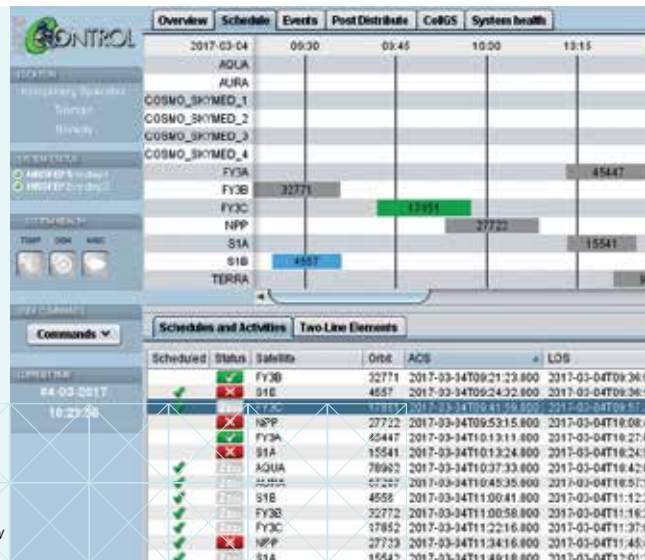
MEOS™ Control GUI, Schedule view

APPLICATION NOTE

MEOS™ CONTROL

THE CHALLENGE

A network of satellite ground stations typically consists of many sites. Each site may have one or more antennas and associated switching matrices and receivers. The stations may have individual technical solutions that may also evolve during the operational life. Operations are typically under a combination of local and centralized control. Equipment diagnostic tools are available primarily at the station level. Generating and distributing status reports and statistics to support operational decisions is typically a manual process.

Operational schedules are distributed from the central site to the stations. In some cases manual work is required to run the stations according to these schedules. Manual work is also required at the central site to assemble reports, make statistics available and present this during operations briefings.

THE SOLUTION

MEOS™ Control is designed for seamless integration into ground station equipment. Its GUIs and remote monitoring and control capability provide detailed system visibility and control from any location in the network, with minimal bandwidth requirements. Network capacity utilization is optimized by automatic and adaptive bandwidth allocation and retransmission.

System status and data quality statistics are automatically generated and disseminated for central archiving and report compilation.

BENEFITS

MEOS™ Capture, MEOS™ Control and MEOS™ Connect can be combined into a ground station network requiring an absolute minimum of manual operations. This reduces operational cost and delays and improves operations reliability.

DELIVERY:

MEOS™ Control is normally configured, tested and pre-qualified at KSGS premises.

Alternative configurations may be available upon request.

RELATED PRODUCTS:

- MEOS™ Capture HRFEP
  - High Rate Front End Processor

- MEOS™ Capture HRTG - High Rate Test Generator

- MEOS™ Connect
  – Ground Station Networking / Systems-of-systems

- MEOS™ Antenna
  – 3.0 - 5.0 m multi-band antenna

Specifications subject to change without any further notice.
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