

METEO
FRANCE

Centre de
Météorologie
Spatiale

Architecture of the operational systems

Computer architecture

The distributed computer architecture of the operational configuration of the CMS is built around a TCP/IP Ethernet Gigabit network backbone and switched 100 Megabit/s Ethernet subnetworks. A secure interconnection network enables Frame-Relay links to be connected for data exchanges with the:

- other services of Météo-France and Internet access
- Eumetsat site at Darmstadt in Germany
- NESDIS site at Suitland in the USA.

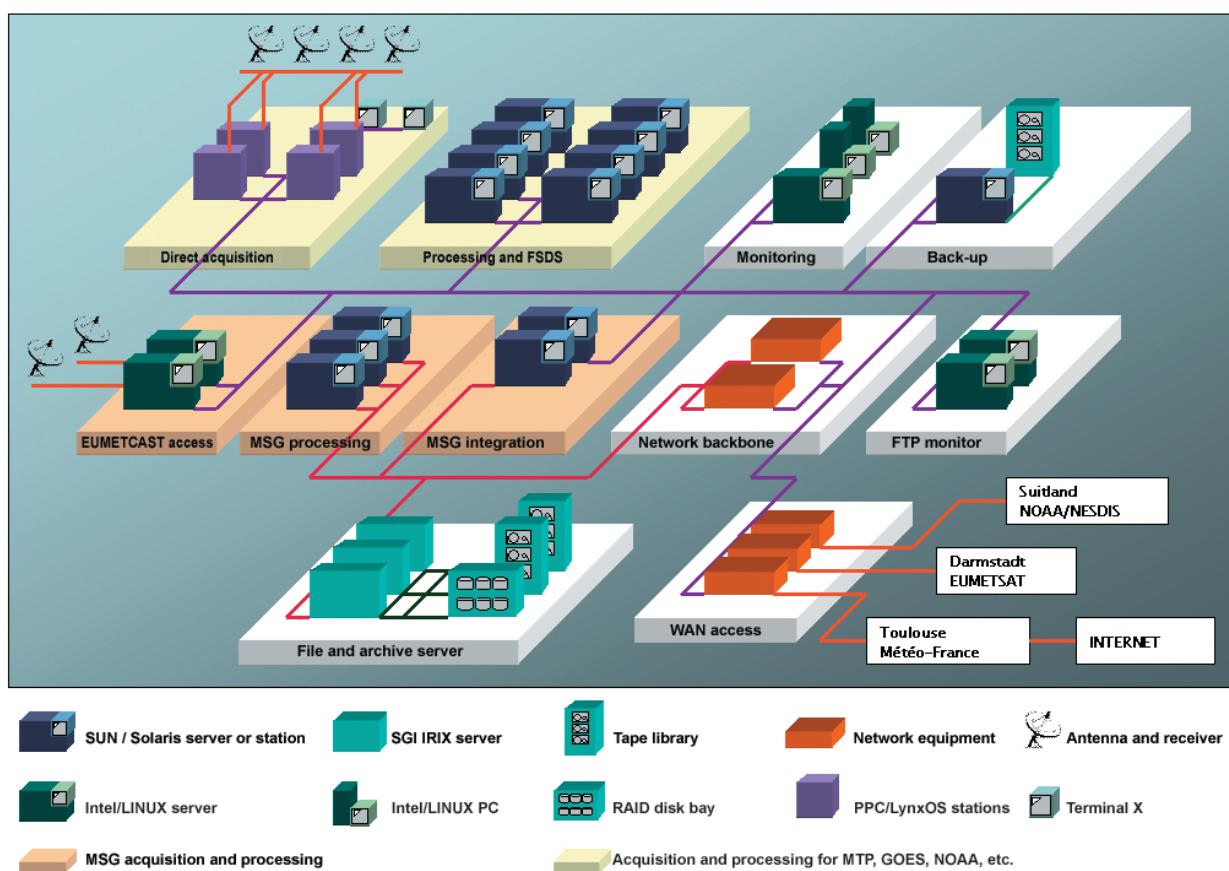
All the elements of the production chain: Acquisition - Processing - Transmission – Archiving, together with the network equipment, include automatic switchover mechanisms or backup procedures to meet the requirement for a round-the-clock, year-round continuous service. The automatic sequencing of tasks and different systems of production monitoring and control, guarantee a high level of availability of the production systems.

Real-time data acquisition

The data flows of the satellites NOAA/HRPT (665 Kb/s), METEOSAT-MTP HRI (166 Kb/s) in normal position 0° and at position 63°E (IODC), GOES-E/GVAR (2.1 Mb/s) represent a volume of 20 Gigabytes per day. They are acquired in real time on dedicated systems driven by PowerPC under UNIX-LynxOS and specialised two-channel PCM boards interfaced with the radioelectric systems. A PC based DVB reception system running on Windows XP receives the EUMETCast data flow, including the MSG data (HRIT/LRIT) which represents a volume of 35 Gb per day.

The RapidScan data from METEOSAT-6 and EARS data (ATOVS data from NOAA) complete this broadcast.

The Japanese (GMS and later MTSAT) and American (GOES-W) geostationary satellite data to which the Indian (METSAT Kalpana) data may be added are received in delayed time via the Frame-Relay links. More than 60 gigabytes per day are therefore acquired at the CMS and sent by FTP to the processing computers across the network.



Processing

The processing machines containing the systems and software applications are SUN Microsystems servers running under UNIX/Solaris. The most powerful ones used for MSG processing, including the SAF applications, are fitted with 4 processors with 8 gigabytes of memory and a disk space of 400 Gb. At the output the products created are sent over the network to the communications monitor (MonFTP). The FSDS (Foreign Satellite Data Service) machines process and reformat the GMS, GOES-E and W data before sending it to Darmstadt within the framework of the relay mission carried out for Eumetsat.

Transmissions

The communications monitor is a PC server running under Linux that uses FTP to provided the automatic and secure dissemination of the products to users within or external to Météo-France. In particular, around 3 gigabytes are currently sent each day to Météo-France's central facility by Frame-Relay (Lannion-Toulouse) for which the access rate is currently 3 Mb/s.

Electrical architecture

The CMS is supplied by the public mains power supply. In the event of a network failure, the CMS has two power generating units that can take up the relay.

Downstream, three regulated generators coupled in parallel power the operational rooms. If one of them fails, the load is borne by the other two without affecting the operation.

Non-operational computers are powered by an inverter and a dedicated generator.

