European Centre for Medium-Range Weather Forecasts (ECMWF) Case Study

About ECMWF

European Centre for Medium-Range Weather Forecasting (ECMWF) is an independent intergovernmental organization supported by 35 states.

ECMWF is both a research institute and a 24/7 service that produces and disseminates numerical weather forecasts to its member states. The data is fully available to the national meteorological services of the Member States. The Centre also offers a catalogue of forecast data that can be purchased by companies worldwide and other commercial customers. ECMWF supercomputing facility (and its data archive) is one of the largest of its kind in Europe and Member States that use 25% of its capacity for their own purposes.

The organization was founded in 1975 and today employs around 400 people from over 35 countries. ECMWF is one of six members of the Coordinated Organizations, which also include the North Atlantic Treaty Organization (NATO), the Council of Europe (CoE), the European Space Agency (ESA), the Organization for Economic Cooperation and Development (OECD) and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT).

ECMWF is headquartered in Reading, UK,
with other offices in Bologna, Italy, and Bonn, Germany.

Company
European Centre for Medium-Range Weather Forecasts (ECMWF)

Country
Italy

Industry
Intergovernmental organization

Business Challenges
Provide the new data center in Bologna, Italy, with a high performing network infrastructure to enable the supercomputers used by ECMWF, which, due to the nature of their business, had to provide data on a European level, thus using high-need servers that require a big space.

Panduit Solution
- Singlemode OS2 and multimode OM4 fibre optic connectivity with PanMPO connectors
- Copper connectivity with
- For some 1G links, copper links were chosen using the complete end-to-end solution consisting of TX6000 Enhanced Category 6 U/UTP cable
- Mini-Com® Cat 6 UTP RJ45 TG Jack Modules
- TX6-28™ Cat 6 UTP small-diameter patch cords

Business Benefits
"We chose Panduit because we consider it to be one of the best suppliers of passive infrastructure technologies, both in terms of fibre specifications and performance, the quality of components and technical solutions offered."

"Having had a supplier like Panduit at our side, who followed us during the design phase and was able to suggest improvements, was an important added value for us. Panduit's technical support also moved promptly to offer us quick and timely interventions."

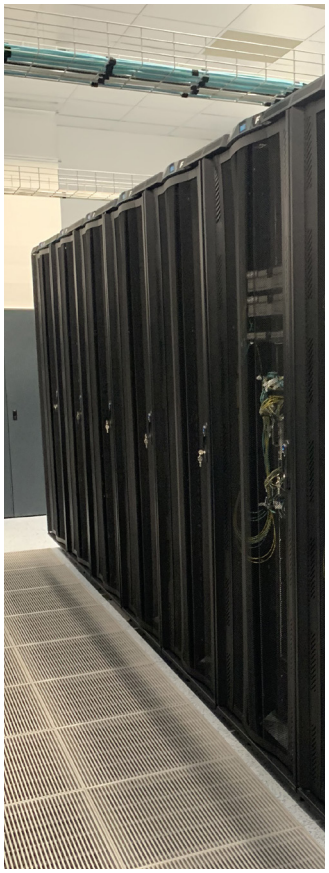
Michele Toni, Senior Site Engineer, ECMWF

Business Challenges

To cope with the increased need for data processing, ECMWF decided in 2016 to open an international competition for bids from ECMWF member states to host a new data center.

The Italian bid, which proved to be the winner of the competition, was submitted by the Emilia Romagna Region (R-ER) and the site chosen for the new ECMWF data center was the new Tecnopolo in Bologna, a 13-hectare space intended for public and private research facilities, built on unused redeveloped buildings and on the grounds of a former tobacco factory.

Designing an entire new data center was a huge task and it was clear from the outset that the design concept for the project would be incredibly important in order to show all its relative advantages.



"We started with a blank sheet of paper. The first difficulty we faced was to design a complex infrastructure before the buildings were even constructed: the distances we would have to consider within the site were not known precisely, we only had drawings, so we opted for a solution with trunk cables and pre-connected cables."

Michele Toni,
Senior Site Engineer, ECMWF

Panduit Solution

The proposed Panduit connectivity solutions complied with all technical and application requirements and supercomputing needs adopted by ECMWF, so specifically a singlemode OS2 and multimode OM4 fibre optic architecture was provided, with PanMPO technology.

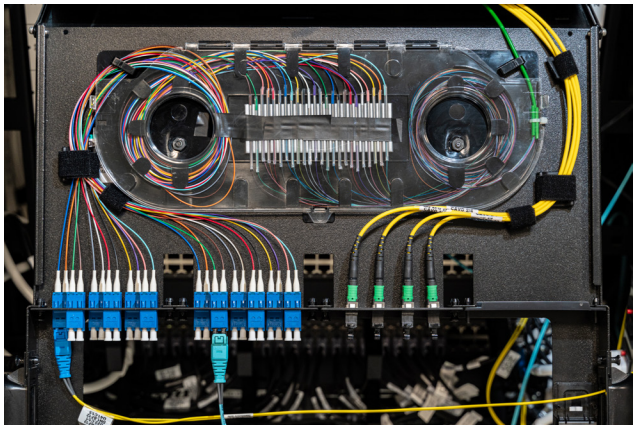
The Panduit PanMPO connector allows migration from 10 to 40, up to 100G Ethernet, maintaining installation in compliance with industry standards, thanks to easy gender conversion from male to female and quick key-up/key-down polarity switching.

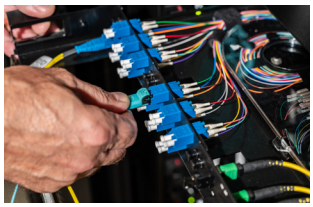
Panduit's fibre-optic and copper infrastructure enabled the connection of all supercomputing machines in ECMWF's new data center and was set up for current and future needs, adapting to frequent equipment changes.

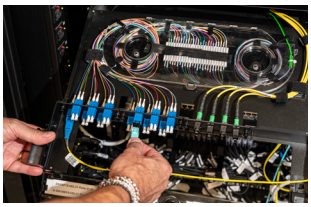
In addition, ECMWF Data Centre has a very large surface area and is divided into several zones, so Panduit created an architecture of backbone and horizontal links, in addition to the main distribution area.

For the fibre side, the modularity of Panduit's offering, which includes PanMPO and LC connections in the same optical cassette, was highly appreciated.

For some 1G links, copper links were chosen using the complete end-to-end solution consisting of TX6000™ Enhanced Category 6 U/UTP cable, Mini-Com® Cat 6 UTP RJ45 TG Jack Modules and TX6-28™ Cat 6 UTP small-diameter patch cords to enable better and optimized management of any Move, Add & Change within the cabinets.







Business Benefits

The operational phase started in September 2020 and the first supercomputer machine was connected in early June 2021. It was one of the only construction sites open in Italy at the height of the pandemic. While it is true that all data centres are critical infrastructures, the one in Bologna represents a supranational entity, the expression of 34 different countries, which provides global numerical weather prediction to all its Member States, which in turn use this global data to produce their national weather forecasts. The data is also used around the world for commercial and research purposes. Despite contiguous and material procurement challenges, the site remained operational and deliveries were met.

"For the backbone cabling infrastructure we opted for singlemode fibre, while for the horizontal distribution we chose multimode fibre: copper was used for the rack and cabling part. One of the most remarkable features was that a single Panduit rack mountenclosure, allowed us to contain all the kinds of fibre connectivity we needed, saving half of the space."

Michele Toni
Senior Site Engineer, ECMWF

"We chose Panduit because we consider it to be one of the best suppliers of passive infrastructure technologies, both in terms of fibre specifications and performance, the quality of components and technical solutions offered."

"Having had a supplier like Panduit at our side, who followed us during the design phase and was able to suggest improvements, was an important added value for us. Panduit's technical support also moved promptly to offer us quick and timely interventions."

Michele Toni
Senior Site Engineer, ECMWF

Photos: Stefano Marzoli

PANDUIT®

Panduit Italia
Via Lepetit, 40
20045 Lainate (MI)
tel. 02 93173.1
E-mail: CX-Italy@panduit.com

cs@panduit.com
US and Canada: 800.777.3300
Europe, Middle East, and Africa: 44.20.8601.7200
Latin America: 52.33.3777.6000
Asia Pacific: 65.6305.7575

www.panduit.com