# The End of an Era: Termination of the Meyrin Data Centre Console Service

Abstract

For nearly five decades, Data Centre Operators have provided critical support to the CERN Meyrin Data Centre, from its infancy, until spring 2024. Advancements in Data Centre infrastructure, a diverse power topology and resilience built into IT services have rendered the Console Service obsolete. Hands-on, round-the-clock interventions are no longer required in the Data Centre thanks to a combination of resilient, and in some cases, auto-remediating, IT services and modern data centre technologies.
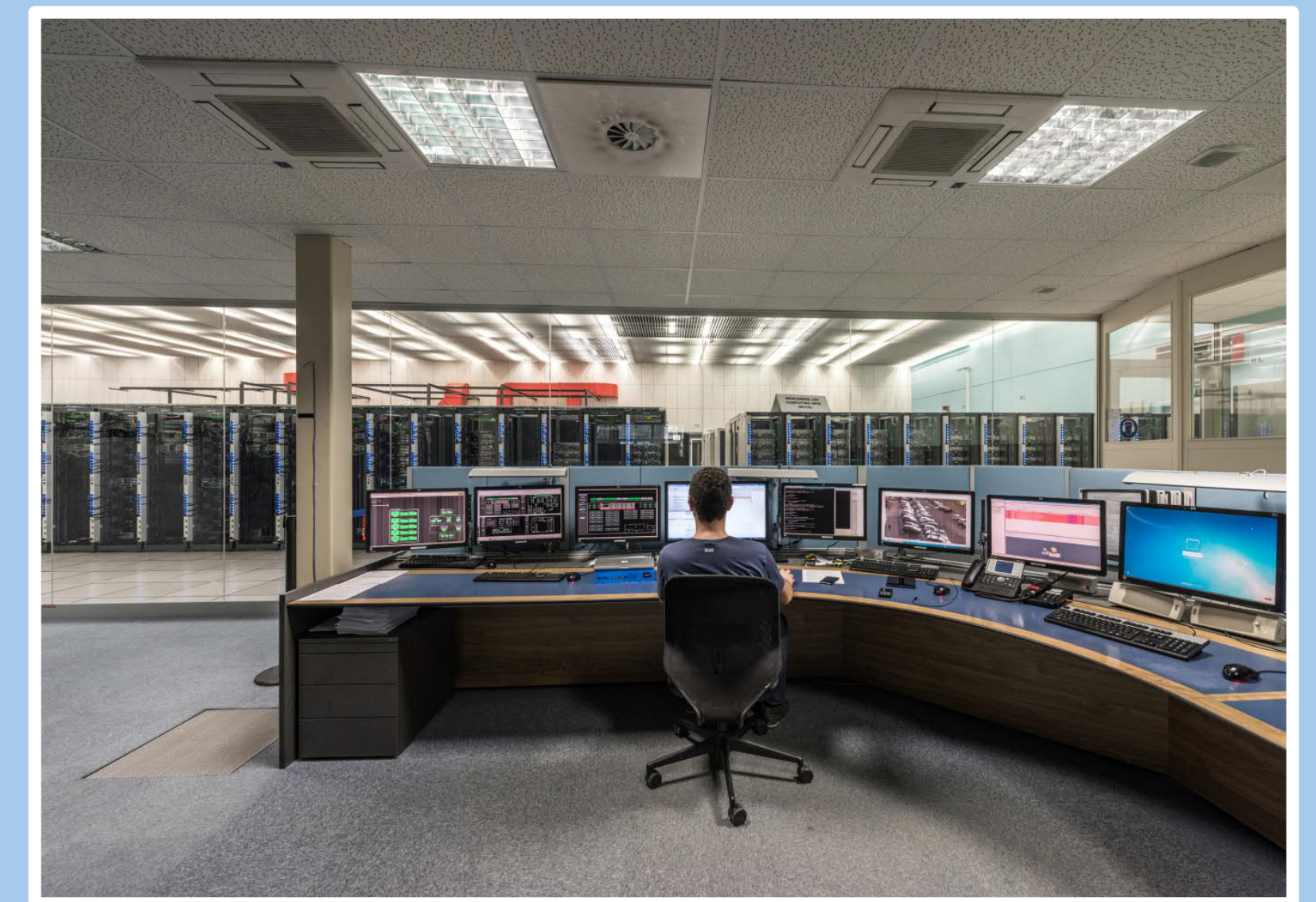
Through the Ages

In the early days of the Meyrin Data Centre, day-to-day operations relied heavily on the expertise and manual operations of Console Operators. A crucial function of the Operator was the manual management of the massive tape libraries used for data storage. Early and bespoke computing equipment required specialised skills to operate, in addition, the Console Operator interfaced with the CERN community to exchange punch cards and magnetic tape with stakeholders. The Console Operators role and evolved through the ages and has underpinned the success of computing at CERN.

Roles of the Console Operator in 2023

With the introduction of automated tape libraries and commercial grade Data Centre hardware, the Console Operators we're primarily tasked with ensuring the uptime of equipment, and subsequent communications in case of an outage. Operators had a fundamental understanding of 3 phase electrical distribution systems, a working knowledge of Linux operating systems and networking to diagnose and apply corrective action. In addition, Console Operators monitored supporting Data Centre infrastructure, enabled access to computing facilities and simple administrative tasks.

Termination of the Console Service

For decades, the organisations requirement for computing resources has been increasing exponentially and the IT department responded with the deployment of computing facilities around the CERN campus. Facilities remote to the principal Meyrin Data Centre required a revised operating model, a model that didn't require the immediate intervention from a Console Operator to continue IT operations. The new generation of computing facilities were designed with high degrees of resilience, incorporating layers of redundant supporting infrastructure. This, combined with the IT departments longstanding objective to build resilience into IT Services, paved the way for Data Centre Operations without a Console Operator, and thus the termination of the Service. Below are the key points that underpin the decision to terminate the service.
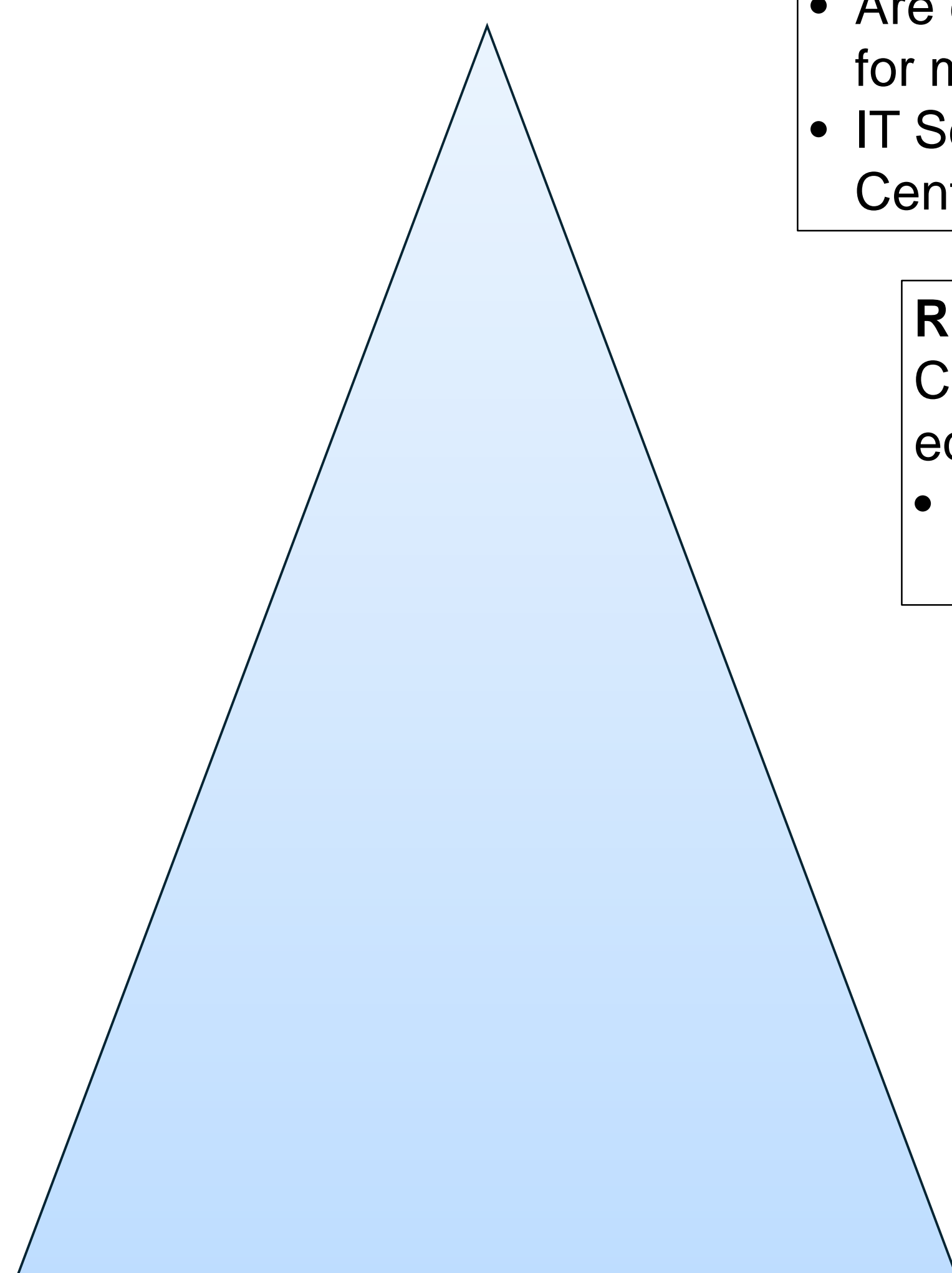
Platform and Applications
If required, Platform and Applications:
- Are designed with a high degree of fault tolerance and can withstand a single point of failure for machines installed on physics power.
- IT Service Managers follow guidelines on how to effectively distribute VM's across Data Centre availability zones on cloud infrastructure resources.

Resilience to Local Electrical Incident
Compute hardware and supporting infrastructure installed in Data Centre racks are equipped with dual power supply units for N+1 redundancy.
- Power supply units are connected to single or dual PDUs, always on opposing phases, a configuration that is resilient to cascade tripping of over current protection devices.

Diverse Electrical Power Distribution
Computing facilities are equipped with diverse, electrical topologies, relevant to the criticality and primary function of the facility.

Area	Room	Distribution	No UPS	UPS	Diesel	UPS autonomy
(Critical Area) Barn	513/R-060	A+B		A+B	B	10 mins
Telecom Zones	513/R-050	A+B		A+B	B	10 mins
Second Network Hub	773/R-001	A+B		A	A+B	10 mins
Physics area	513/R-050, 513/S-034	A		A		10 mins
Prévessin Data Centre	775/2-001, 775/2-007	A+B	A+B(80%)	B(20%)		5 mins

Data Centre Operations Now, and the Future.

Functions critical to Data Centre Operations were transferred to the CERN Control Centre, Technical Infrastructure Operator in October 2023. In addition to the critical functions they provide the organisation, the Technical Infrastructure Operator has been handling the monitoring of the Data Centre infrastructure, network device alarms and providing communications to the CERN community. The termination of the Service marks a new era of highly resilient IT Operations.

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