

The Importance of Redundancy as Data Center Resilience

Redundancy in the data center world is the duplication of systems in case of failure of other components. According to Atlassian, in high-risk industries such as finance, transportation, and healthcare, one hour of downtime can cost an organization at least \$5 million.

Malware attacks can take down an organization no matter the size and have a very significant impact. Losing important and sensitive corporate data becomes very costly and risky. This is why it is important to know the best SLA level to meet your needs as this determines the good IT infrastructure required to keep your business operating.

Prevention is better than cure, this also applies in infrastructure systems that think about power outages to natural disasters. The system in the data center you choose should be able to cope with any unforeseen situation. This is where redundancy comes into action just like insurance, a redundancy system guarantees a data center maintains its SLA.

The Role of Data Center Redundancy

Data center redundancy refers to the practice of building and managing a data center with backup components designed to avoid system failures and maintain high operational continuity. The main objective of data center redundancy is to minimize the risk of downtime or loss of access to critical data and applications.

In the context of data center redundancy, several elements are typically considered for redundancy:

Power resources have a stable main power supply backed up by reliable backup generators. This ensures that if the main power supply is disrupted, the data center can still operate without interruption.

Network and connectivity often have multiple separate network paths and different internet service providers. This is done to reduce the risk of connectivity failures and ensure fast and reliable access to data and applications.

Data storage systems a redundant data center, data is often replicated across multiple physical storage devices. If one device fails, the data can still be accessed from other devices.

Cooling and temperature control systems equipped with redundant cooling systems to maintain optimal temperature within the server rooms. If one cooling system fails, the redundant system takes over to prevent overheating, which can damage the equipment.

Physical security includes the use of surveillance systems, strict access control, and protection against natural disasters such as fire or flooding.

By implementing data center redundancy, organizations can enhance the reliability and availability of their systems, reduce the risk of failures, and ensure high operational continuity. This is particularly important for companies that heavily rely on their IT systems to run their core operations and maintain customer satisfaction.

The Significance of Redundancy

The occurrence of system disruptions will have a negative impact that can be critical to business operations and the impact is widespread in terms of lost revenue, decreased customer experience, and SLA consistency.

Technology has become a modern business, integrating technology into a system minimizes disruptions and tolerates downtime for better business operations.

A good data center has redundancy systems, for example in servers, operating systems, networks. Almost all data center components are redundant as a function to anticipate failures.

The data center building is also one of the most important supports for the redundancy system to support the data center to work optimally automatically.

Distributed Redundancy Mechanism

Distributed Redundancy Mechanism refers to a mechanism or method used in distributed redundancy systems to achieve higher reliability and resilience.

In the context of distributed systems, redundancy refers to the existence of copies or duplication of important components or data in the system. It aims to reduce the risk of a single failure that could cause disruption or damage to the system as a whole.

Distributed Redundancy Mechanism is the way in which this redundancy is implemented and managed within a distributed system. It involves sharing redundant components to multiple locations or separate entities within the system to avoid single points of failure. In addition, it also involves methods to detect failures and perform automatic recovery by switching to a redundant copy that is still working.

Distributed Redundancy Mechanism can involve techniques such as data replication, backup node setup, redundant server setup, and robust communication protocols between distributed entities. The goal is to ensure that the distributed system continues to operate reliably and without interruption despite failures in individual components.

Higher tiers imply better availability

Data center tiers are a standardized classification system that categorizes data centers based on levels of reliability, availability, and redundancy. The tier system was created by the Uptime Institute, and provides a framework for assessing data center design and performance. There are four tiers in the Uptime Institute classification system:

Tier I: Basic capacity and infrastructure, offering limited redundancy and availability. Has only one path for power distribution and cooling with no backup components.

Tier II: Redundant capacity components, providing a certain level of

backup and redundancy. Has only one path for power distribution and cooling with backup components for a given system.

Tier III: Concurrently maintainable, offering higher levels of redundancy and availability. Has multiple paths for power distribution and cooling with spare components. Also allows maintenance and repairs to be carried out without affecting operations.

Tier IV: Fault-tolerant and highest level of availability. Has multiple active paths for power distribution and cooling with backup components.

Provides the highest level of protection against failure or disruption, allowing maintenance and repairs to be performed without any downtime.

The tier system helps organizations understand and compare the reliability and resilience of different data centers. High tiers generally exhibit higher levels of redundancy, availability, and resilience, but also have higher design and operation costs and complexity.

How MettaDC Can Help

Systems in data centers are required to always provide optimal service from top to bottom. All the details in the data center specifications need to be well thought out to ensure that there are no system failures and all that is in MettaDC.

Starting from the electrical power source with redundancy components is one of the main points of the smooth operation of the data center business to keep it running 24/7. Generators and UPS as basic data center components with mechanical and electrical redundancy configurations. Even the UPS at MettaDC is divided into 2 blocks with each 2N UPS configuration, 2 types of battery technology systems are equipped in the MettaDC data center as a way to provide data center reliability and durability. Up to the cooling system, MettaDC has implemented redundancy confirmation.

MettaDC is committed to keeping operations, data and applications operational and protected. The consequences of downtime failures such as human error, system misconfiguration, and cyber-attacks can be mitigated with MettaDC's support to keep your business running smoothly.