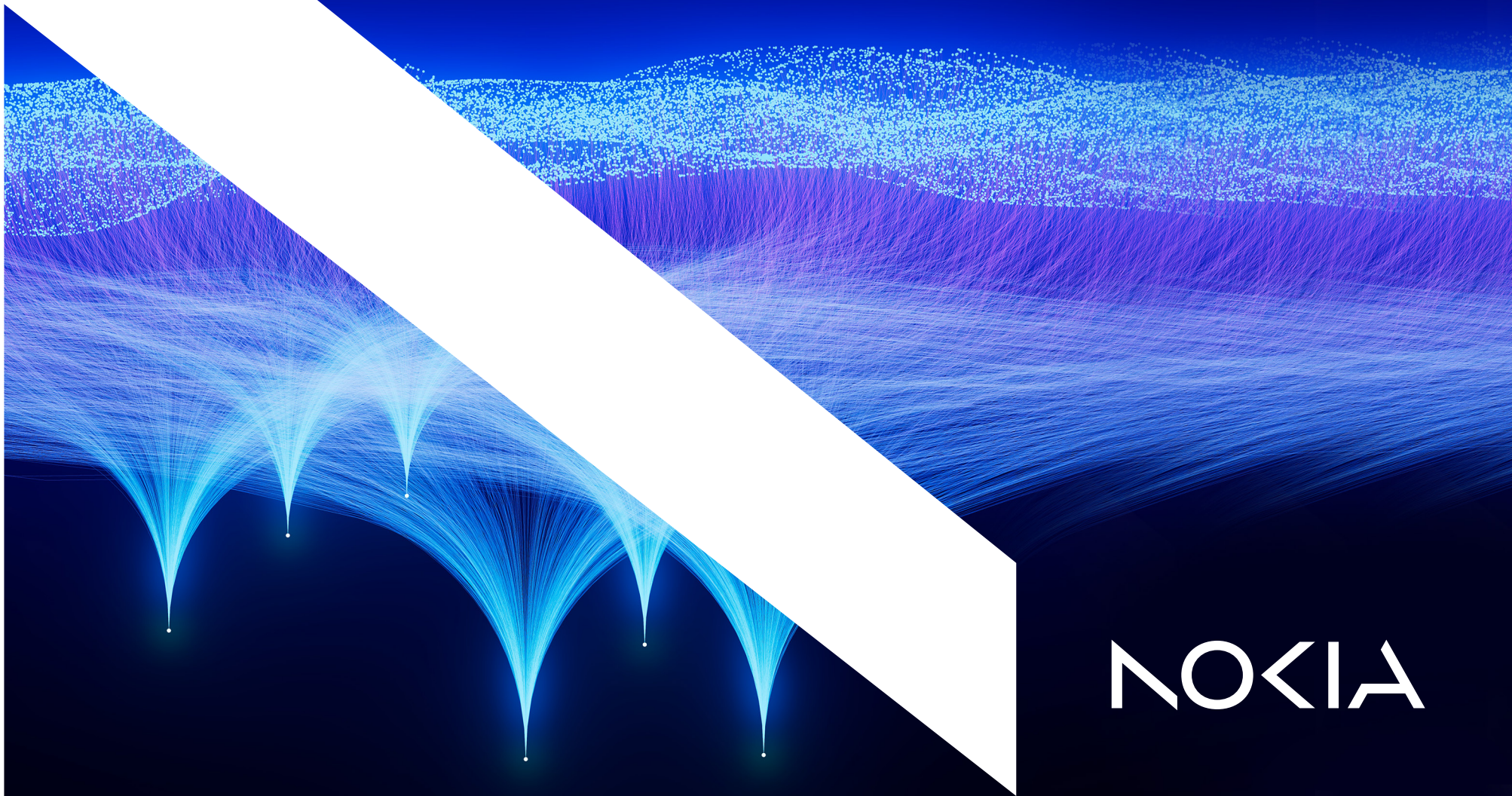
Use case

Multi-site geo-redundancy solution powered by Nokia Policy Controller

Offers telecommunication providers improved resilience, scalability and disaster recovery



NOKIA

Why geo-redundancy matters

With more extreme weather events, geo-political conflicts or even an errant backhoe, network operators face a range of challenges that can interrupt services for their customers and cause financial and reputational loss. In the case of natural disasters such as tsunamis, floods and fires, the damage can be extensive. In these cases, it is important to geographically separate redundant operations to protect against local and regional outage events.

Multi-site deployment models

Multi-site geo-redundancy solutions, encompassing two-site, three-site, and four-site configurations, primarily differ in their traffic distribution during normal operation and their capacity to withstand simultaneous site failures. The different configurations offer varying levels of resilience, from two-site setups handling 100% load for single site outages, to four-site configurations providing the highest fault tolerance against multiple simultaneous failures.

These configurations are tailored to a total planned network capacity (e.g., 12 million subscribers for illustrative purposes). For a 2-Site deployment, the 1+1 model ensures maximum resilience, with each of the two sites (Site A and Site B) being able to independently handle the full planned network capacity (e.g., 12m), in case the other site fails.

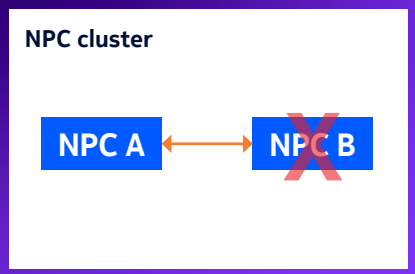
In 3-Site deployments, the 1+2 option provides similar high individual site capacity, where all three sites (A, B, C) are each provisioned for the full planned network capacity (e.g., 12m). Alternatively, the 2+1 model distributes the total planned network capacity (e.g., 12m) across three sites, with each site (A, B, C) handling a portion of that capacity (e.g., 6m each).

For 4-Site deployments, the 1+3 configuration maintains the full planned capacity (e.g., 12m) with each of the four sites (A, B, C, D) even though all the other three sites would fail.

The 2+2 and 3+1 configurations allocate portions of the total planned network capacity (e.g., 6m and 4m respectively) to each of the four sites (A, B, C, D) creating flexible capacity solutions for tailored redundancy.

These diverse deployment options allow operators to select a redundancy strategy that precisely matches their specific resilience, capacity, geographical concerns and operational requirements for any given planned network load.

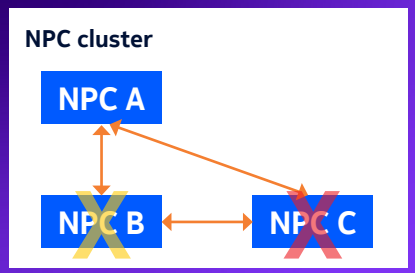
2-site



Sunny day traffic distribution is 50% per site

Each NPC site is dimensioned to carry 100% traffic for single site failure

3-site



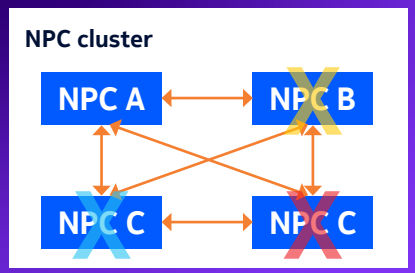
Sunny day traffic distribution is ~34% per site

Each NPC site is dimensioned to carry

1. 50% traffic for single site failure (2+1 model) or

2. 100% traffic for double site failure (1+2 model)

4-site



Sunny day traffic distribution is 25% per site

Each NPC site is dimensioned to carry

1. 34% traffic for single site failure (3+1) or

2. 50% traffic for double site failure (2+2) model or

3. 100% traffic for triple site failure (1+3 model)

The end-customer benefits of geographical redundancy

The business benefits of multi-site geo-redundancy solution based on Nokia Policy Controller include reduced downtime, improved customer satisfaction, cost mitigation and compliance.

Less downtime

By having redundant sites in different locations, operators can significantly reduce the impact of downtime caused by technical failures, disasters, or maintenance. Downtime and service disruptions can result in substantial financial losses for businesses. Service continuity is ensured for customers that need access to critical applications and data. Revenue-generating activities can continue from the redundant sites, while the affected site is being restored.

Compliance and data protection

Some industries, such as healthcare, finance, and government, have strict compliance and data protection requirements. Multi-site redundancy helps businesses meet these regulations by ensuring data redundancy, backup, and disaster recovery capabilities across multiple locations. During extreme events, it is also essential that emergency and first responder services continue to operate.

Critical machine communications

For enterprise customers embracing Industry 4.0 automation, low latency is critical. By distributing data and services across multiple sites, telecommunication providers can reduce local latency enabling users to access services from the nearest site, minimizing data transfer delays.

Technical benefits for operators

Load balancing

Redundancy has operational benefits as well. Nokia's multi-site geo-redundancy powered by NPC allows operators to distribute the workload and balance traffic across multiple locations to meet increased user demand and ensure that resources are used efficiently without overloading any single site.

Scalability and flexibility

With multi-site redundancy, operators can easily scale their operations and handle increased demand. The distributed nature of redundant sites allows for seamless expansion, enabling organizations to adapt to changing customer needs and accommodate growth without sacrificing performance or reliability.

Seamless maintenance and upgrades

Redundant sites provide flexibility for performing maintenance tasks and upgrades. Operators can take one site offline for maintenance while the other sites continue to handle user requests, minimizing the impact on service availability and simplifying maintenance processes.

Competitive edge

Offering robust and resilient services gives network providers a competitive edge in the market.Customers are more likely to choose a provider that guarantees high availability, data protection, and reliable performance like Nokia Policy Controller. Multi-site geo-redundancy can be a key differentiator that attracts customers and helps operators stand out.

Why Nokia?

Nokia provides end-to-end network solutions to a wide range of customers and deploys complex and complete networks including multi-vendor environments. As well as providing world-leading technology and innovation, we partner with telecommunication providers around the world to ensure that they provide their customers with exceptional experiences.

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About Nokia

Nokia is a global leader in connectivity for the AI era. With expertise across fixed, mobile, and transport networks, we're advancing connectivity to secure a brighter world.