

An aerial photograph of a city skyline at sunset, with the sun low on the horizon casting a warm orange glow. The city is densely packed with skyscrapers, and a large body of water is visible on the left. A large, white, stylized 'K' graphic is overlaid on the right side of the image, partially obscuring the skyline. The word 'NOKIA' is written in white capital letters on the right side, and the text 'Disaster recovery in large VoLTE deployments' is written in white on the left side.

Disaster recovery in large VoLTE deployments

Bharti Airtel

NOKIA

The uptake of VoLTE services has been steady over the last decade, and it is now the primary way voice services are being delivered over 4G/LTE networks worldwide. When implemented as a cloud-based service, VoLTE can provide redundant core services from a geographically distant location. This makes it possible to create a cloud-based N+1 redundant hub for disaster recovery should VoLTE services in regional hubs completely fail.

In this case study from India, we describe how Nokia Core Networks Global Services was able to implement the largest VoLTE geo-redundancy disaster recovery solution rapidly and cost-efficiently for the 150+ million subscribers of Bharti Airtel. This case study highlights the strengths of the Nokia team in terms of processes and access to global expertise, as well as our ability to collaborate closely with the customer team to realize even the most ambitious projects.



Ensuring the reliability of voice services

Bharti Airtel, with 155 million subscribers, has one of the world's biggest voice over LTE (VoLTE) services in the world, with operations across the Indian sub-continent. Dedicated to providing a world-class experience, Bharti turned to Nokia to help ensure a seamless and uninterrupted service experience for its customers.

When deployed as a cloud solution, VoLTE uses the data capacity of the 4G/LTE network and a cloud-based IMS server (Internet Multimedia Services)

located in the core network to provide a full range of voice and, potentially, video communications. The quality of voice calls is much higher than traditional circuit-switched voice services and is now supported by all present generation Android and Apple smart-phones. Being fully integrated with the handset, high quality, IMS-based voice and video calls can also be integrated in apps, representing added value for subscribers versus lower quality, video and voice over IP (VoIP) services such as Skype and Facetime.

VoLTE voice services are also capable of delivering highly flexible services to enterprise customers that integrate with enterprise unified communications systems. They can support field agents with the ability to combine data and video exchanges seamlessly into the call. They can also be integrated into enterprise collaboration applications. VoLTE services can also include speech recognition and keyword detection to allow for voice-based interfaces for everything from enterprise information systems to control of IoT devices.

Services such as the Bharti Airtel Emergency Alerts Service, which allows subscribers to alert up to 10 loved ones with one call, also rely on the availability of the system during disaster situations. It is critical, therefore that these business- and mission-critical applications are highly reliable and secure, even in the case of disaster. Thus, Bharti Airtel turned to Nokia to design a disaster recovery (DR) solution that would ensure the reliable delivery of its VoLTE services to all its customers.

Always prepared

The Bharti Airtel VoLTE core network is spread across India with 12 hubs controlling 22 circles. Each hub and circle is designed with local redundancy, but there is a risk that a large-scale regional disaster could affect local operations. For this reason, Bharti was looking for Nokia to provide geo-redundancy, so that local failures of the core network and IMS server would not mean an interruption in voice services for customers in that region.

The Nokia solution was designed to create N+1 redundancy, meaning that for all 12 hubs, there would always be one additional core available to replace the failure of a single regional hub. This 12+1 DR core, which provides the

disaster recovery backup, includes all Nokia core network functions, including the IMS functions needed for VoLTE. In the case that one of the Bharti regional hubs fails, there is an automatic cutover to the redundant DR hub without service interruption.

More than once during the delivery of the project, a regional hub failure occurred, and the disaster recovery hub assumed responsibility for the failed hub's live traffic, even before final execution of the solution had been completed. It performed flawlessly, proving itself under real-life conditions. All 12 hubs are now integrated with the DR hub.

Bharti Airtel was looking for DR solution to provide seamless customer experience during any emergency resulting either from planned or unplanned activities. This called for a robust geo-redundant Disaster Recovery solution with auto fail-over scenario. It was really challenging to design a DR solution for such a large, complex and multi-party network environment covering pan-India active sites. However, the team has done a wonderful job and successfully deployed an auto fail-over DR solution as per customer requirements within the committed timeline. Currently, the DR solution has become the lifeline of the network and enables us to provide seamless services to end customers. Further, it also helps us in reducing Care ticket costs and provide hassle-free operation of the network.

Rajeev Roshan
BGDM – Bharti

Why Nokia?

The key to the success of this implementation was the collaboration between Nokia Core Networks Global Services and the local Bharti team. Although the scale and complexity of the solution was unique in terms of its size, the Nokia team was able to draw on previous customer implementations in other parts of the world to design the Bharti DR solution.

The Nokia team was also able to leverage a suite of in-house automation tools and project implementation protocols that ensured that it provided quality planning deliverables, faster execution and cost efficiencies throughout the project. The team also created a knowledge base so that lessons learned in integrating the first hub led to faster

implementations as other hubs were brought into the DR solution (moving from two circles in the first two months to four to five circles per month in the end). Despite the project occurring during the pandemic, Nokia was able to support the local project execution team using global resources remotely without any loss of efficiency.

Nokia Core Networks Global Services delivers 650+ projects and 44,000 deployments annually to customers worldwide using a single delivery model through six state-of-the-art global delivery centers. Our experts work directly with our customers — remotely or in person — to ensure our solution is fully optimized to their network.



“Nokia and Airtel together designed and deployed a unique disaster recovery (DR) solution specific to Airtel, which uses N+1 mode with a single DR hub able to support multiple active hubs. The best part is that the switchover from active hub to DR hub in case of any failure, happens automatically without any service impact. This has resulted in a highly available and resilient network with much better customer experience as the services remain available even in case of any partial or complete failure of any of the hubs. As a result, Airtel is confidently moving faster to convert the entire circuit-switched voice network to Nokia’s VoLTE IMS solution, thus improving VoLTE uptake in the Indian market.”

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About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

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