

# A Single Pane of Glass for Private 5G Network Orchestration



## JAPANESE ENTERPRISE CUSTOMER CHOOSES CAPGEMINI, AARNA NETWORKS, AND THE 5G SUPER BLUEPRINT

*Building on the work of the Linux Foundation Networking 5G Super Blueprint initiative, Aarna Networks and CapGemini collaborated to deliver a RAN, a Core, and a single pane of glass for an enterprise customer to view, orchestrate, configure, and manage a Private 5G Mobile Broadband and IoT deployment*

### CHALLENGE

CapGemini Engineering was approached by a large enterprise customer in Japan who needed a RAN and Core for a new Private 5G Network. They brought very specific requirements for an IoT and Mobile Broadband use case but were open to new and innovative approaches for meeting them. Network functions in the RAN and Core are exceedingly complex and 3GPP and O-RAN specifications around 5G are constantly evolving which makes designing and building Private 5G Networks a considerable challenge.

A standards-aligned, open source-based approach would be needed.

Through its partnership with Aarna Networks, CapGemini Engineering has been a key contributor to Linux Foundation Networking's 5G Super Blueprint, a community-driven integration of multiple open source initiatives coming together to show end-to-end use cases that demonstrate implementation architectures for end users. Together, they had worked to integrate the 5G RAN and Core in multiple proof of concept demos over the last several years. This provided valuable experience working with cloud native approaches and a thoroughly understood path for integrating the RAN and Core. Sharing this collaborative Proof of Concept with the customer helped instill a sense of confidence in the solution's origins as an industry-wide effort in the open source community.

After building out their RAN and Core offerings, network complexity (involving thousands of devices streaming at 4K speeds) demanded an end-to-end solution management.

*"Capgemini 5G core is a completely stateless & scalable microservices-based implementation, compliant to cloud-native principles.*

*The missing piece was an orchestration & life-cycle management platform for centralized and edge deployments. Integration with Aarna's AMCOP platform helped us to fill in the missing piece."*

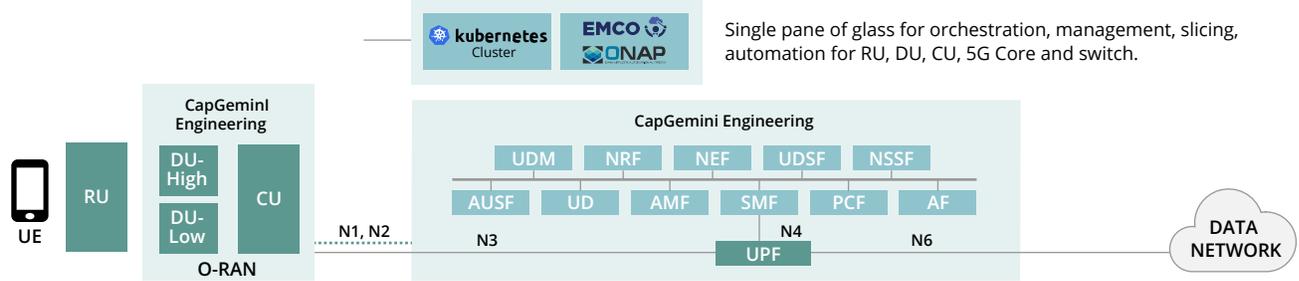
— RAJAT GUPTA,  
SENIOR DIRECTOR OF TECHNOLOGY,  
CAPGEMINI ENGINEERING

### SOLUTION

Aarna networks developed AMCOP, an open source orchestration, lifecycle management, and closed loop automation platform based on EMCO, ONAP, and OpenDaylight by following specifications from the O-RAN Alliance around the O1 interface. AMCOP O-RAN SMO is a Private O-RAN SMO that also incorporates 5G Core management.

AMCOP was chosen to integrate with CapGemini's OAM UI to overcome orchestration complexity and provide a single pane of glass for the entire network in two tabs:

- One from CapGemini for 5G core configuration;
- One from Aarna for 5G core orchestration/lifecycle management, and RAN orchestration/lifecycle management/configuration.



SOLUTION (cont.)

CapGemini validated the orchestration of the 5G Core completely, including a 5G software upgrade procedure and validation of deployments with multiple tenants and functionality at runtime. The next step for the Core deployment is division of network slices. RAN orchestration was not initially included in the solution architecture for M-plane functionality because it was not yet fully containerized.

However, CapGemini is furthering RAN CNF orchestration and onboarding via the Telecom Infra Project and working to integrate the O1 interface. Ultimately, the end-to-end configuration will leverage AMCOP to configure, manage and orchestrate all network components, including 5G Radio Units. This work furthers progress towards a zero-touch 5G network with configurations coming in through UI commands from anywhere.

*“Service Management & Orchestration is a key aspect of 5G — especially with edge deployments of the UPF, RAN, and everything considered a disaggregated application. The opportunity to integrate with CapGemini’s network functions and validate a deployment directly for a large enterprise customer was a valuable learning opportunity to refine and improve our O-RAN SMO industry offering.”*

— SRIRAM RUPANAGUPTA,  
CO-FOUNDER AND SVP, AARNA NETWORKS

BENEFITS

The 5G Super Blueprint, an open source initiative managed by Linux Foundation Networking, provides the framework to solve common 5G network challenges, such as building simulators and SDKs, handling Big Data, advancing the Service Management Orchestrators, and staying in alignment with critical industry standards like O-RAN. Aarna’s open source approach selects modular open source components to build solutions, contributing to and benefiting from regular releases with enhancements, bug fixes, and 5G software upgrades. Working in the open source community allowed CapGemini and Aarna a significant head start on their integration and will considerably reduce time to market.

With this deployment, the enterprise network operator customer in Japan can create an infrastructure, deploy network functions, and configure them with a single click. This one platform can manage hundreds of edges and multiple edges in a single pane of glass. The customer will begin deployment testing in Q32022 with plans to bring the deployment into production before the end of the year.

*“Aarna and CapGemini have been key contributors to the 5G Super Blueprint Development effort by integrating the RAN and Core used in several keynote proof of concept demos at industry events. Building open source products from open source projects is a proven business model and the evolutionary path for our members.”*

— HEATHER KIRKSEY,  
VP OF ECOSYSTEM AND DEVELOPMENT,  
LINUX FOUNDATION

*“Collaborating with Aarna was an introduction to working in the open source community. It enabled us to learn new technologies; and most importantly, deliver orchestration of end-to-end 5G network solutions for our customers.”* — RAJAT GUPTA, SENIOR DIRECTOR OF TECHNOLOGY, CAPGEMINI ENGINEERING