Ericsson Network Functions Virtualization Infrastructure
Make virtuality a reality

A pre-integrated, pre-tested, system-verified solution is a better approach for telco cloud than best-of-breed, reducing deployment cost and time to market while minimizing risk.

Lessons learned

- When we pre-integrated the components ourselves, we reduced deployment time for every one of our customers.
- We were able to guarantee that our solution worked because we subjected it to our own rigorous testing.
- We avoided compatibility headaches by lifecycle-managing individual components within our system-verified solution.
- An open, industry standard architecture enabled us to incorporate VNFs and compute hardware from multiple vendors.
- A system-verified solution scales more reliably and cost-effectively than a collection of best-of-breed components.
- To make sure it paves the way for 5G, we had to design our solution today to include edge-compute and multi-cloud capabilities tomorrow.

Over several years of helping major operators virtualize their network functions, we have learned a great deal about integrating telco-grade solutions, including how to reduce the time and cost involved. We have based our system-verified NFVI solution on that experience. It reduces complexity, lowers risk, shortens your time to market, and reduces total cost of ownership, all while laying the foundation for 5G.

In attempting to reap the benefits of cloud by virtualizing physical network functions, early adopters in the telco industry embraced a best-of-breed approach that required a great deal of time and money to integrate. They are now rolling out their first VNF, with more on the way.

Therefore, we believe that at this stage in the adoption cycle, a better approach than trying to integrate your own optimized components is to rely on a pre-configured, pre-integrated, and tested system-verified solution from an experienced partner.

At Ericsson we spent almost two years and a large investment selecting, integrating, and testing our best components to make sure that our entire NFVI solution helps you deploy your services rapidly with the reliability expected by our telco industry. We have systems in commercial production at several Tier 1 and Tier 2 customers. Those customers experienced dramatic improvements in the time to market of their network services with significant reductions in both capex and opex.

“Ericsson’s NFVI solution is a leader in the NFVI market. The solution is pre-integrated and its tested blueprint helps operators reduce time to market and minimize testing and rollout time for new services.”

Glen Hunt, Principal Analyst, Transport and Routing Infrastructure, GlobalData
System-verified solution overview

We pre-integrated the latest cloud and open source technologies, including software-defined infrastructure, support for network slicing, and automated orchestration, into a standards-based telco-grade platform ready for 5G.

A system-verified solution
Focus on rolling out your virtual network functions and services in dramatically shorter time because we already pre-configured, pre-integrated, pre-tested and thoroughly documented our NFVI solution so you won’t have to. We also equipped it with performance management, fault management, and backup and recovery so that it operates at telco standards.

Building blocks

Automated orchestration and management
Easily set up, launch, and lifecycle-manage your virtual network functions and services with Ericsson Orchestrator, and automate their deployment across underlying virtual environments and physical resources.

Ericsson Orchestrator’s workflow automation enforces both pre-defined and user-defined workflows so that your network functions and services are rolled out with predictable and reliable processes and timelines.

Telco-grade VIM
Dynamically allocate resources for VNFs with telco-grade capabilities such as redundancy, high availability, high throughput with low latency, trusted tenant isolation, automatic virtual machine recovery, and more. Ericsson Cloud Execution Environment, our telco grade VIM based on OpenStack, monitors performance and system faults, giving our NFV orchestrator the data to automate performance optimization and fault management.

Container Management and Orchestration
The industry standard Kubernetes opensource container orchestration system is the foundation of Ericsson Cloud Container Distribution (CCD). It supports the deployment, scaling, and management of containerized virtual network functions and provides the Container-as-a-Service (CaaS) capability. Additional open-source software builds out the telco-grade cluster, adding components for ingress, networking, storage, and monitoring among other capabilities.

Software-defined networking
Ericsson Cloud SDN is a network virtualization solution that provides seamless intra- and inter-datacenter connectivity for virtual, physical and container-based workloads. It uniquely combines an industrialized OpenDaylight controller with advanced routing capabilities, and provides network automation services to NFV workloads.

Software-defined infrastructure
Create multiple virtual performance-optimized datacenters (vPODs) from a single infrastructure, each optimized to run a particular type of workload. Assign or remove pooled compute and storage resources on the fly. Select either our small footprint NEBS3-compliant Ericsson BSP 8100 or our 3PP-capable Ericsson Software Defined Infrastructure system.

Highlights

- Roll out VNFs from multiple vendors in dramatically shorter time
- Upgrade pre-verified physical resources from multiple vendors without service interruption
- Rapidly configure and modify virtual datacenters (vPODs) to host new VNF workloads
- Orchestrate dynamic allocation of VNF workloads across multiple vPODs
- Define policies for performance optimization and automate them
- Automate fault management across the entire solution stack
- Use network slices within the same infrastructure to satisfy compliance requirements from different tenants
- Manage new and legacy environments from the same platform
- Be ready to support 5G-scale environments

Solution overview
Focus areas

Orchestration — MANO based on ETSI standards, automated, highly elastic and highly scalable across a multi-cloud environment. Automates network resource allocation, end-to-end SDN controller orchestration, support for advanced network orchestration, and network slicing.

Scalability — Elastic in the size of the workloads they can manage on a dedicated virtual datacenter (vPOD plus VIM), the total amount of compute, storage, and network resources it can orchestrate and manage across datacenters, and able to cope with the infrastructure scale of 5G, which can require as many as 10,000 VIMs.

Security — Segregate user tenant traffic from operations and management traffic. Implements a real-time security event management solution. Hardened.

Multi-vendor VNF — Open, based on ETSI standards, provides the infrastructure capabilities required by a wide variety of VNF vendors.

Automated serviceability and LCM — Across the entire solution, not just for each individual component, analytics-based automation of fault management, performance optimization, and lifecycle management.

Telco-grade cloud platform — Hardware resiliency required for VNFs, geo-redundant high availability, automated disaster recovery, and redundant controllers.

Support for distributed datacenters — Network orchestration across multiple sites, pico- and micro-datacenter design provides cost-effective telco-grade infrastructure for workloads on the data plane, and centralized management to reduce the effective footprint of the distributed datacenter.

Performance optimization — Implements DPDK libraries for fast packet processing, virtualizes input-output through the SR-IOV protocol, and employs smart NICs to offload processing from the host CPU.

System verified VNFs from Ericsson
- EPC - SGSN-MME, EPG, WMG, SAPC
- IMS - MTAS, CSCF, SBC, MRF, EMe, AGF
- UDM - CUDB, HSS-FE, HLR-FE, EIR-FE, EDA, IPworks
- Mobile Switching - MSC-S, CTC
- Signaling - DSC, IP-STP
- OSS - ENM, VNF-LCM, EO, EDA
- BSS - EMM

Onboarded third party VNFs
A high number of third party VNFs have been onboarded from:
- Nokia
- Huawei
- ZTE
- Cisco
- Juniper
- Fujitsu
- NEC
- And more

Ericsson enables communications service providers to capture the full value of connectivity. The company’s portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson’s investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.

www.ericsson.com