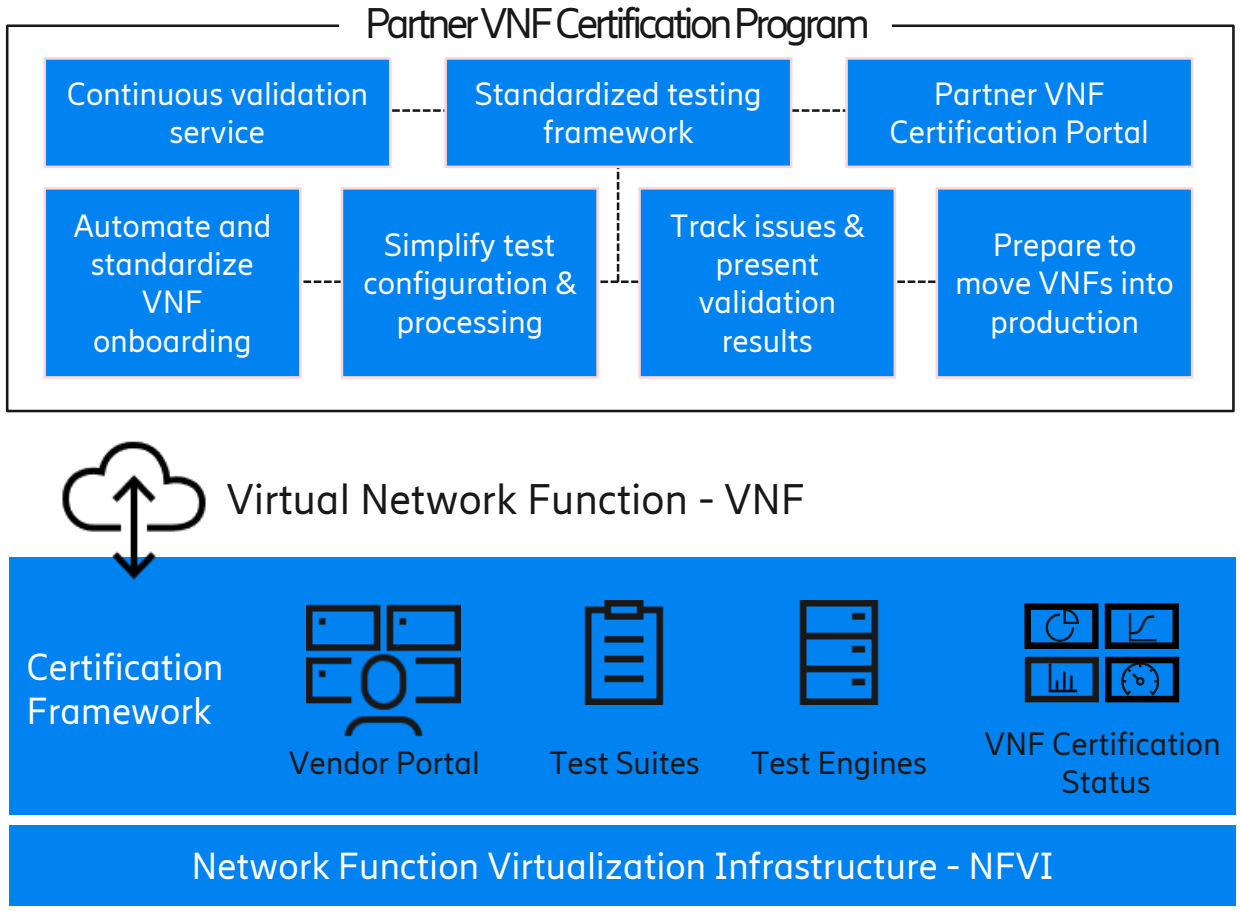
Partner VNF Certification Program and Standardized Certification Pipeline

As telecom operators increasingly adopt NFV, they face the critical challenge of validating and certifying VNFs. VNFs need to not only be validated for initial onboarding, but also frequently re-validated to keep up with the pace of infrastructure innovation such as Ericsson NFVI offerings.

In order to address the validation challenges, Ericsson has developed a standardized testing framework to ensure the functionality and operational readiness of VNFs throughout the lifecycle of both VNFs and the Ericsson NFVI offerings.

The program provides access to the Ericsson NFV Infrastructure. It is based on a standardized validation framework and includes tools for onboarding and testing virtualized applications.



Partner VNF Certification Commercial presentation

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- Partner VNF Certification Lab & SW Baseline
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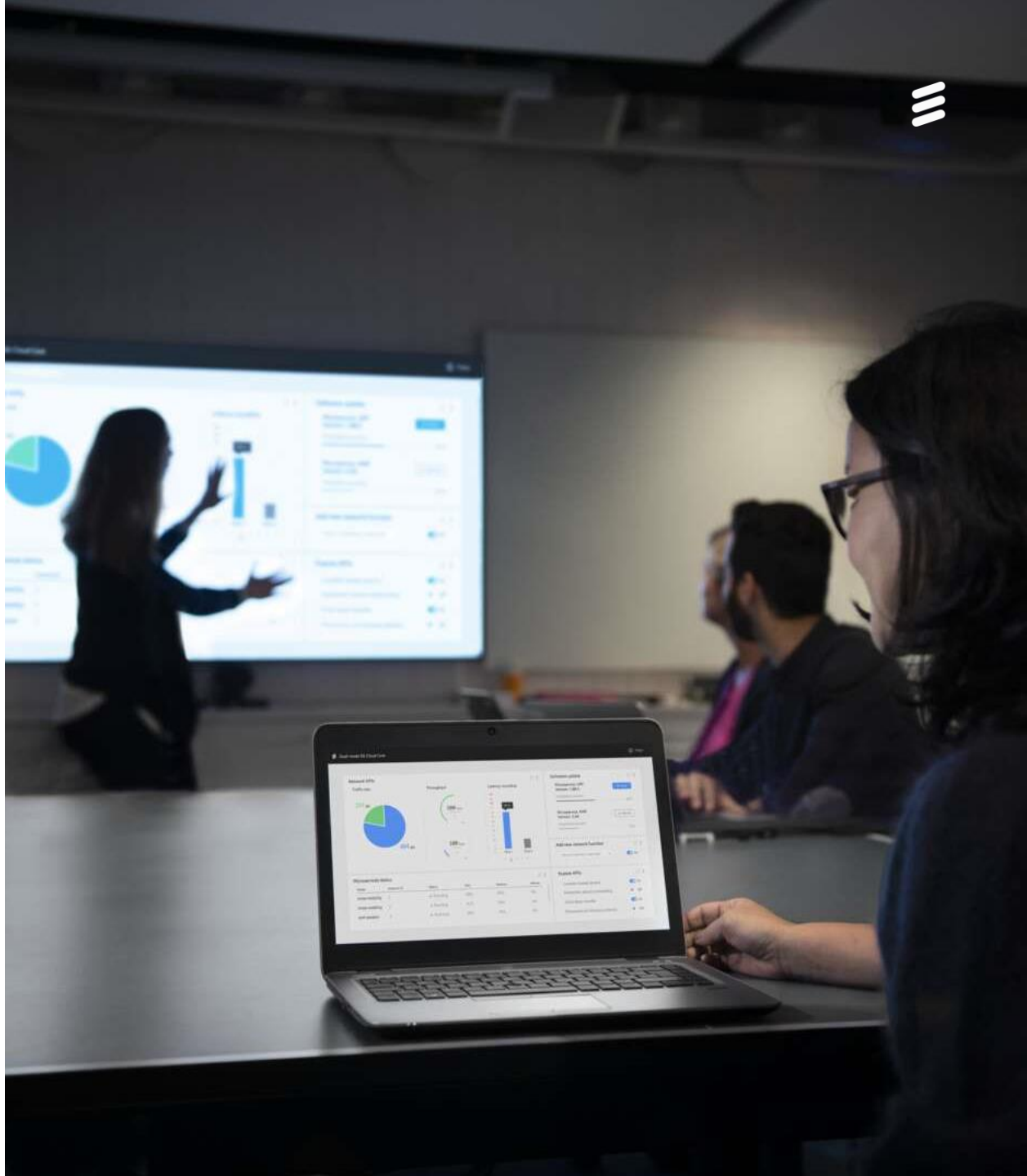
- Benefits for VNF vendors and service providers
- Ericsson NFVI market reach
- Existing VNF ecosystem overview
- NFV use cases



Overcoming VNF onboarding challenges

Challenges:

— Getting multiple VNFs up and running is a costly and time-consuming process, which can defeat the purpose of network virtualization.

— VNFs are all very diverse in function, construction, deployment and life cycle requirement

— Lack of standards, automation and collaboration

Goal of the Partner VNF Certification Program:

— Drive adoption of NFV in Telcos and Service providers by minimizing the challenges of onboarding VNFs

Partner VNF Certification Program

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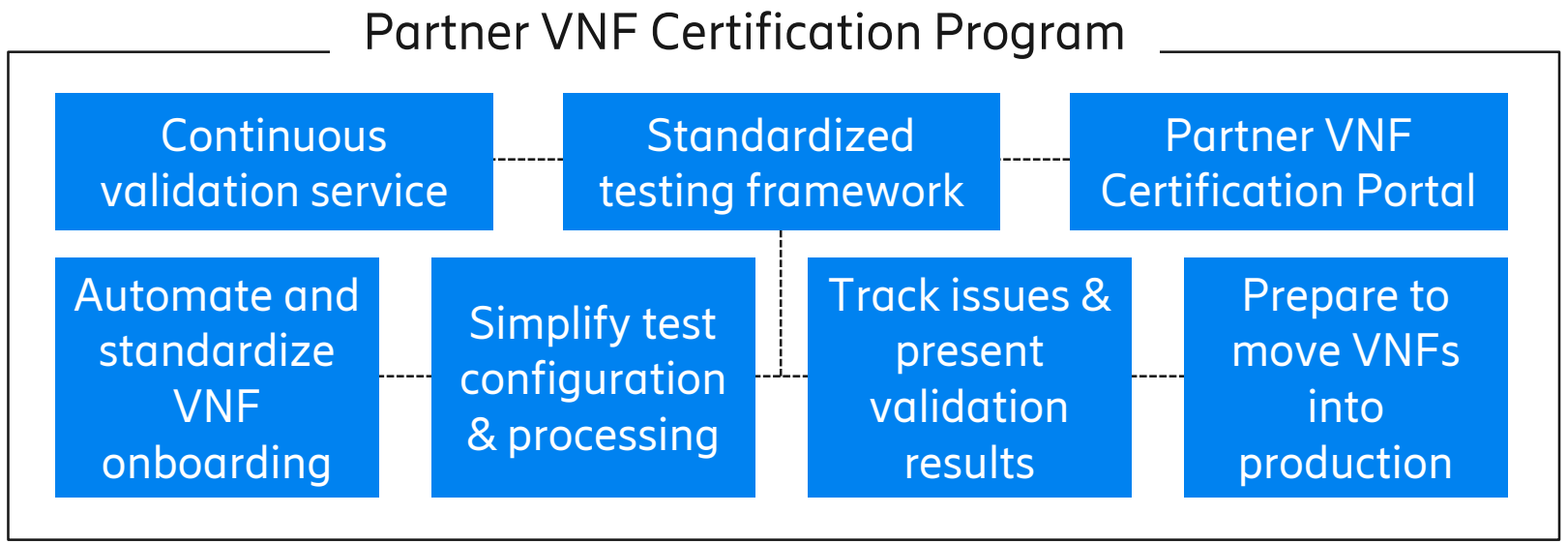
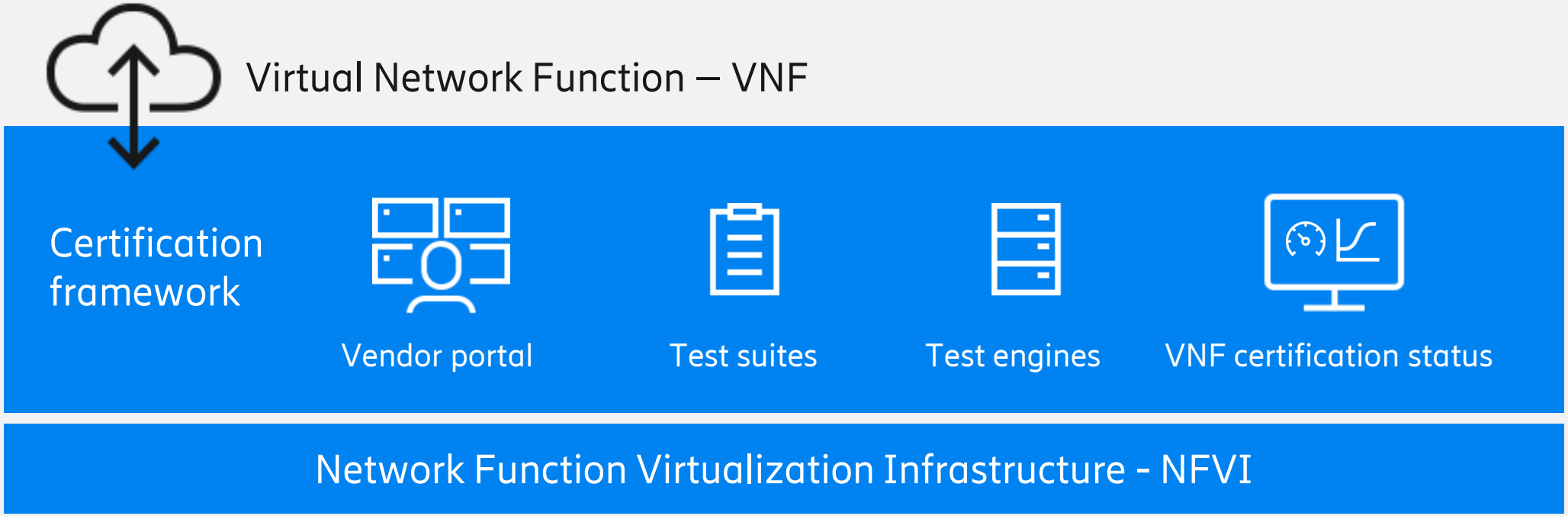


Standardized certification pipeline – streamlined and automated VNF onboarding and certification process



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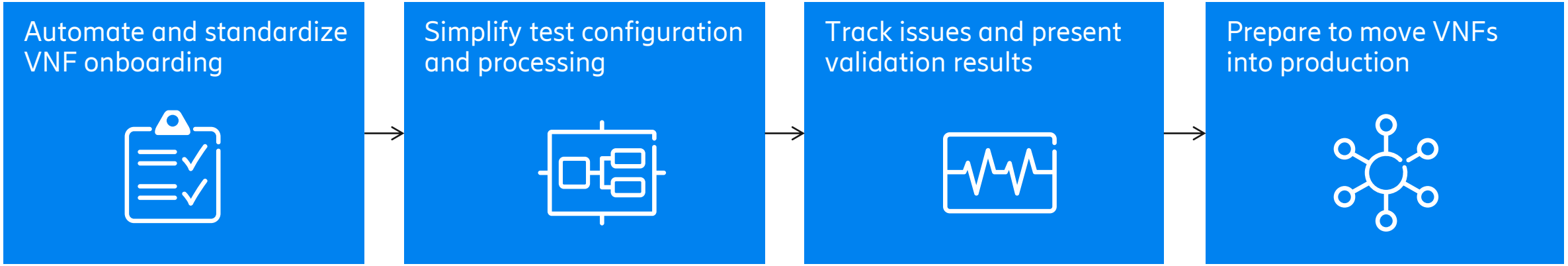
VNF Test Automation

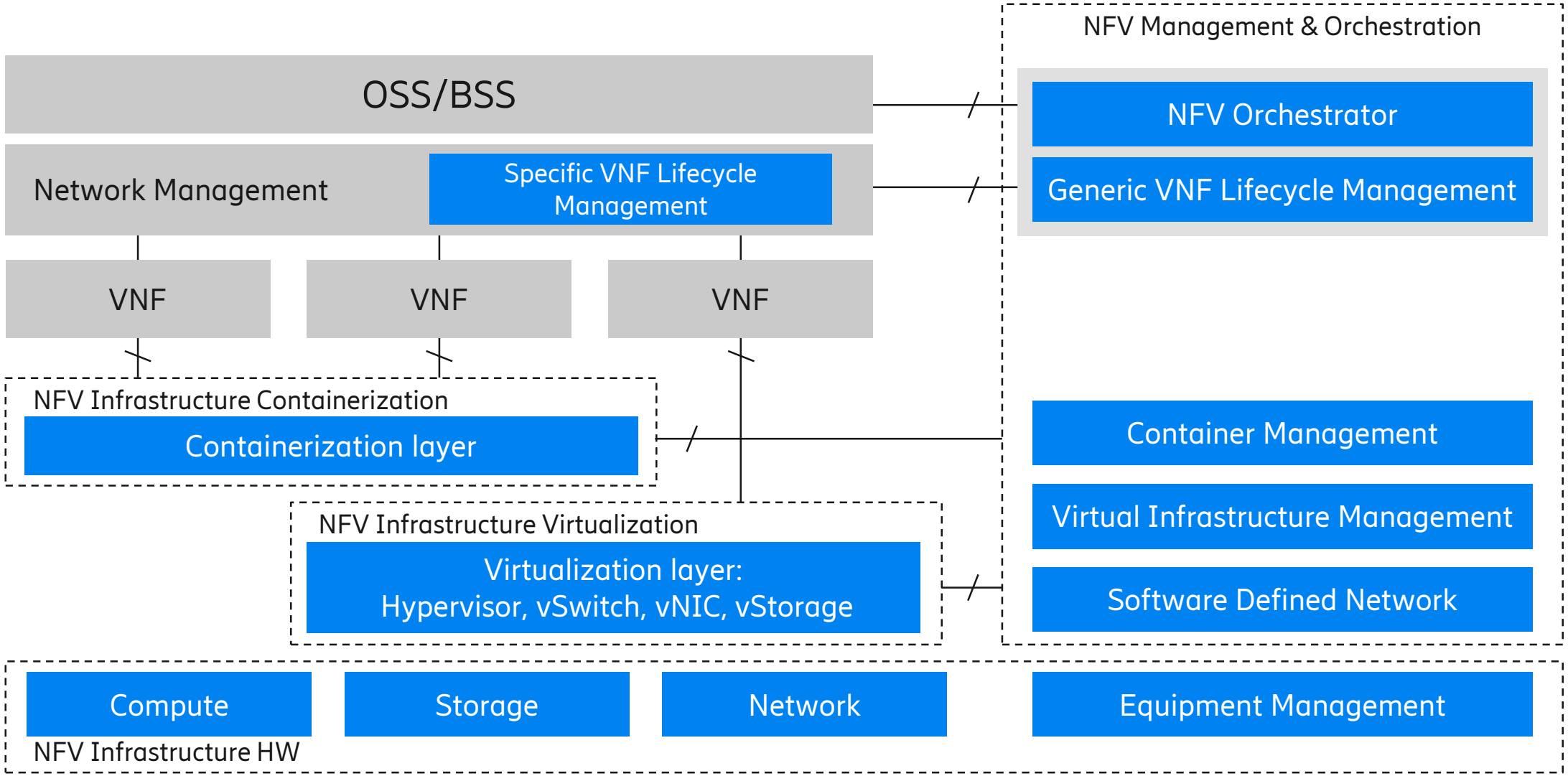
streamlined and automated VNF onboarding and certification process



Standardized pipeline features

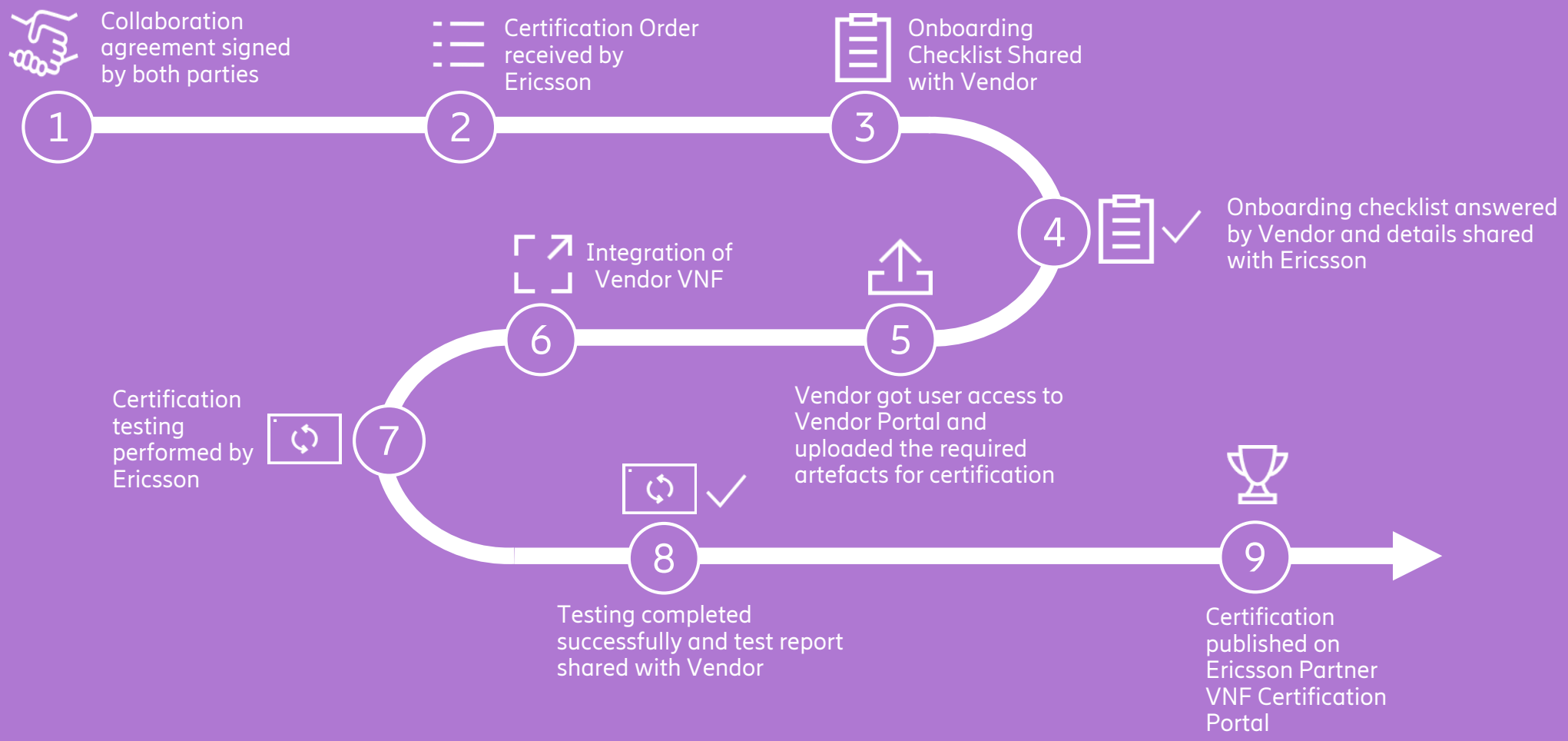
- Web portal driven operations
- Automated VNF onboarding
- Automated VNF validation
- Test configuration management
- Issue tracking
- Orchestrator integration
- Test tool integration
- Cloud platform integration

Ericsson NFVI reference architecture

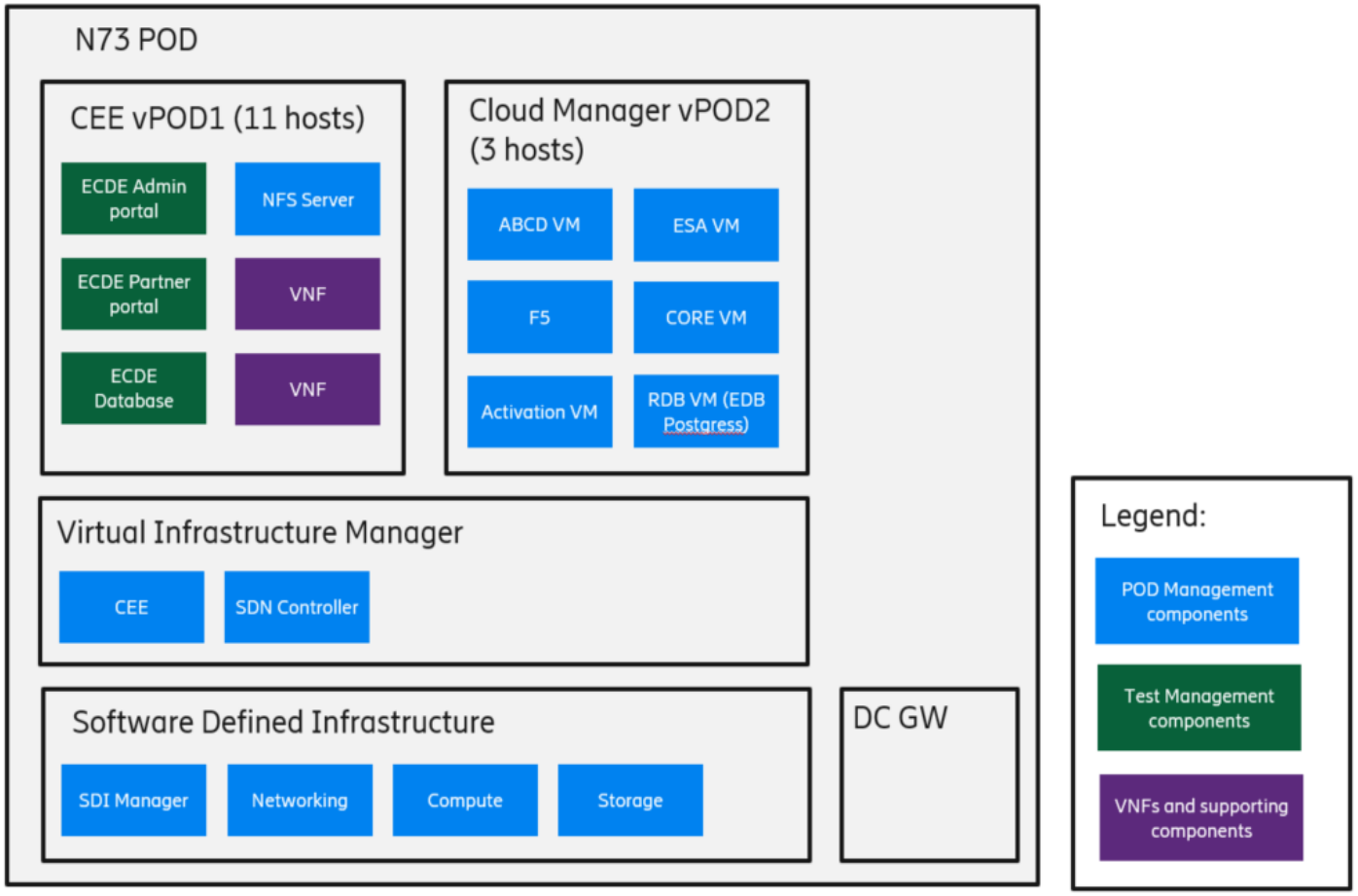


NFVI reference architecture

PARTNER VNF CERTIFICATION PROGRAM
PARTNER JOURNEY



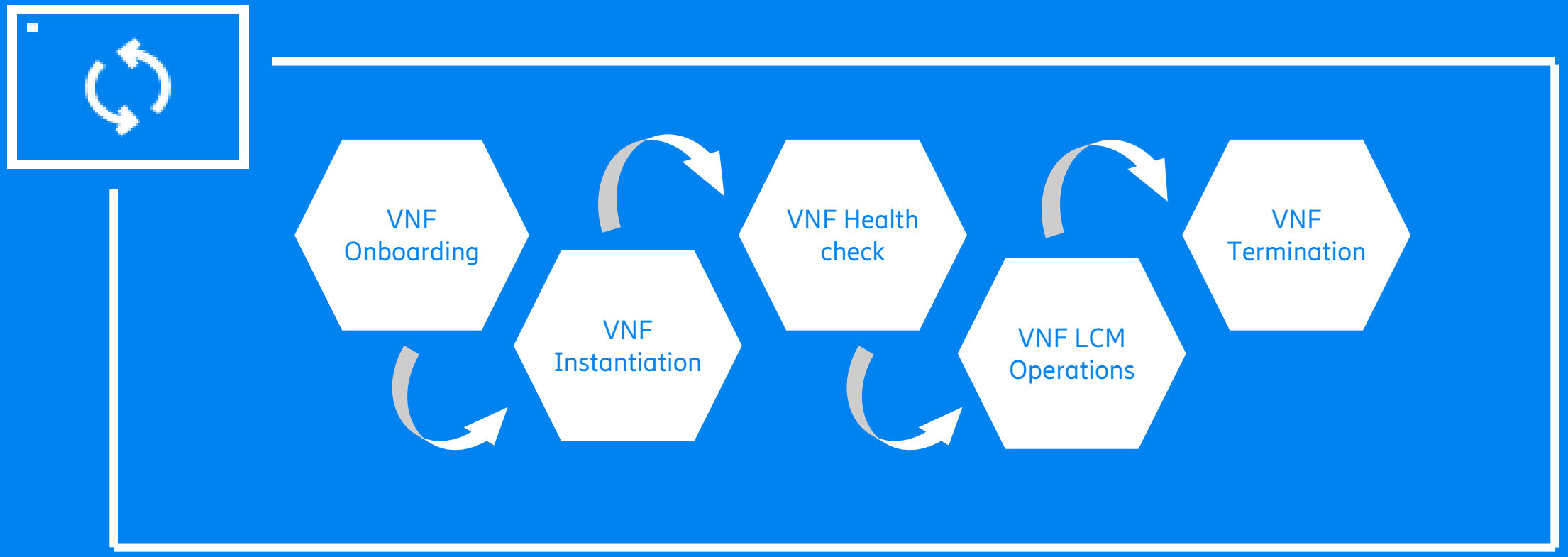
Partner VNF Certification Lab & SW Baseline



Name	Version
Ericsson Network Function Virtualization Infrastructure (NFVI)	6.1
Ericsson Software Defined Infrastructure (SDI)	2.12.1
Ericsson Cloud Execution Environment (CEE)	9.1.1
Ericsson Software-defined networking (SDN)	7.0
Ericsson Orchestrator (EO)	18.3
Ericsson Cloud Deployment Engine (ECDE)	18.3

Partner VNF Certification Lab Environment

Partner VNF Certification test scope



- Streamlined and automated VNF certification testing
- 20 Test cases mainly focusing on VNF Day 0 configuration

Partner VNF Certification assets

Re-usable certification assets

Partner VNF Certification Program benefits

Benefits for VNF Vendors

- Access to experienced experts, feedback and trouble report resolution during validation process
- Broaden market reach and leverage on Ericsson NFVI market position
- Joint marketing and sales activities, included listing on Ericsson internet site
- Re-use non-IPR restricted assets (Test Cases, VNF Descriptor, Heat Orchestration Template) to accelerate customer projects

Benefits for service providers

- Verify that VNF vendors are compliant with relevant NFV standards
- Accelerate deployment and reduce risk when onboarding and deploying multi-vendor VNFs on Ericsson NFVI.
- Access to a large catalog of certified VNFs

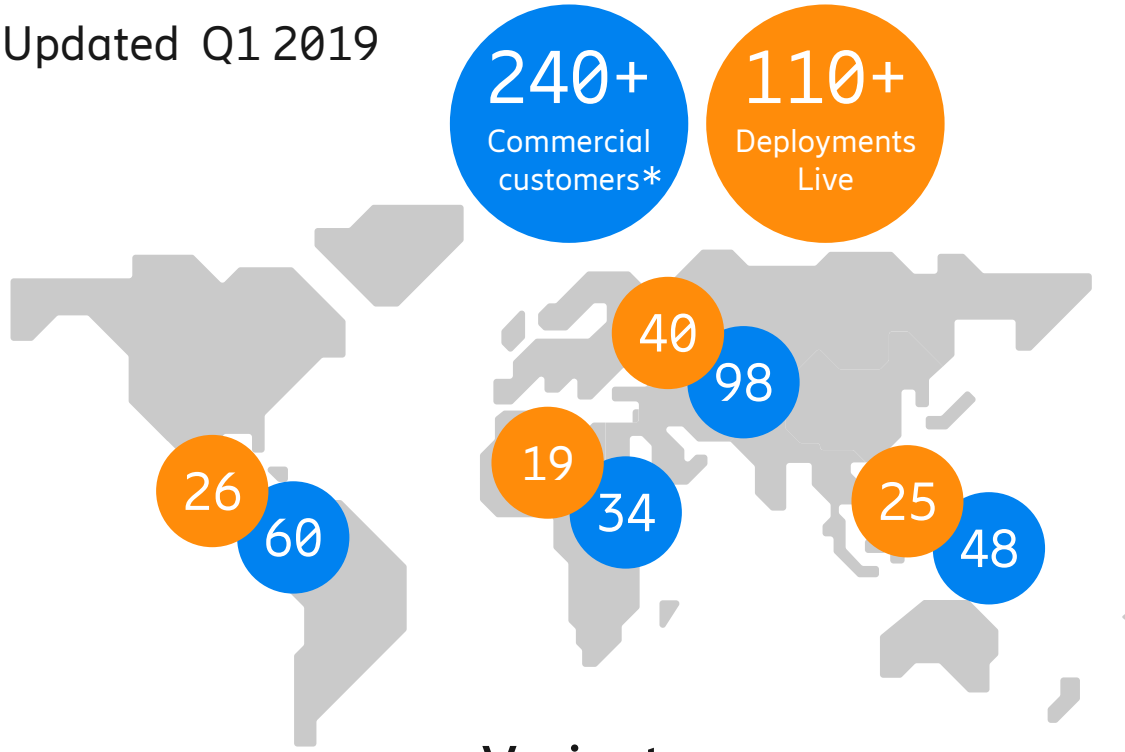
Accelerate NFV Deployment

Ericsson NFV references
VNF's, NFVI, NFV-MANO

Drivers:

- New Business
- Modernization
- Transformation
- Capacity build-out

Updated Q1 2019



Variants

Ericsson full stack — End-user service on any NFVI — Single VNF

Lead NFV customers

Telefonica, UNICA
Swisscom, Wind
Vodafone-Australia, VHA
NTT docomo, Telstra
Verizon, AT&T

End user Services:

- VoLTE
- Wi-Fi calling
- MBB
- Enterprise
- IoT

* VNF, NFVI & NFV Mano domains, most customers have multiple VNF's and contracts

Ericsson Cloud Infrastructure customers

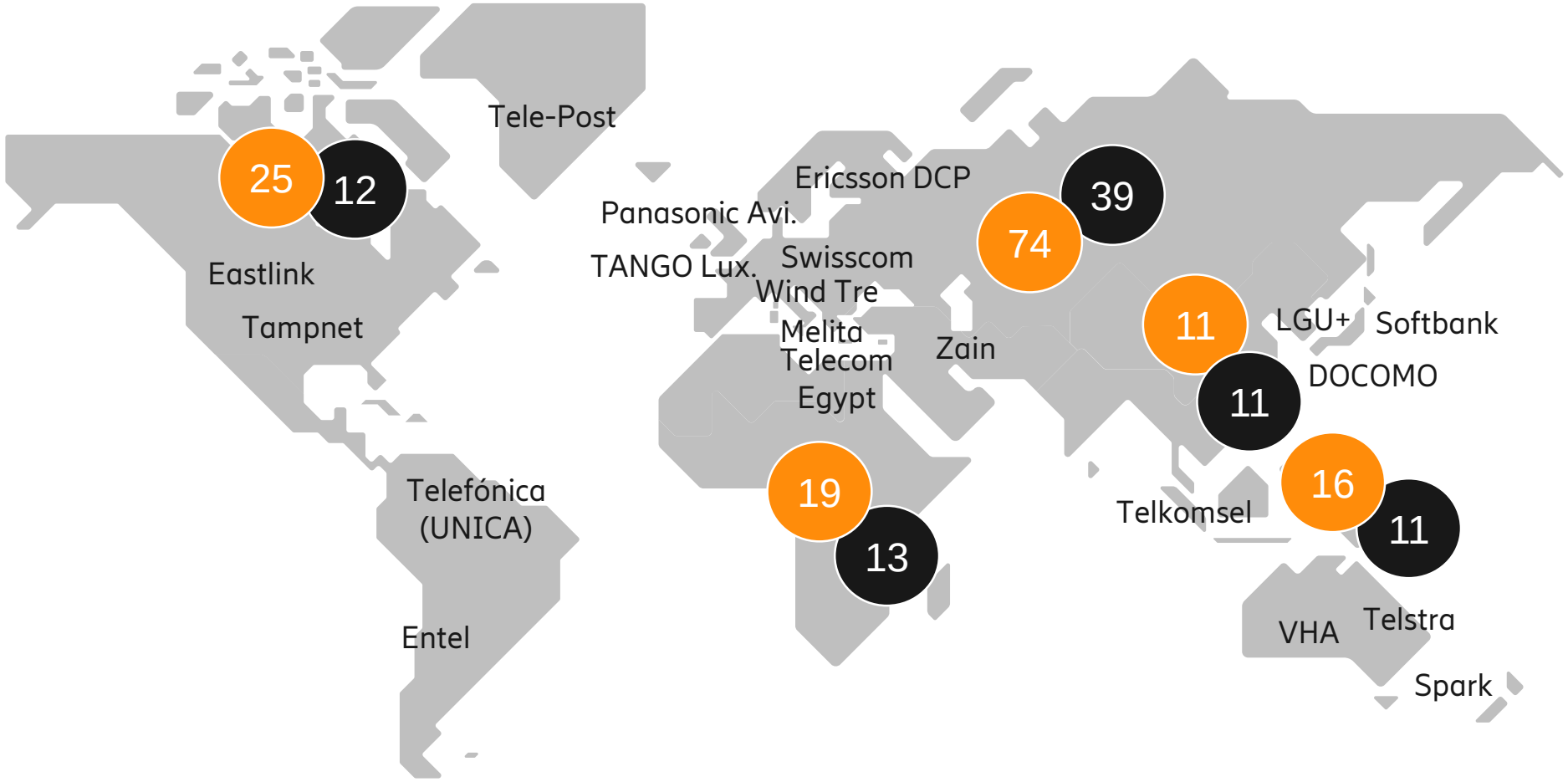
September 2019

145+* CEE customers

85+ Live CEE customers

65+** NFVI customers

39 Live NFVI customers



- * No of CEE customers contracted for infrastructure for VNF appliances or system verified NFVI
- ** No of customers contracted for system verified NFVI

Ericsson NFVI Existing VNF ecosystem overview

Based on executive customer projects

Ericsson

- vEPG
- vMSP
- vWCG
- vWMG
- vPCRF/ vSAPC
- vDSC
- vIMS
- vMME
- vUDC
- vSBG
- vEMA
- vENM
- vEO
- vEMM
- vDNS
- vAAA
- vEPC
- vMSS
- vCNOM

Huawei

- vOCS
- vNGIN
- vEPC
- vPCRF
- vDRA
- SD-WAN
- vSBC
- vIMS

ZTE

- vIMS

NOKIA

- vAAA
- vMME
- vEPC
- VoWiFi

NEC

- vMME
- vSCN
- vASN
- vEPC
- cESPG

Cisco

- CSR1000v
- XRv 9000 PE
- ASAv30 / ASAv50
- NGIPSv
- FTDv
- Broadworks VoIP Platform
- FMC

Fujitsu

- vIPCRX (IP Centrex)
- vMGN
- vMRN
- vEPC

Juniper

- vDBE (Data Border Element)
- vSRX Router

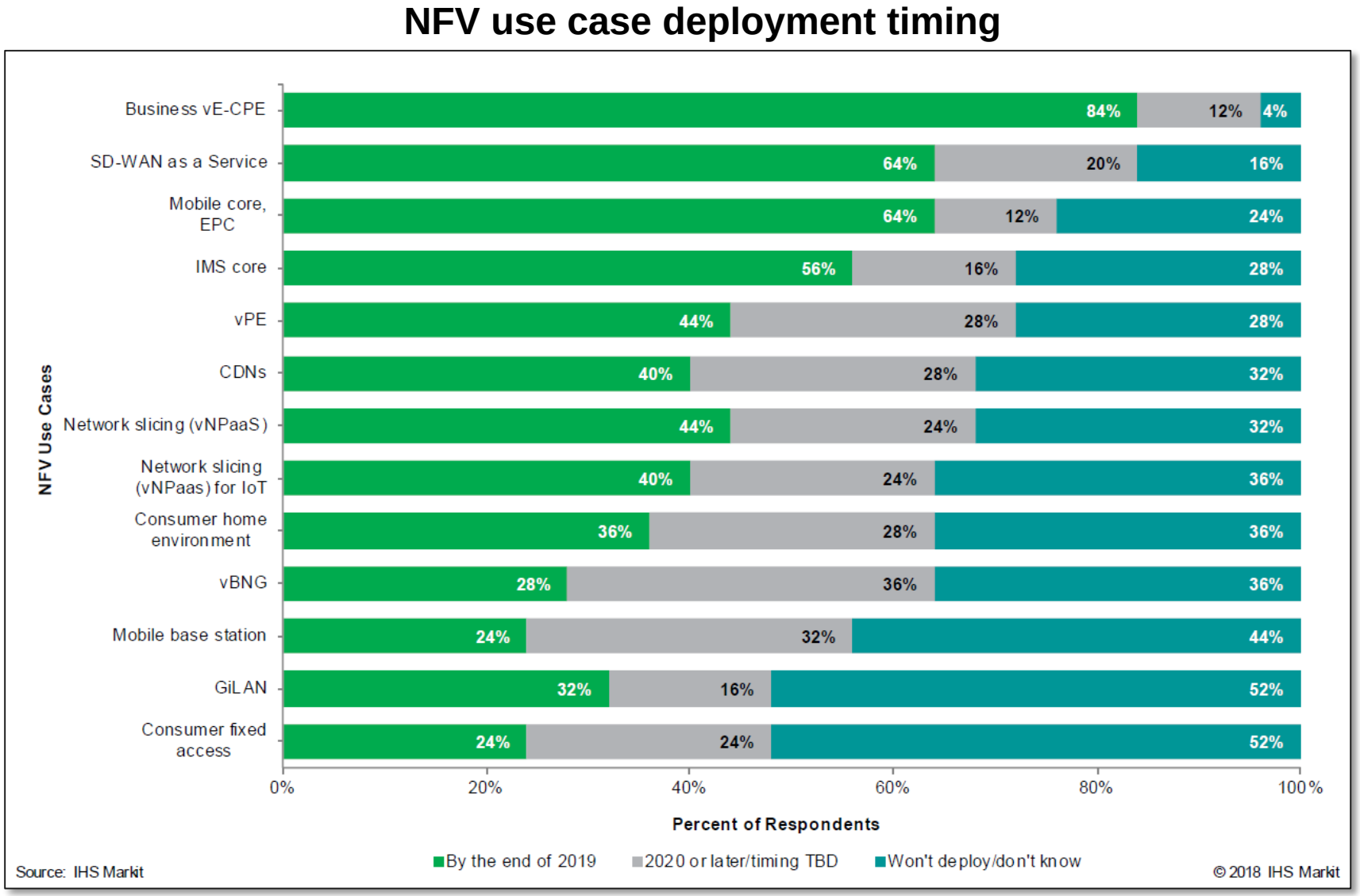
Others

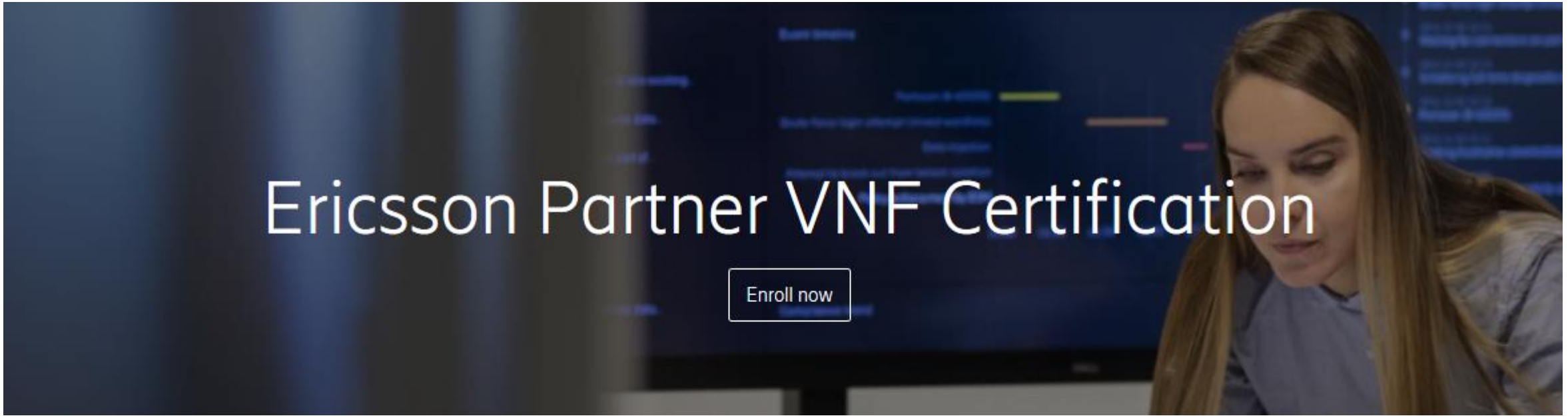
vDRA	(F5)	Sandvine	(Sandvine)
Big-IP	(F5)	Mquest	(Mquaest)
LTM, GTM, APM	(F5)	vSS7	(Mavenir)
AFM, PEM, Gi Function		vIMS	(Mavenir)
vFirewall	(Palo Alto Networks)	vSMSC	(Mavenir)
vThunder	(A10 Networks)	vPCRF	(Oracle)
CG-NAT	(A10 Networks)	FortiGate, Forti Mgr	(Forti Networks)
vLB	(AVI)	RCS Suite	(Wit Software)
vMPN	(HP)	Central WLAN	(Aruba)
BNS	(HP)	OCS	(Digitale Route)
VNFM	(HP)	TCP Optimization	(Openwave)
VSR 1000	(HP)	vNAT Log Collector Engine	(Sterlite Technologies)
Directory Serv.	(Oracle)	Peakflow	(Arbor)
RCS	(WIT Software SA)	VNFM	(Ribbon)
AGCF	(Iskratel)	A2 Telephony App. Server	(Ribbon)
Enterprise AS	(Metaswitch)	vSMSC	(hSenid)

Multi-Vendor, Multi-VNF, Multi-Tenant NFVI System Verified Solution

13 NFV use cases driving NFVI traffic growth

— According to IHS Market "NFV Strategies Service Provider Survey", 88% of Service Providers are deploying NFV solutions in 2019 enabling 1 or several of the use cases below.





Are you interested? Contact us here:

https://www.ericsson.com/en/digital-services/offerings/nfvi-cloud-infrastructure/nfv-infrastructure/vnf-certification-service