Oracle® Communications

Cloud Native Core, Security Edge Protection Proxy Benchmarking Guide

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Oracle Communications Cloud Native Core, Security Edge Protection Proxy Benchmarking Guide, Release 25.1.102

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Preface

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Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
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Acronyms

The following table lists the acronyms and the terminologies used in the document:

Table Acronyms and Terminologies

Acronym	Description
Cat-0	Cat-0 SBI Message Schema Validation Feature
Cat-1	Cat-1 Service API Validation Feature
Cat-2	Cat-2 Network ID Validation Feature
Cat-3	Cat 3 - Previous Location Check
CNC Console	Oracle Communications Cloud Native Configuration Console
CRD	Custom Resource Definition
CNE	Oracle Communications Cloud Native Environment
cSEPP/C-SEPP	Consumer Security Edge Protection Proxy
DB	Database
DNS	Domain Name System
DRL	Drools Rule Language
EGW	Egress Gateway
FQDN	Fully Qualified Domain Name
GSMA	Groupe Speciale Mobile Association (GSMA). Represents the interests of mobile operators and the broader mobile industry worldwide.
Hosted SEPP	Hosted SEPP functionality provides selective routing in Roaming Hub Mode
IGW	Ingress Gateway
IPX	Internetwork Packet Exchange
K8s	Kubernetes
Local PLMN	PLMN managed by Local SEPP
Local SEPP	SEPP in Local PLMN
MNO	Mobile Network Operator
NDB	Network Database
NF	Network Function
Network Function	A functional building block within a network infrastructure, which has well defined external interfaces and well defined functional behavior. In practical terms, a network function is often a network node or physical appliance.
NF Consumer	A generic way to refer to an NF which consumes services provided by another NF. Example: An AMF acts as a Consumer NF that consumes AMPolicy services provided by the PCF.
NF Instance	A specific instance of a network function type.
NF Producer or NF Provider	A generic way to refer to an NF which provides services that can be consumed by another NF. Example: A PCF acts as a Producer NF that provides AMPolicy Services to the AMF.
NRF	Oracle Communications Cloud Native Core, Network Repository Function
OHC	Oracle Help Center
OSDC	Oracle Software Delivery Cloud
PDB	PodDisruptionBudget

Table (Cont.) Acronyms and Terminologies

Acronym	Description
PLMN	Public Land Mobile Network
pSEPP/P-SEPP	Producer Security Edge Protection Proxy
Remote PLMN	PLMN managed by Remote SEPP
Remote SEPP	SEPP in Remote PLMN
Remote SEPP Set	Set of Remote SEPPs to allow alternate routing across Remote SEPPs
REST API	Representational State Transfer Application Programming Interface
Roaming Hub	Roaming Hub is the deployment mode of SEPP. Roaming Hub is used as an intermediate proxy. Each SEPP connects to the Roaming Hub which further connect to another SEPP. All the Remote SEPPs can communicate with each other through roaming hub.
Scaling	Ability to dynamically extend or reduce resources granted to the Virtual Network Function (VNF) as needed. This includes scaling out and in or scaling up and down.
SCM	Security Coutermeasure
SEPP	Oracle Communications Cloud Native Core, Security Edge Protection Proxy
SUPI	Subscription Permanent Identifier
SVC	Service
TLS	Transport Layer Security
TH	Topology Hiding
TUH	Topology Unhiding
TPS	Transactions Per Second
UE	User Equipment
UDR	Oracle Communications Cloud Native Core, Unified Data Repository

What's New in This Guide

This section introduces the documentation updates for Release 25.1.1xx.

Release 25.1.102 - G29350-03, July 2025

There are no updates made to this document in this release.

Release 25.1.101 - G29350-02, June 2025

There are no updates made to this document in this release.

Release 25.1.100 - G29350-01, April 2025

Added the following configurations:

- SEPP 24K MPS, 24 Hrs Run with ASM Enabled and without Feature Enabled with 50ms Delay at Server End
- SEPP 24K MPS, 102 Hrs Run with ASM Enabled and without Feature Enabled with 50ms Delay at Server End
- SEPP 20K MPS, 62 Hrs Run with Topology Hiding, SCM (Cat-0, Cat-1, Cat-2, and Cat-3), Overload, Mediation, SOR, and Rate Limiting Features Enabled with 50ms Delay at Server End
- SEPP 24K MPS, 32 Hrs Run with Topology Hiding, SCM (Cat-0, Cat-1, Cat-2, and Cat-3),Overload, Mediation, SOR, and Rate Limiting (only Global PLMN Ingress Rate Limiting) Features Enabled with 50ms Delay at Server End
- SEPP 20K MPS, 84 Hrs Run with Topology Hiding, SCM (Cat-0, Cat-1, Cat-2, and Cat-3),Overload, Mediation, SOR, and Rate Limiting (only Global PLMN Ingress Rate Limiting) Features Enabled with 50ms Delay at Server End
- SEPP 20K MPS, 38 Hrs Run with Topology Hiding, SCM (Cat-0, Cat-1, Cat-2, and Cat-3),Overload, Mediation, SOR, DNS SRV, and Rate Limiting (only Global PLMN Ingress Rate Limiting) Features Enabled with 50ms Delay at Server End
- SEPP 20K MPS, 85 Hrs Run with Topology Hiding, SCM (Cat-0, Cat-1, Cat-2, and Cat-3),Overload, Mediation, SOR, DNS SRV, and Rate Limiting (only Global PLMN Ingress Rate Limiting) Features Enabled with 50ms Delay at Server End
- Test Scenario 8 - SEPP 20K MPS, 14 Hrs Run with Topology Hiding, SCM (Cat-0, Cat-1, Cat-2, and Cat-3),Overload, Mediation, SOR, DNS SRV, and Rate Limiting (only Global PLMN Ingress Rate Limiting) Features Enabled with 300ms Delay at Server End
- Test Scenario 9: SEPP 20K MPS, 14 Hrs Run without Feature Enabled with 300ms Delay at Server End

1 Overview

Security Edge Protection Proxy (SEPP) is a key component of the 5G Service Based Architecture. It is a proxy Network Function (NF) which is used for the secured communication for inter Public Land Mobile Network (PLMN) messages.

For more information about the SEPP architecture, see *Oracle Communications Cloud Native Core, Security Edge Protection Proxy User Guide*.

The user can install either SEPP or Roaming Hub/Hosted SEPP.

> **Note**
>
> The performance and capacity of the SEPP system may vary based on the call model, Feature/Interface configuration, and underlying CNE and hardware environment.

1.1 Purpose and Scope

This document is designed to help operators measure the capacity and performance of SEPP, SEPP microservices, and deployment environment setup software such as Cloud Native Environment (CNE) and cnDBTier.

This document provides SEPP performance and capacity data. It is recommended that SEPP is run through a benchmark on the target cloud native infrastructure to determine the capacity and performance in the target infrastructure. This information can be used to adjust the initial deployment resources and to help predict resource requirements when SEPP is scaled up.

1.2 References

For more information on Security Edge Protection Proxy (SEPP), refer to the following documents:

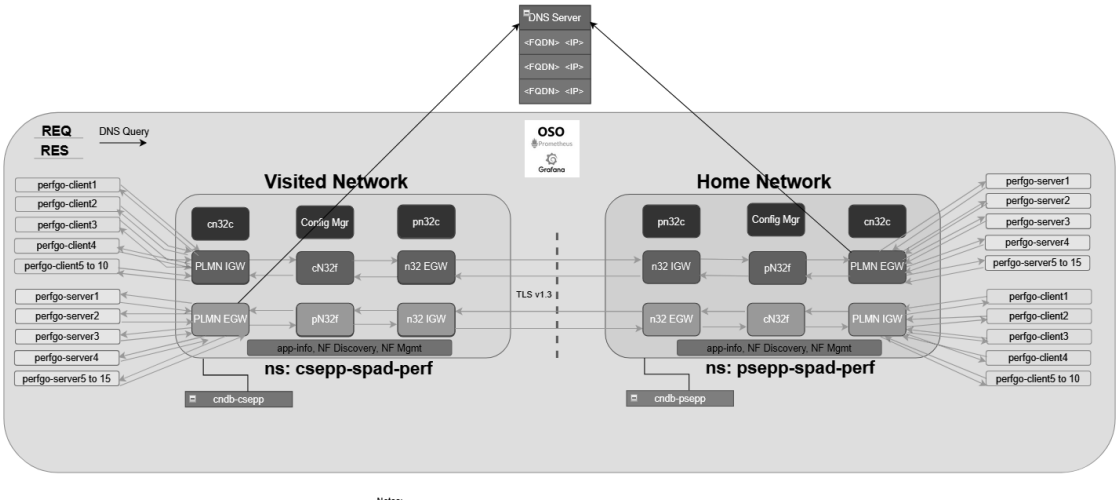
- *Oracle Communications Cloud Native Core, Security Edge Protection Proxy Installation, Upgrade, and Fault Recovery Guide*
- *Oracle Communications Cloud Native Core, Security Edge Protection Proxy User Guide*
- *Oracle Communications Cloud Native Core, Security Edge Protection Proxy REST Specification Guide*
- *Oracle Communications Cloud Native Core, Security Edge Protection Proxy Troubleshooting Guide*
- *Oracle Communications Cloud Native Core, cnDBTier Installation, Upgrade, and Fault Recovery Guide*
- *Oracle Communications Cloud Native Core, cnDBTier User Guide*

2
Deployment Environment

This section provides information about the cloud native infrastructure used for SEPP benchmarking.

The following diagram represents the deployment configurations of SEPP:

Figure 2-1 Deployment Diagram



The details about the deployment configurations are as follows:

- cnDBTier, cSEPP, pSEPP, perfgo-client, and perfgo-server are deployed in same cluster
- DNS server is running on a standalone VM in a different cluster
- cSEPP to pSEPP n32 TLS 1.3 connection is on External IP (metalLB)
- perfgo-client is sending traffic on SEPP external IP
- SEPP to perfgo-server connection is using External IP (metalLB)
- Both SEPP have 30 local PLMNs
- Network delay of 50 ms on server side

2.1 Overall Summary of Benchmarking Configurations

The following table lists the overall summary of benchmarking configurations.

Overall Summary

Table 2-1 Overall Summary

S. No.	Execution Time	SEPP Release	CNCC Release	cnDBTier Release	ASM Enabled/ Disabled	OSO(Yes/ No)	HA Proxy Installed	Cluster	Site-1 MPS	Site-2 MPS	Overall MPS	Network Delay on server side	Features Enabled
Run1	24Hr	25.1.0	25.1.0(Non-ASM)	25.1.0	Enabled	NA	NA	Hard head 1	12K	12K	24K	50ms	Vanilla Run
Run2	102Hr	25.1.0	25.1.0(Non-ASM)	25.1.0	Enabled	NA	NA	Hard head 1	10K	10K	20K	50ms	Vanilla Run
Run3	62Hr	25.1.0	25.1.0(Non-ASM)	25.1.0	Enabled	NA	NA	Hard head 1	10K	10K	20K	50ms	Topology Hiding, SCM (Cat-0,Cat-1,Cat-2,and Cat3), Overload, Mediation, SOR, and RateLimiting

Table 2-1 (Cont.) Overall Summary

S. No.	Execution Time	SEPP Release	CNCC Release	cnDBTier Release	ASM Enabled/ Disabled	OSO(Yes/ No)	HA Proxy Installed	Cluster	Site-1 MPS	Site-2 MPS	Overall MPS	Network Delayon server side	Features Enabled
Run4	12Hr	25.1.0	25.1.01(Non-ASM)	25.1.0	Enabled	NA	NA	Hard head 1	10K	10K	20K	50ms	Topology Hiding, SCM (Cat0 ,Cat1, Cat2, and Cat3) ,Overload, Mediation, SOR, and RateLimiting(Only Global PLMN-ingress rate limiting).

Table 2-1 (Cont.) Overall Summary

S. No.	Execution Time	SEPP Release	CNCC Release	cnDBTier Release	ASM Enabled/ Disabled	OSO(Yes/ No)	HA Proxy Installed	Cluster	Site-1 MPS	Site-2 MPS	Overall MPS	Network Delayon server side	Features Enabled
Run5	84Hr	25.1.0	25.1.0(Non-ASM)	25.1.0	Enabled	NA	NA	Hard head 1	10K	10K	20K	50ms	Topology Hiding, SCM(Cat0, Cat1, Cat2, Cat3) ,Overload, Mediation, SOR, RateLimiting (Only Global PLMN-ingress rate limiting).

Table 2-1 (Cont.) Overall Summary

S. No.	Execution Time	SEPP Release	CNCC Release	cnDBTier Release	ASM Enabled/ Disabled	OSO(Yes/ No)	HA Proxy Installed	Cluster	Site-1 MPS	Site-2 MPS	Overall MPS	Network Delayon server side	Features Enabled
Run6	38Hr	25.1.0	25.1.0(Non-ASM)	25.1.0	Enabled	NA	NA	Hard head 1	10K	10K	20K	50ms	Topology Hiding, SCM(Cat0, Cat1, Cat2, and Cat3) ,Overload, Mediation, SOR, DNS-SRV, RateLimiting (Only Global PLMN-ingress rate limiting).

3
SEPP Benchmark Testing

This section provides information about the SEPP testcases run in different scenarios.

3.1 Test Scenario 1: SEPP 24K MPS, 24 Hrs Run with ASM Enabled and without any Feature Enabled with 50ms Delay at Server End

This test scenario describes performance and capacity of SEPP and provides the benchmarking results for 24K MPS,24Hrs with ASM enabled and without any feature enabled with 50ms delay at server end.

3.1.1 Testcase and Setup Details

Following are the testcase and setup details:

Traffic Model Details:

Table 3-1 TPS (Transactions Per Second)

Over all TPS	SITE-1	SITE-2
24K MPS	12K MPS	12K MPS

Call Mix

Table 3-2 Call Mix

NF-Consumer	NF-Producer	Reference Point ID	Traffic %
vAMF	hUDM	N8	32.35
vAMF	hAUSF	N12	8.82
vNRF	hNRF	N27	11.76
vNSSF	hNSSF	N31	2.94
vPCF	hPCF	N24	11.76
vSMF	hUDM	N10	8.82
vSMF	hSMF	N16	17.65
vSMSF	hUDM	N21	2.94
vPCF	hAMF	N15	2.94

Setup Details

Table 3-3 Setup Details

Setup Details	Values
Active User	NA for SEPP
Execution Timeline	24Hrs
Environment	VCNE
Cluster	Hardhead1
Bastion-1 IP	10.148.209.173
OCCNE Version	23.3.3
cnDBTier	25.1.100
cSEPP	25.1.100
pSEPP	25.1.100
CNC Console	25.1.100
Set up Configuration	• Both SEPPs are deployed in Model-B. • cnDBTier is deployed on both site.
List of SEPP Features enabled	None. This execution is done on vanilla SEPP deployment.

Resource Footprint

Table 3-4 Resource Footprint

Microservices / container	Container Count	CPU Resource per container (Limit)	CPU Resource per container (Request)	Memory Resource per container (Limit)	Memory Resource per container (Request)
Site1-ocsepp-alternate-route/ alternate-route	2	2	2	4Gi	4Gi
Site1-ocsepp-appinfo/appinfo	2	1	1	2Gi	1Gi
Site1-ocsepp-cn32c-svc/ cn32c-svc	2	2	2	2Gi	2Gi
Site1-ocsepp-cn32f-svc/ cn32f-svc	7	5	5	8Gi	8Gi
Site1-ocsepp-coherence-svc/ coherence-svc	1	1	1	2Gi	2Gi
Site1-ocsepp-config-mgr-svc/ config-mgr-svc	1	2	2	2Gi	2Gi
Site1-ocsepp-n32-egress-gateway/n32-egress-gateway	7	5	5	5Gi	5Gi
Site1-ocsepp-n32-ingress-gateway/n32-ingress-gateway	7	6	6	5Gi	5Gi

Table 3-4 (Cont.) Resource Footprint

Microservices / container	Container Count	CPU Resource per container (Limit)	CPU Resource per container (Request)	Memory Resource per container (Limit)	Memory Resource per container (Request)
ocsepp-nf-mediation/nf-mediation	2	8	8	8Gi	8Gi
Site1-ocsepp-ocpm-config/ config-server	2	1	1	1Gi	1Gi
Site1-ocsepp-performance/ perf-info	2	2	2	4Gi	200Mi
Site1-ocsepp-plmn-egress-gateway/plmn-egress-gateway	7	5	5	5Gi	5Gi
Site1-ocsepp-plmn-ingress-gateway/plmn-ingress-gateway	7	5	5	5Gi	5Gi
Site1-ocsepp-pn32c-svc/ pn32c-svc	2	2	2	2Gi	2Gi
Site1-ocsepp-pn32f-svc/ pn32f-svc	7	5	5	8Gi	8Gi
Site1-ocsepp-sepp-nrf-client-nfdiscovery/nrf-client-nfdiscovery	2	1	1	2Gi	2Gi
Site1-ocsepp-sepp-nrf-client-nfmanagement/ nrf-client-nfmanagement	1	1	1	1Gi	1Gi
Site2-ocsepp-alternate-route/ alternate-route	1	2	2	4Gi	4Gi
Site2-ocsepp-appinfo/appinfo	2	1	1	2Gi	1Gi
Site2-ocsepp-cn32c-svc/ cn32c-svc	2	2	2	2Gi	2Gi
Site2-ocsepp-cn32f-svc/ cn32f-svc	7	5	5	8Gi	8Gi
Site2-ocsepp-coherence-svc/ coherence-svc	1	1	1	2Gi	2Gi

Table 3-4 (Cont.) Resource Footprint

Microservices / container	Container Count	CPU Resource per container (Limit)	CPU Resource per container (Request)	Memory Resource per container (Limit)	Memory Resource per container (Request)
Site2-ocsepp-config-mgr-svc/ config-mgr-svc	1	2	2	2Gi	2Gi
Site2-ocsepp-n32-egress-gateway/n32-egress-gateway	7	5	5	5Gi	5Gi
Site2-ocsepp-n32-ingress-gateway/n32-ingress-gateway	7	6	6	5Gi	5Gi
Site2-ocsepp-ocpm-config/ config-server	2	1	1	1Gi	1Gi
Site2-ocsepp-performance/ perf-info	2	2	2	4Gi	200Mi
Site2-ocsepp-plmn-egress-gateway/plmn-egress-gateway	7	5	5	5Gi	5Gi
Site2-ocsepp-plmn-ingress-gateway/plmn-ingress-gateway	7	5	5	5Gi	5Gi
Site2-ocsepp-pn32c-svc/ pn32c-svc	2	2	2	2Gi	2Gi
Site2-ocsepp-pn32f-svc/ pn32f-svc	7	5	5	8Gi	8Gi
Site2-ocsepp-sepp-nrf-client-nfdiscovery/nrf-client-nfdiscovery	2	1	1	2Gi	2Gi
Site2-ocsepp-sepp-nrf-client-nfmanagement/ nrf-client-nfmanagement	1	1	1	1Gi	1Gi
Site2-mysql-cluster-db-backup-manager-svc/db-backup-manager-svc	1	100m	100m	128Mi	128Mi

Table 3-4 (Cont.) Resource Footprint

Microservices / container	Container Count	CPU Resource per container (Limit)	CPU Resource per container (Request)	Memory Resource per container (Limit)	Memory Resource per container (Request)
Site2-mysql-cluster-db-monitor-svc/db-monitor-svc	1	4	4	4Gi	4Gi
Site2-ndbappmysqld/mysqlndbcluster	2	8	8	10Gi	10Gi
Site2-ndbappmysqld/init-sidecar	2	100m	100m	256Mi	256Mi
Site2-ndbmgmd/mysqlndbcluster	2	4	4	10Gi	8Gi
Site2-ndbmgmd/db-infra-monitor-svc	2	100m	100m	256Mi	256Mi
Site2-ndbmtd/mysqlndbcluster	4	10	10	18Gi	16Gi
Site1-mysql-cluster-db-backup-manager-svc/db-backup-manager-svc	1	100m	100m	128Mi	128Mi
Site2-ndbmtd/db-backup-executor-svc	4	100m	100m	256Mi	256Mi
Site1-mysql-cluster-db-monitor-svc/db-monitor-svc	1	4	4	4Gi	4Gi
Site2-ndbmtd/db-infra-monitor-svc	4	100m	100m	256Mi	256Mi
Site1-ndbappmysqld/mysqlndbcluster	2	8	8	10Gi	10Gi
Site1-ndbappmysqld/init-sidecar	2	100m	100m	256Mi	256Mi

Table 3-4 (Cont.) Resource Footprint

Microservices / container	Container Count	CPU Resource per container (Limit)	CPU Resource per container (Request)	Memory Resource per container (Limit)	Memory Resource per container (Request)
Site1-ndbmgmd/mysqlndbcluster	2	4	4	10Gi	8Gi
Site1-ndbmgmd/db-infra-monitor-svc	2	100m	100m	256Mi	256Mi
Site1-ndbmtd/mysqlndbcluster	4	10	10	18Gi	16Gi
Site1-ndbmtd/db-backup-executor-svc	4	100m	100m	256Mi	256Mi
Site1-ndbmtd/db-infra-monitor-svc	4	100m	100m	256Mi	256Mi
Site1-hello-world2/hello-world2	2	NA	NA	NA	NA
Site1-occne-alertmanager-snmp-notifier/alertmanager-snmp-notifier	1	NA	NA	NA	NA
Site1-occne-bastion-controller/bastion-controller	1	200m	10m	256Mi	128Mi
Site1-occne-kube-prom-stack-grafana/grafana-sc-dashboard	1	NA	NA	NA	NA
Site1-occne-kube-prom-stack-grafana/grafana-sc-datasources	1	NA	NA	NA	NA
Site1-occne-kube-prom-stack-grafana/grafana	1	500m	500m	500Mi	500Mi

Table 3-4 (Cont.) Resource Footprint

Microservices / container	Container Count	CPU Resource per container (Limit)	CPU Resource per container (Request)	Memory Resource per container (Limit)	Memory Resource per container (Request)
Site1-occne-kube-prom-stack-kube-operator/kube-prometheus-stack	1	200m	100m	200Mi	100Mi
Site1-occne-kube-prom-stack-kube-state-metrics/kube-state-metrics	1	20m	20m	500Mi	32Mi
Site1-occne-metrics-server/metrics-server	1	100m	100m	200Mi	200Mi
Site1-occne-promxy/promxy	1	100m	100m	512Mi	512Mi
Site1-occne-promxy-apigw-nginx/nginx	2	2	1	1536Mi	1Gi
Site1-occne-tracer-jaeger-collector/occne-tracer-jaeger-collector	1	1250m	500m	1Gi	512Mi
Site1-occne-tracer-jaeger-query/occne-tracer-jaeger-query	1	500m	256m	512Mi	128Mi
Site1-occne-tracer-jaeger-query/occne-tracer-jaeger-agent-sidecar	1	NA	NA	NA	NA
Site1-alertmanager-occne-kube-prom-stack-kube-alertmanager/alertmanager	2	20m	20m	64Mi	64Mi
Site1-alertmanager-occne-kube-prom-stack-kube-alertmanager/config-reloader	2	200m	200m	50Mi	50Mi

Table 3-4 (Cont.) Resource Footprint

Microservices / container	Container Count	CPU Resource per container (Limit)	CPU Resource per container (Request)	Memory Resource per container (Limit)	Memory Resource per container (Request)
Site1-occne-opensearch-cluster-client/ opensearch	3	1	1	2Gi	2Gi
Site1-occne-opensearch-cluster-data/ opensearch	5	2	1	32Gi	16Gi
Site1-occne-opensearch-cluster-master/ opensearch	3	2	1	32Gi	16Gi
Site1-prometheus-occne-kube-prom-stack-kube-prometheus/ prometheus	2	12	12	55Gi	55Gi
Site1-prometheus-occne-kube-prom-stack-kube-prometheus/ config-reloader	2	200m	200m	50Mi	50Mi

3.1.2 Traffic and Latency

The following tables describe the traffic and latency details:

Traffic Details

Table 3-5 Traffic Details

TPS	Site-1	Site-2
PLMN-IGW-requests-rate	10290.83	10305.44
CN32F-requests-rate	10148.51	10237.15
N32-IGW-requests-rate	10237.13	10148.64
N32-EGW-requests-rate	10148.65	10237.16
PN32F-requests-rate	10236.35	10147.94
PLMN-EGW-requests-rate	10537.70	10445.02
Total TPS	10266.5	10253.5

Latency Details

Table 3-6 Latency Details

NF Service Latency(In MilliSecond)	Site-1	Site-2
IGW(s)	0.17	0.24
EGW(s)	0.25	0.18
cn32f(s)	0.13	0.10
pn32f(s)	0.03	0.03

3.1.3 Results

- csepp_call success rate: 99.999%
- psepp_call success rate: 99.999%
- csepp_Avg_Latency_rate: 73.67 ms
- psepp_Avg_Latency_rate: 72.71 ms
- No pod restarts are observed.
- Perfgo deployed on hardhead 1 cluster with 15 server and 4 client each side.
- Run with 50ms server delay.
- Feature enabled: NA (Vanilla run)

3.2 Test Scenario 2: SEPP 24K MPS, 102 Hrs Run with ASM Enabled and without any Feature Enabled with 50ms Delay at Server End

This test scenario describes performance and capacity of SEPP and provides the benchmarking results for 102 Hrs with ASM enabled and without any feature enabled with 50ms delay at server end.

3.2.1 Test Case and Setup Details

Following are the testcase and setup details:

Traffic Model Details

Table 3-7 TPS (Transactions Per Second)

Over all TPS	Site 1	Site 2	DB size	CPU Threshold	Memory Threshold
40K MPS	20K MPS	20K MPS	21MB at each SEPP	75	75

Call Mix

Table 3-8 Call Mix

NF-Consumer	NF-Producer	Reference Point ID	Traffic %
vAMF	hUDM	N8	32.35
vAMF	hAUSF	N12	8.82
vNRF	hNRF	N27	11.76
vNSSF	hNSSF	N31	2.94
vPCF	hPCF	N24	11.76
vSMF	hUDM	N10	8.82
vSMF	hSMF	N16	17.65
vSMSF	hUDM	N21	2.94
vPCF	hAMF	N15	2.94

Setup Details

Table 3-9 Setup Details

Setup Details	Values
Active User	NA for SEPP
Execution Timeline	75Hrs
Environment	VCNE
Cluster	Hardhead1
OCCNE Version	23.3.3
cnDBTier	25.1.200
cSEPP	25.1.200
pSEPP	25.1.200
CNC Console	25.1.200
Set up Configuration	• Both SEPPs are deployed on hardhead1. • cnDBTier is deployed on both site.
List of SEPP Features enabled	None. This execution is done on vanilla SEPP deployment.

Resource Footprint

Table 3-10 Resource Footprint

Micro services/ container	Replicas	CPU (Limit)	CPU (Request)	Memory (Limit)	Memory (Request)
Site2-ocsepp-alternate-route/ alternate-route	2	2	2	4Gi	4Gi
Site2-ocsepp-appinfo/appinfo	2	1	1	2Gi	1Gi
Site2-ocsepp-cn32c-svc/ cn32c-svc	2	2	2	2Gi	2Gi

Table 3-10 (Cont.) Resource Footprint

Micro services/ container	Replicas	CPU (Limit)	CPU (Request)	Memory (Limit)	Memory (Request)
Site2-ocsepp-cn32f-svc/ cn32f-svc	7	5	5	8Gi	8Gi
Site2-ocsepp-coherence-svc/ coherence-svc	1	1	1	2Gi	2Gi
Site2-ocsepp-config-mgr-svc/ config-mgr-svc	1	2	2	2Gi	2Gi
Site2-ocsepp-n32-egress-gateway/n32-egress-gateway	7	5	5	5Gi	5Gi
Site2-ocsepp-n32-ingress-gateway/n32-ingress-gateway	7	6	6	5Gi	5Gi
Site2-ocsepp-nf-mediation/nf-mediation	2	8	8	8Gi	8Gi
Site2-ocsepp-ocpm-config/ config-server	2	1	1	1Gi	1Gi
Site2-ocsepp-performance/ perf-info	2	2	2	4Gi	200Mi
Site2-ocsepp-plmn-egress-gateway/plmn-egress-gateway	7	5	5	5Gi	5Gi
Site2-ocsepp-plmn-ingress-gateway/plmn-ingress-gateway	7	5	5	5Gi	5Gi
Site2-ocsepp-pn32c-svc/ pn32c-svc	2	2	2	2Gi	2Gi
Site2-ocsepp-pn32f-svc/ pn32f-svc	7	5	5	8Gi	8Gi
Site2-ocsepp-sepp-nrf-client-nfdiscovery/nrf-client-nfdiscovery	2	1	1	2Gi	2Gi

Table 3-10 (Cont.) Resource Footprint

Micro services/ container	Replicas	CPU (Limit)	CPU (Request)	Memory (Limit)	Memory (Request)
Site2-ocsepp-sepp-nrf-client-nfmanagement/ nrf-client-nfmanagement	1	1	1	1Gi	1Gi
Site1-ocsepp-alternate-route/ alternate-route	2	2	2	4Gi	4Gi
Site1-ocsepp-appinfo/appinfo	2	1	1	2Gi	1Gi
Site1-ocsepp-cn32c-svc/ cn32c-svc	2	2	2	2Gi	2Gi
Site1-ocsepp-cn32f-svc/ cn32f-svc	7	5	5	8Gi	8Gi
Site1-ocsepp-coherence-svc/ coherence-svc	1	1	1	2Gi	2Gi
Site1-ocsepp-config-mgr-svc/ config-mgr-svc	1	2	2	2Gi	2Gi
Site1-ocsepp-n32-egress-gateway/n32-egress-gateway	7	5	5	5Gi	5Gi
Site1-ocsepp-n32-ingress-gateway/n32-ingress-gateway	7	6	6	5Gi	5Gi
Site1-ocsepp-nf-mediation/nf-mediation	2	8	8	8Gi	8Gi
Site1-ocsepp-ocpm-config/ config-server	2	1	1	1Gi	1Gi
Site1-ocsepp-performance/ perf-info	2	2	2	4Gi	200Mi
Site1-ocsepp-plmn-egress-gateway/plmn-egress-gateway	7	5	5	5Gi	5Gi
Site1-ocsepp-plmn-ingress-gateway/plmn-ingress-gateway	7	5	5	5Gi	5Gi

Table 3-10 (Cont.) Resource Footprint

Micro services/ container	Replicas	CPU (Limit)	CPU (Request)	Memory (Limit)	Memory (Request)
Site1-ocsepp-pn32c-svc/ pn32c-svc	2	2	2	2Gi	2Gi
Site1-ocsepp-pn32f-svc/ pn32f-svc	7	5	5	8Gi	8Gi
Site1-ocsepp-sepp-nrf-client-nfdiscovery/nrf-client-nfdiscovery	2	1	1	2Gi	2Gi
Site1-ocsepp-sepp-nrf-client-nfmanagement/ nrf-client-nfmanagement	1	1	1	1Gi	1Gi

3.2.2 Traffic and Latency

The following tables describe the traffic and latency details:

Traffic Details

Table 3-11 Traffic Details

TPS	Site-1	Site-2
PLMN-IGW-requests-rate	10289.46	10289.58
CN32F-requests-rate	10289.45	10289.59
N32-IGW-requests-rate	10289.61	10289.47
N32-EGW-requests-rate	10289.45	10289.57
PN32F-requests-rate	10289.61	10289.42
PLMN-EGW-requests-rate	10289.60	10289.46
Total TPS	10289.5	10289.5

Latency Details

Table 3-12 Latency Details

NF Service Latency(In MilliSecond)	Site-1	Site-2
IGW(s)	0.06	0.06
EGW(s)	0.07	0.07
cn32f(s)	0.04	0.04
pn32f(s)	0.03	0.03

3.2.3 Results

- csepp_call success rate: 99.999%
- psepp_call success rate: 99.999%
- csepp_Avg_Latency_rate: 72.04 ms
- psepp_Avg_Latency_rate: 71.78 ms
- No pod restarts are observed.
- Perfgo deployed on hardhead 1 cluster with 5 server and 4 client each side.
- Run with 50ms server delay.
- Feature enabled: NA (Vanilla run)