Oracle® Communications

Network Analytics Data Director Benchmarking Guide

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Oracle Communications Network Analytics Data Director Benchmarking Guide, Release 25.1.200

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Preface

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The following text conventions are used in this document:

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.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

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Acronyms

The following table provides information about the acronyms used in the document.

Table Acronyms

Acronym	Description
BSF	Oracle Communications Cloud Native Core, Binding Support Function
CNE	Oracle Communications Cloud Native Core, Cloud Native Environment
MPS	Messages Per Second
NDB	Network Data Broker
NRF	Oracle Communications Cloud Native Core, Network Repository Function
NVME	Non Volatile Memory Express
OCI	Oracle Cloud Infrastructure
OCNADD	Oracle Communications Network Analytics Data Director
OCPU	Oracle Compute Unit
PCF	Oracle Communications Cloud Native Core, Policy Control Function
SCP	Oracle Communications Cloud Native Core, Service Communication Proxy
SEPP	Oracle Communications Cloud Native Core, Security Edge Protection Proxy
xDR	Extended Detail Record

What's New in This Guide

This section lists the documentation updates for Release 25.1.2xx in *Oracle Communications Network Analytics Data Director Benchmarking Guide*.

Release 25.1.200 - G32793-01, July 2025

Updated the following sections:

- Added the following resource profiles in Resource Requirement chapter:
  - Egress 360K MPS Synthetic (TCP) Feed
  - Egress 450K MPS Synthetic (TCP) or HTTP2 Feed
  - Aggregated 270K MPS TCP or HTTP2 Feed
  - Aggregated 270K MPS Kafka Feed
- Added the following scenarios in OCNADD Benchmarking Testing chapter:
  - Performance Benchmarking for 360K MPS SCP Traffic with Synthetic (TCP) Feed
  - Performance Benchmarking for 360K MPS SCP and 450K Egress Traffic with Synthetic (TCP) and HTTP2 Feed
  - Performance Benchmarking for 270K MPS Aggregated Traffic with Synthetic (TCP) Feed
  - Performance Benchmarking for 270K MPS Aggregated Traffic with HTTP2 Feed
  - Performance Benchmarking for 360K MPS SCP Traffic with Synthetic (TCP) Feed
  - Performance Benchmarking for 360K MPS SCP and 450K Egress Traffic with TCP and HTTP2 Feed

1 Introduction

Oracle Communications Network Analytics Data Director (OCNADD) is a specialized Network Data Broker (NDB) in 5G Network Architecture.

OCNADD receives network traffic data from various sources, 5G network functions (NFs), Non-5G NFs, and third-party producers, performs filtering, replication, and aggregation on the received data according to the rules implemented by the subscribed third-party consumers. OCNADD then sends the filtered, replicated, or aggregated data to the subscribed third-party consumers (third-party consumer applications or platforms) securely.

1.1 Purpose and Scope

This document is designed to measure the performance and capacity of OCNADD deployment and resource requirements.

1.2 References

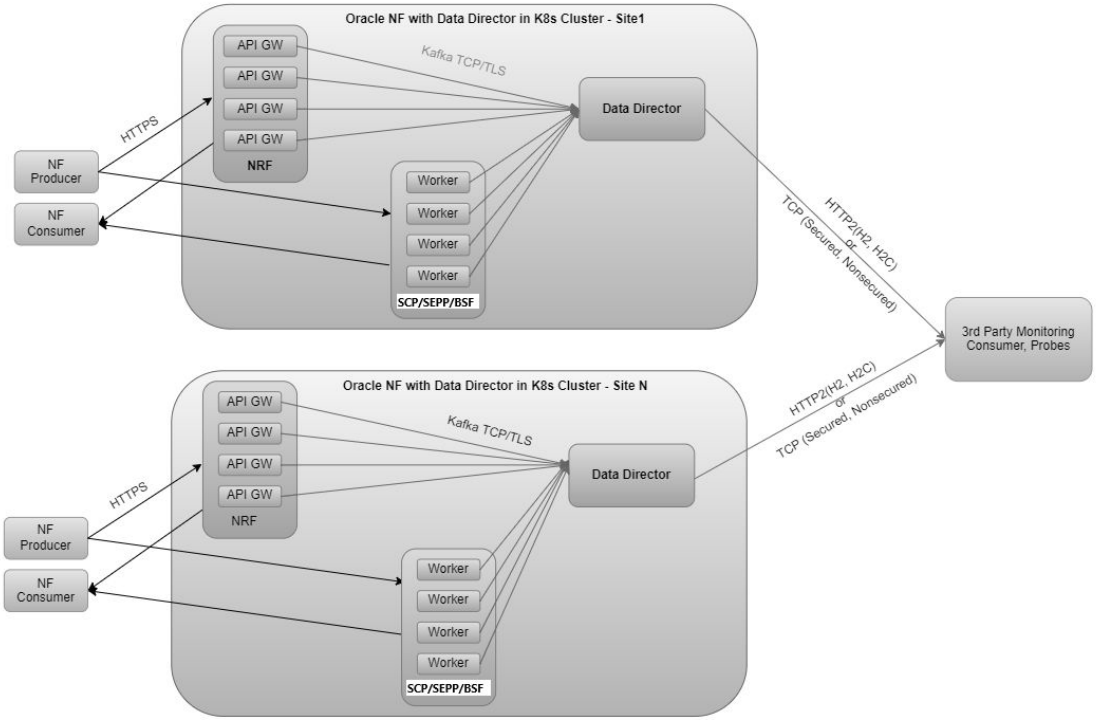
For more information about OCNADD, see the following documents:

- *Oracle Communications Network Analytics Data Director Installation, Upgrade, and Fault Recovery Guide*
- *Oracle Communications Network Analytics Data Director User Guide*
- *Oracle Communications Cloud Native Core OCI Adaptor, NF Deployment on OCI Guide*

2 Deployment

OCNADD supports CNE and OCI deployment. There are a few variations in the deployment process for both the platforms. For more information about OCNADD installation, see *Oracle Communications Network Analytics Data Director Installation, Upgrade, and Fault Recovery Guide*.

The following diagram depicts the OCNADD deployment in the 5G architecture:



OCNADD uses the following common services of CNE:

- Kubernetes
- Prometheus
- Metallb (Load balancer)
- CNLB
- cnDBTier

3
Resource Requirement

This chapter provides information about the resource requirements to install and run Oracle Communications Network Analytics Data Director (OCNADD) with the desired Message Per Second (MPS) profiles.

Resource Requirements for CNE Environment

Resource requirements for Baremetal (with NVMe):

Table 3-1 Bare Metal Environment

Type of Server	X9 Server and NVME
Master node	3
Worker node	19
Storage Class	Standard

Resource Requirements for OCI Environment

- OCI block volume is attached to the PVC with auto-tune based performance from balanced to high performance. To change block volume to auto-tune based performance (Balance to High Performance), see Changing the Performance of a Volume.
- All tests are performed with the default round-robin based ordering.
- Resource requirements may vary after enabling key or custom based ordering and running traffic with actual NFs.

Table 3-2 OKE Worker Nodes

Type of Server	OCI Hardware
Worker nodes	6
Instance Shape	VM.Standard.E4.Flex
OCPUs in worker node	50 (CPU: 100)
Memory in worker node	194 GB

3.1 Profile Resource Requirements

This section provides information about the profile resource requirements to install and run Oracle Communications Network Analytics Data Director (OCNADD) with the desired Message Per Second (MPS) profiles.

> **Note**
>
> It is recommended to have the following configurations for Baremetal setup to achieve the required throughput:
>
> - Jumbo frames should be enabled.
> - Ring buffer size should be increased to avoid packet drop at interfaces.
> - FluentD pods should not be in "*CrashLoopBackOff*" state due to Out of Memory error. For more information see "*High Latency in adapter feeds due to high disk latency*" section in *Oracle Communications Network Analytics Data Director Troubleshooting Guide.*

3.1.1 Resource Profile for Database

This section provides information about the database profile resource requirements to install and run Oracle Communications Network Analytics Data Director (OCNADD) with the desired Message Per Second (MPS) profiles.

Table 3-3 Resource Requirement

cnDBTier Pods	Min vCPU	Max vCPU	Min Memory	Max Memory	Total Replica
SQL (ndbmysqld) **Kubernetes Resource Type:** StatefulSet	1	1	1Gi	1Gi	0
SQL (ndbappmysqld) **Kubernetes Resource Type:** Statefulset	1	1	1Gi	1Gi	2
MGMT (ndbmgmd) **Kubernetes Resource Type:** StatefulSet	1	1	1Gi	1Gi	2
Database (ndbmtd) **Kubernetes Resource Type:** StatefulSet	1	1	4Gi	4Gi	2
Backup Manager Service (db-backup-manager-svc) **Kubernetes Resource Type:** Deployment	0.1	0.1	128Mi	128Mi	1
Monitor Service (db-monitor-svc) **Kubernetes Resource Type:** Deployment	0.2	0.2	500Mi	500Mi	1
EXTENDED STORAGE is ENABLED in CORRELATION Feed(Per Correlation Feed) Rate Supported in current release: 1K MPS rate with 24 hours retention Update "global.ndb.datamemory=96G" in custom-value.yaml of cndbTier PVC of ndbmtd= 150GB					

Table 3-3 (Cont.) Resource Requirement

cnDBTier Pods	Min vCPU	Max vCPU	Min Memory	Max Memory	Total Replica
Database (ndbmtd) **Kubernetes Resource Type:** StatefulSet	8	8	128Gi	128Gi	4

> **Note**
>
> Configure "**datamemory: 1G**" under "**ndbmtd"** section while deploying the CnDbTier for OCNADD. For more details on cnDBTier resource profile, see "cnDBTier Small Profile" section in *cnDBTier Resource Models Guide*.

3.1.2 Resource Profile for OCNADD OAM Services

The following profile is used for management group services in all the performance scenarios.

Table 3-4 Resource Requirement

Service Name	vCPU	Memory Required (Gi)	Total Replica	Description
ocnaddconfiguration	1	1	1	-
ocnaddalarm	1	1	1	-
ocnaddadmin	1	1	1	-
ocnaddhealthmonitoring	1	1	1	-
ocnaddgui	1	1	1	-
ocnadduirouter	1	1	1	-
ocnaddexport	0.5	1	1	Resource requirement will increase when export is configured. For more details, see Correlated 30K MPS Kafka Feed.
ocnaddredundancyagent	1	1	1	Required only when Georedundancy is enabled for OCNADD.

3.1.3 Resource Profile for OCNADD Worker Group Services

The following profile shall be used for worker group services. The resource profile for worker group services will vary based on the scenario to be executed.

> **Note**
>
> To support the increased throughput, the number of topic partitions should be increased. For more details on this, see "Adding Partitions to an Existing Topic" in the *Oracle Communications Network Analytics Data Director User Guide*.

3.1.3.1 vCNE Cluster Environment

This section gives the details of the LBVM vCNE Cluster Environment.

- **Hardware Type**: X9-2 Server
- **Disk Type**: NVMe
- **Master node**: 3
- **Worker node**: 44
- **LoadBalancer node**: LBVM

3.1.3.1.1 Egress 360K MPS Synthetic (TCP) Feed

> **Note**
>
> DD services and SCP NF services are deployed with anti-affinity enabled at the node level in same cluster.

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** TCP
- **FILTER:** OFF

360K MPS SCP Profile(Ingress to DD)

Table 3-5 360K MPS SCP Profile(Ingress to DD)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka (kafkaBroker)	5	48	11	-
ocnaddscpaggregation	2	4	13	SCP =78 (Each instance 6 partition)
ocnaddadapter(TCP) (consumeradapter)	3	6	20	MAIN=120 (Each instance 6 partition)

> **Note**
>
> - Additional memory is required for the SCP aggregation service if the Metadata Enrichment feature is enabled and the values of the properties `"METADATA_MAP_CACHE_EXPIRY_TIME_MS"` and `"METADATA_MAP_CACHE_SCHEDULER_TIME_MS"` are increased to higher values.
> - The end-to-end latency may increase based on "**METADATA_MAP_CACHE_EXPIRY_TIME_MS" and "METADATA_MAP_CACHE_SCHEDULER_TIME_MS**" is increased to a higher value.
> - More instances of the Kafka broker might be required when running with **RF=2**, depending on setup performance, and end-to-end latency might increase if disk I/O is slow.
> - For DISK I/O, see Disk Throughput Requirements.
> - For Kafka PVC-Storage, see Kafka PVC Storage Requirements.

3.1.3.1.2 Egress 450K MPS Synthetic (TCP) or HTTP2 Feed

vCNE Cluster Environment

> **Note**
>
> DD services and SCP NF services are deployed with anti-affinity enabled at the node level in same cluster.

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** TCP, HTTP2
- **FILTER:** OFF

360K MPS SCP Profile(Ingress to DD)

Table 3-6 360K MPS SCP Profile(Ingress to DD)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka (kafkaBroker)	5	96	16	-
ocnaddscpaggregation	2	4	13	SCP =78 (Each instance 6 partition)
ocnaddadapter(TCP) (consumeradapter)	3	6	20	MAIN=120 (Each instance 6 partition)

Table 3-6 (Cont.) 360K MPS SCP Profile(Ingress to DD)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddadapter(TCP) (consumeradapter, 360K MPS ingress and 36K MPS egress with Filter)	3	10	7	No partition change as MAIN topic already has 120 partition.
ocnaddadapter(TCP) (consumeradapter, 360K MPS ingress and 36K MPS egress with Filter)	3	10	7	No partition change as MAIN topic already has 120 partition.
ocnaddadapter(HTTP2) (consumeradapter, 360K MPS ingress and 18K MPS egress with Filter)	3	30	5	No partition change as MAIN topic already has 120 partition.

Note

- Additional memory and/or replica is required for SCP aggregation service if Metadata cache feature is enabled and value of properties "**METADATA_MAP_CACHE_EXPIRY_TIME_MS**" and "**METADATA_MAP_CACHE_SCHEDULER_TIME_MS**" is increased to a higher value.
- The end-to-end latency may increase based on: **"Timer Expiry Value + Processing Time + RF2/RF1 Processing Time + third-party Response Time (for HTTP2 feed)"**.
- More instances of the Kafka broker might be required when running with **RF=2**, depending on setup performance, and end-to-end latency might increase if disk I/O is slow.
- For DISK I/O, see Disk Throughput Requirements.
- For Kafka PVC-Storage, see Kafka PVC Storage Requirements.

3.1.3.2 Bare Metal Cluster Environment

This section gives the details of the Bare Metal Cluster Environment.

3.1.3.2.1 CNLB

This section gives the details of the CNLB Bare Metal Cluster Environment.

- **Hardware Type**: X9-2 Server
- **Disk Type**: NVMe
- **Master node**: 3

- **Worker node**: 19
- **LoadBalancer node**: CNLB

3.1.3.2.1.1 Egress 360K MPS Synthetic (TCP) Feed

> **Note**
>
> There are two separate clusters: one dedicated to OCNADD services, and another shared by SCP NF services and third-party application services.

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** TCP
- **FILTER:** OFF

360K MPS SCP Profile(Ingress to DD)

Table 3-7 360K MPS SCP Profile(Ingress to DD)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka (kafkaBroker)	5	48	11	-
ocnaddscpaggregation	2	4	13	SCP =78 (Each instance 6 partition)
ocnaddadapter(TCP) (consumeradapter)	3	6	20	MAIN=120 (Each instance 6 partition)

> **Note**
>
> - Additional memory is required for the SCP aggregation service if the Metadata Enrichment feature is enabled and the values of the properties `"METADATA_MAP_CACHE_EXPIRY_TIME_MS"` and `"METADATA_MAP_CACHE_SCHEDULER_TIME_MS"` are set to higher values.
> - End-to-end latency may increase based on "**Timer Expiry Value + Processing Time+ RF2/RF1 Processing Time**".
> - More Kafka broker instances might be required when running with **RF=2**, depending on the system's performance. End-to-end latency may also increase if disk I/O is slow.
> - For DISK I/O, see Disk Throughput Requirements.
> - For Kafka PVC-Storage, see Kafka PVC Storage Requirements.

3.1.3.2.1.2 Egress 450K MPS Synthetic (TCP) or HTTP2 Feed

Bare Metal Cluster Environment

> **Note**
>
> There are two separate clusters: one dedicated to OCNADD services, and another shared by SCP NF services and third-party application services.

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** TCP or HTTP2
- **FILTER:** OFF

360K MPS SCP Profile(Ingress to DD)

Table 3-8 360K MPS SCP Profile(Ingress to DD)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka (kafkaBroker)	5	96	16	-
ocnaddscpaggregation	2	4	13	SCP =78 (Each instance 6 partition)
ocnaddadapter(TCP) (consumeradapter)	3	6	20	MAIN=120 (Each instance 6 partition)
ocnaddadapter(TCP) (consumeradapter, 360K MPS ingress and 36K MPS egress with Filter)	3	10	7	No partition change as MAIN topic already has 120 partition.
ocnaddadapter(TCP) (consumeradapter, 360K MPS ingress and 36K MPS egress with Filter)	3	10	7	No partition change as MAIN topic already has 120 partition.
ocnaddadapter(HTTP2) (consumeradapter, 360K MPS ingress and 18K MPS egress with Filter)	3	28	5	No partition change as MAIN topic already has 120 partition.

> **Note**
>
> - Additional memory and/or replica is required for SCP aggregation service if Metadata cache feature is enabled and value of properties. "**METADATA_MAP_CACHE_EXPIRY_TIME_MS**" and "**METADATA_MAP_CACHE_SCHEDULER_TIME_MS**" is increased to a higher value.
> - The end-to-end latency may increase based on: **"Timer Expiry Value + Processing Time + RF2/RF1 Processing Time + third-party Response Time (for HTTP2 Feed)"**.
> - More instances of the Kafka broker might be required when running with RF=2, depending on setup performance, and end-to-end latency might increase if disk I/O is slow.
> - For DISK I/O, see Disk Throughput Requirements.
> - For Kafka PVC-Storage, see Kafka PVC Storage Requirements.

3.1.3.2.1.3 Aggregated 270K MPS TCP or HTTP2 Feed

When Weighted Load Balancing is ON/OFF and Filter is OFF

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** HTTP2 or TCP (single feed at a time either HTTP2 or TCP will be present)
- **FILTER:** OFF
- **Message Sequencing/Filter/Metadata:** OFF

15K NRF Profile

Table 3-9 15K NRF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	2	24	3	-
ocnaddnrfaggregation	2	4	1	NRF=6
ocnaddadapter(HTTP2)	3	3	2	MAIN=18
ocnaddadapter(TCP)	3	3	1	MAIN=18

9K BSF Profile

Table 3-10 9K BSF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	2	24	3	-

Table 3-10 (Cont.) 9K BSF Profile

ocnaddbsfaggregation	2	4	1	BSF=6
ocnaddadapter(HTTP2)	3	3	1	MAIN=18
ocnaddadapter(TCP)	3	3	1	MAIN=18

58K PCF Profile

Table 3-11 58K PCF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	5	24	3	-
ocnaddpcgaggregation	2	4	2	PCF=12
ocnaddadapter(HTTP2)	3	8	4	MAIN=36
ocnaddadapter(TCP)	3	4	3	MAIN=36

128K SCP Profile

Table 3-12 128K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	6	48	4	-
ocnaddscpaggregation	2	4	7	SCP=30
ocnaddadapter(HTTP2)	3	16	10	MAIN=90
ocnaddadapter(TCP)	3	6	6	MAIN=90

60K SEPP Profile

Table 3-13 60K SEPP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	5	24	3	-
ocnaddseppaggregation	2	4	2	SEPP=12
ocnaddadapter(HTTP2)	3	8	4	MAIN=36

Table 3-13 (Cont.) 60K SEPP Profile

ocnaddadapter(TCP)	3	4	3	MAIN=36

270K Aggregated Profile (SCP:128K, NRF:15K, SEPP:60K, PCF=58K, BSF: 9k)

Table 3-14 270K Aggregated Profile (SCP:128K, NRF:15K, SEPP:60K, PCF=58K, BSF: 9k)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	4	48	11	-
ocnaddscpaggregation	2	4	5	SCP=30 (Each Instance 6 partition)
ocnaddpcgaggregation	2	4	3	PCF=18 (Each Instance 6 partition)
ocnaddbsfaggregation	2	4	1	BSF=6 (Each Instance 6 partition)
ocnaddnrfaggregation	2	4	1	NRF=6 (Each Instance 6 partition)
ocnaddseppaggregation	2	4	3	SEPP=18 (Each Instance 6 partition)
ocnaddadapter(HTTP2)	3	24	23	MAIN=207 (Each Instance 9 partition)
ocnaddadapter(TCP)	3	6	15	MAIN=90 (Each Instance 6 partition)

270K SCP Profile

Table 3-15 270K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	4	48	11	-
ocnaddscpaggregation	2	4	10	SCP=60 (Each Instance 6 partition)
ocnaddadapter(HTTP2)	3	24	23	MAIN=207 (Each Instance 9 partition)

Table 3-15 (Cont.) 270K SCP Profile

ocnaddadapter(TCP)	3	6	15	MAIN=90 (Each Instance 6 partition)

3.1.3.2.1.4 Aggregated 270K MPS Kafka Feed

When Weighted Load Balancing is ON/OFF and Filter is OFF

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** Kafka
- **FILTER:** OFF
- **Message Sequencing/Filter/Metadata:** OFF

15K NRF Profile

Table 3-16 15K NRF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	2	24	3	-
ocnaddnrfaggregation	2	4	1	NRF=6

9K BSF Profile

Table 3-17 9K BSF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	2	24	3	-
ocnaddbsfaggregation	2	4	1	BSF=6

58K PCF Profile

Table 3-18 58K PCF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	5	24	3	-
ocnaddpcgaggregation	2	4	2	PCF=12

128K SCP Profile

Table 3-19 128K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	6	48	4	-
ocnaddscpaggregation	2	4	7	SCP=42

60K SEPP Profile

Table 3-20 60K SEPP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	5	24	3	-
ocnaddseppaggregation	2	4	2	SEPP=12

270K Aggregated Profile (SCP:128K NRF:15K SEPP:60K, PCF=58K, BSF=9K))

Table 3-21 270K Aggregated Profile (SCP:128K NRF:15K SEPP:60K, PCF=58K, BSF=9K))

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	4	48	11	-
ocnaddscpaggregation	2	4	5	SCP=30 (Each Instance 6 partition)
ocnaddpcgaggregation	2	4	3	PCF=18 (Each Instance 6 partition)
ocnaddbsfaggregation	2	4	1	BSF=6 (Each Instance 6 partition)
ocnaddnrfaggregation	2	4	1	NRF=6 (Each Instance 6 partition)
ocnaddseppaggregation	2	4	3	SEPP=18 (Each Instance 6 partition)

270K SCP Profile

Table 3-22 270K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kraft-controller	1	2	3	-
ocnaddkafka	4	48	11	-
ocnaddscpaggregation	2	4	10	SCP=60 (Each Instance 6 partition)

> **Note**
>
> Number of partition in MAIN topic will be decided based on third-party Kafka consumer.

3.1.3.2.2 LBVM

This section gives the details of the LBVM Bare Metal Cluster Environment.

- **Hardware Type**: X9-2 Server
- **Disk Type**: NVMe
- **Master node**: 3
- **Worker node**: 19
- **LoadBalancer node**: LBVM

3.1.3.2.2.1 Aggregated 135K MPS HTTP2 Feed

When Weighted Load Balancing is ON/OFF and Filter is OFF

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** HTTP2
- **FILTER:** OFF
- **WLB:** WLB is ON/OFF

15K NRF Profile

Table 3-23 15K NRF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	2	24	3	-
kafkaBroker (with replicated feed)	2	24	3	-
ocnaddnrfaggregation	2	2	1	NRF=6 (Each Instance 6 partitions)

Table 3-23 (Cont.) 15K NRF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
consumeradapter (HTTP2 feed)	3	3	2	MAIN=18

90K SCP Profile

Table 3-24 90K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	6	48	4	-
kafkaBroker (with replicated feed)	7	48	4	-
ocnaddscpaggregation	2	4	5	SCP=30 (Each Instance 6 partitions)
consumeradapter (HTTP2 feed)	3	16	10	MAIN=90

30K SEPP Profile

Table 3-25 30K SEPP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	5	18	3	-
kafkaBroker (with replicated feed)	6	24	3	-
ocnaddseppaggregation	2	4	2	SEPP=12 (Each Instance 6 partitions)
consumeradapter (HTTP2 feed)	3	8	4	MAIN=36

135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)

Table 3-26 135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	6.5	48	6	-
kafkaBroker (with replicated feed)	7.5	96	6	-

Table 3-26 (Cont.) 135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddscpaggregation	2	4	5	SCP=30 (Each Instance 6 partitions)
ocnaddnrfaggregation	2	2	1	NRF=6 (Each Instance 6 partitions)
ocnaddseppaggregation	2	4	2	SEPP=12 (Each Instance 6 partitions)
consumeradapter (HTTP2 feed)	3	24	15	MAIN=135 (Each instance 9 partitions)

135K SCP Profile

Table 3-27 135K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	6.5	48	6	-
kafkaBroker (with replicated feed)	7.5	96	6	-
ocnaddscpaggregation	2	4	8	SCP=48 (Each Instance 6 partitions)
consumeradapter (HTTP2 feed)	3	24	15	MAIN=135 (Each instance 9-5 partitions)

When Weighted Load Balancing is ON/OFF and Filter is ON

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** HTTP2
- **FILTER:** ON
- **WLB:** WLB is ON/OFF

15K NRF Profile

Table 3-28 15K NRF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddnrfaggregation (Ingress Filter is ON)	2	2	2	NRF=12 (Each Instance 6 partitions)

Table 3-28 (Cont.) 15K NRF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
consumeradapter (HTTP2 feed with Egress Filter ON)	3	3	3	MAIN=27 (Each instance 9 partitions)

90K SCP Profile

Table 3-29 90K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddscpaggregation (Ingress Filter is ON)	2	4	6	SCP=36 (Each Instance 6 partitions)
consumeradapter (HTTP2 feed with Egress Filter ON)	3	3	11	MAIN=99 (Each instance 9 partitions)

30K SEPP Profile

Table 3-30 30K SEPP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddseppaggregation (Ingress Filter is ON)	2	2	3	SEPP=18 (Each Instance 6 partitions)
consumeradapter (HTTP2 feed with Egress Filter ON)	3	3	5	MAIN=45 (Each instance 9 partitions)

135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)

Table 3-31 135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddscpaggregation (Ingress Filter is ON)	2	4	6	SCP=36 (Each Instance 6 partitions)
ocnaddnrfaggregation (Ingress Filter is ON)	2	2	2	NRF=12 (Each Instance 6 partitions)
ocnaddseppaggregation (Ingress Filter is ON)	2	4	3	SEPP=18 (Each Instance 6 partitions)
consumeradapter (HTTP2 feed with Egress Filter ON)	3	24	16	MAIN=144 (Each instance 9 partitions)

135K SCP Profile

Table 3-32 135K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddscpaggregation (Ingress Filter is ON)	2	4	9	SCP=54 (Each Instance 6 partitions)
consumeradapter (HTTP2 feed with Egress Filter ON)	3	24	16	MAIN=144 (Each instance 9 partitions)

Note

- When advanced features such as Ingress filtering, Egress filtering, and Weighted load balancing are enabled simultaneously, the resource requirement for "*consumeradapter*" service may vary at higher throughput.
- Filter is not tested with replicated feed enabled due to disk I/O limitation.
- Resource requirement may vary when Filter is ON based on % data allowed after filtering and number of filter conditions with configured values.
- Five or Six instances of Kafka brokers might be required when running RF=2, based on the setup performance. The end-to-end latency might increase when DISK I/O is slow.
- For DISK I/O, see Disk Throughput Requirements.
- For Kafka PVC-Storage, see Kafka PVC Storage Requirements.

3.1.3.2.2.2 SCP 270K MPS HTTP2 Feed

When Weighted Load Balancing is ON/OFF and Filter is OFF

- **Replication Factor:** 1
- **Message Size :** 3500
- **FEED Type:** HTTP2
- **FILTER:** OFF
- **WLB:** WLB is ON/OFF

Table 3-33 270K MPS HTTP2 FEED

Services	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
zookeeper	1	1	3	-
kafkaBroker	5	48	11	-
ocnaddscpaggregation	2	4	11	SCP=66 (Each instance 6 partition)

Table 3-33 (Cont.) 270K MPS HTTP2 FEED

Services	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddscpaggregation MESSAGE SEQUENCING =ON DD METADATA = ON/OFF	2	48	14	SCP=84 (Each instance 6 partition)
consumeradapter (HTTP2 feed)	3	24	29	MAIN=261 (Each instance 6 partition)

Note

- The number of instance for SCP aggregation may increase from defined number in resource profile based on message sequencing timer expiry configuration (using Max timer expiry value) and Transaction success rate.
- Additional memory is required for SCP aggregation service if Metadata Enrichment feature is enabled and value of properties "METADATA_MAP_CACHE_EXPIRY_TIME_MS" and "METADATA_MAP_CACHE_SCHEDULER_TIME_MS" is increased to a higher value.
- End-to-end latency may increase based on "Timer Expiry Value + Processing Time + RF2/RF1 Processing Time + third-party response time (for HTTP2 Feed)."
- More instances of the Kafka broker might be required when running with RF=2, based on setup performance. End-to-end latency might also increase if DISK I/O is slow.
- For DISK I/O refer to Disk Throughput Requirements
- For Kafka PVC-Storage refer to Kafka PVC Storage Requirements

3.1.3.2.2.3 Aggregated 135K MPS Synthetic (TCP) Feed

When Weighted Load Balancing is ON/OFF and Filter is OFF

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** Synthetic (TCP)
- **FILTER:** OFF
- **WLB:** WLB is ON/OFF

15K NRF Profile

Table 3-34 15K NRF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	2	24	3	-
kafkaBroker (with replicated feed)	2	24	3	-
ocnaddnrfaggregation	2	2	1	NRF=6
consumeradapter (Synthethic feed)	3	3	2	MAIN=12

90K SCP Profile

Table 3-35 90K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	4	48	4	-
kafkaBroker (with replicated feed)	7	48	4	-
ocnaddscpaggregation	2	4	5	SCP=30 (Each Instance 6 partitions)
consumeradapter (Synthethic feed)	3	3	8	MAIN=48

30K SEPP Profile

Table 3-36 30K SEPP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	3	18	3	-
kafkaBroker (with replicated feed)	6	24	3	-
ocnaddseppaggregation	2	4	2	SEPP=12 (Each Instance 6 partitions)
consumeradapter (Synthethic feed)	3	3	3	MAIN=18

135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)

Table 3-37 135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	6	48	6	-
kafkaBroker (with replicated feed)	7.5	96	6	-
ocnaddscpaggregation	-	-	-	SCP= 30 (Each Instance 6 partitions)
ocnaddnrfaggregation	-	-	-	NRF= 6 (Each Instance 6 partitions)
ocnaddseppaggregation	2	4	2	SEPP=12 (Each Instance 6 partitions)
consumeradapter (Synthethic feed)	3	6	11	MAIN=66 (Each Instance 6 partitions)

135K SCP Profile

Table 3-38 135K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	6	48	6	-
kafkaBroker (with replicated feed)	6.5	96	6	-
ocnaddscpaggregation	2	4	8	SCP=48 (Each Instance 6 partitions)
consumeradapter (Synthethic feed)	3	6	11	MAIN=66 (Each Instance 6 partitions)

When Weighted Load Balancing is ON/OFF, L3L4 Mapping is ON/OFF, and Filter is ON

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** SYNTHETIC
- **L3L4 Mapping:** ON/OFF
- **FILTER:** ON
- **WLB:** WLB is ON/OFF

15K NRF Profile

Table 3-39 15K NRF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddnrfaggregation (Ingress Filter is ON)	2	2	2	NRF=12 (Each Instance 6 partitions)
consumeradapter (Synthethic feed with Egress Filter ON)	3	3	3	MAIN=18

90K SCP Profile

Table 3-40 90K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddscpaggregation (Ingress Filter is ON)	2	4	6	SCP=36 (Each Instance 6 partitions)
consumeradapter (Synthethic feed with Egress Filter ON)	3	3	9	MAIN=54

30K SEPP Profile

Table 3-41 30K SEPP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddseppaggregation (Ingress Filter is ON)	2	4	3	SEPP=18 (Each Instance 6 partitions)
consumeradapter (Synthethic feed with Egress Filter ON)	3	3	3	MAIN=18

135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)

Table 3-42 135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddscpaggregation (Ingress Filter is ON)	2	4	6	SCP=36 (Each Instance 6 partitions)
ocnaddnrfaggregation (Ingress Filter is ON)	2	2	2	NRF=12 (Each Instance 6 partitions)

Table 3-42 (Cont.) 135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddseppaggregation (Ingress Filter is ON)	2	4	3	SEPP=18 (Each Instance 6 partitions)
consumeradapter (Synthethic feed with Egress Filter ON)	3	6	11	MAIN=66 (Each Instance 6 partitions)

135K SCP Profile

Table 3-43 135K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddscpaggregation (Ingress Filter is ON)	2	4	9	SCP=54 (Each Instance 6 partitions)
consumeradapter (Synthethic feed with Egress Filter ON)	3	6	11	MAIN=66 (Each Instance 6 partitions)

Note

- When advance OCNADD features like Ingress filtering, Egress filtering. L3-L4 and Weighted load balancing are enabled simultaneously, then resource requirement for "consumeradapter (Synthethic feed)" may vary at higher throughput.
- Resource requirement may vary when Filter is ON based on % data allowed after filtering and number of filter condition with values configured.
- Resource requirement may vary when L3L4 is ON and size of global l3l4 configuration is big.
- Five/Six instances of Kafka broker might require while running RF=2 based on setup performance and end-2-end latency might get increased when DISK I/O is slow,
- For DISK I/O refer to Disk Throughput Requirements
- For Kafka PVC-Storage refer to Kafka PVC Storage Requirements

3.1.3.2.2.4 SCP 270K MPS Synthetic (TCP) Feed

When Weighted Load Balancing is ON/OFF and Filter is OFF

- **Replication Factor:** 1
- **Message Size:** 3500
- **FEED Type:** Synthetic (TCP)

- **FILTER:** OFF
- **WLB:** WLB is ON/OFF

Table 3-44 270K MPS SCP Profile

Services	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
zookeeper	1	1	3	-
kafkaBroker	5	48	11	-
ocnaddscpaggregation	2	4	11	SCP=66 (Each instance 6 partition)
ocnaddscpaggregation MESSAGE SEQUENCING =ON DD METADATA = ON/OFF	2	48	14	SCP=84 (Each instance 6 partition)
consumeradapter (Synthethic feed)	3	6	21	MAIN=126 (Each instance 6 partition)

Note

- Resource requirements may vary when L3L4 is ON, and the size of the global L3L4 configuration is large.
- The number of instances for SCP aggregation may increase from the defined number in the resource profile based on the message sequencing timer expiry configuration (using max timer expiry value) and transaction success rate.
- Additional memory is required for the SCP aggregation service if the Metadata Enrichment feature is enabled, and the values of properties "METADATA_MAP_CACHE_EXPIRY_TIME_MS" and "METADATA_MAP_CACHE_SCHEDULER_TIME_MS" are increased to a higher value.
- End-to-end latency may increase based on "Timer Expiry Value + Processing Time + RF2/RF1 Processing Time + third-party response time (for HTTP2 Feed)."
- More instances of the Kafka broker might be required when running with RF=2, based on setup performance. End-to-end latency might also increase if DISK I/O is slow.
- For DISK I/O refer to Disk Throughput Requirements
- For Kafka PVC-Storage refer to Kafka PVC Storage Requirements

3.1.3.2.2.5 BSF 9K MPS All Feed Types

When Weighted Load Balancing is ON/OFF and Filter is OFF

- **Replication Factor:** 1

- **Message Size:** 3500
- **FEED Type**: ALL
- **FILTER:** OFF
- **WLB:** WLB is ON/OFF

Table 3-45 9K MPS BSF Profile

Services	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	2	24	4	-
ocnaddbsfaggregation	2	2	1	BSF=6
ocnaddbsfaggregation MESSAGE SEQUENCING =ON DD METADATA = ON/OFF	2	16	1	BSF=6
ocnaddconsumeradapter (Synthetic Feed)	3	4	1	MAIN=6
ocnaddconsumeradapter (HTTP2 Feed)	3	4	1	MAIN=9
FEED TYPE = CORRELATED_FILTERED (Minimum 20% data filter is configured)				
ocnaddfilter	2	3	1	MAIN=6,<feed-name>-FILTERED=6
ocnaddcorrelation	3	48	1	<feed-name>-FILTERED-CORRELATED=6 or as per consumer

Note

- Resource requirements may vary for the filter service based on the % of data allowed after filtering and the number of filter conditions with values configured.
- Resource requirements for the correlation service may vary when all messages of a transaction are not received and the value of "maxTransactionWaitTime" is set to a higher value. (It is recommended to have a lower value in these scenarios.)
- Kafka broker resource requirements will increase in the case of `rf=2` and/or if replicated feed is running. End-to-end latency might increase when DISK I/O is slow.
- The above resource requirements for the correlation service are mentioned for a single feed; in the case of a replicated feed, additional resources will be required in Kafka.
- Additional memory is required for the aggregation service if the Metadata Enrichment feature is enabled, and the values of properties "METADATA_MAP_CACHE_EXPIRY_TIME_MS" and "METADATA_MAP_CACHE_SCHEDULER_TIME_MS" are increased to a higher value.
- The end-to-end latency may increase based on "Timer Expiry Value + Processing Time + RF2/RF1 Processing Time + third-party response time (for HTTP2 Feed)."
- Filter service memory and CPU requirements may need to increase based on the number of CORRELATED_FILTERED feeds configured; the above requirement is given for a single configuration.
- For DISK I/O refer to Disk Throughput Requirements
- For Kafka PVC-Storage refer to Kafka PVC Storage Requirements
- It is mandatory to create CORRELATED/CORRELATED_FILTERED ACL feeds before making correlation configurations.
- Calculate the PVC size of the Kafka broker in advance for correlation configurations, as each new CORRELATED ACL feed type correlation configuration creates 1 new topic, and each new CORRELATED_FILTERED ACL feed type correlation configuration creates 2 new topics.
- CPU and Memory requirements in Kafka will increase based on the number of configurations of CORRELATED or CORRELATED_FILTERED. Resources are mentioned below for a maximum of 2 configurations.
- Resource requirements for the correlation service may vary when all messages of a transaction are not received and the value of "maxTransactionWaitTime" is set higher. (It is recommended to have a lower value in these scenarios.)

3.1.3.2.2.6 PCF 30K MPS All Feed Types

When Weighted Load Balancing is ON/OFF and Filter is OFF

- **Replication Factor:** 1
- **Message Size:** 3500
- **FEED Type**: ALL
- **FILTER:** OFF

- **WLB:** WLB is ON/OFF

Table 3-46 30K MPS PCF Profile

Services	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
zookeeper	1	1	3	-
kafkaBroker	3	24	4	-
ocnaddpcfaggregation	2	2	2	PCF=12
ocnaddpcfaggregation MESSAGE SEQUENCING =ON DD METADATA = ON/OFF	2	24	2	PCF=12
ocnaddconsumeradapter (Synthetic Feed)	3	4	3	MAIN=18
ocnaddconsumeradapter (HTTP2 Feed)	3	4	3	MAIN=27
FEED TYPE = CORRELATED_FILTERED (Minimum 20% data filter is configured)				
ocnaddfilter	2	3	4	MAIN=24, <feed-name>-FILTERED=24
ocnaddcorrelation	3	64	4	<feed-name>-FILTERED-CORRELATED=24 or as per consumer

Note

- Resource requirements may vary for the filter service based on the percentage of data allowed after filtering and the number of filter conditions with configured values.
- Resource requirements for the correlation service may vary when all messages of a transaction are not received and the value of "maxTransactionWaitTime" is set higher. (It is recommended to use a lower value in these scenarios.)
- Kafka broker resource requirements will increase in the case of `rf=2` and/or if a replicated feed is running, and end-to-end latency might increase when DISK I/O is slow.
- The above resource requirements for the correlation service are mentioned for a single feed, and in the case of a replicated feed, additional resources will be required in Kafka.
- Additional memory is required for the aggregation service if the Metadata Enrichment feature is enabled and the values of properties "METADATA_MAP_CACHE_EXPIRY_TIME_MS" and "METADATA_MAP_CACHE_SCHEDULER_TIME_MS" are increased.
- End-to-end latency may increase based on "Timer Expiry Value + Processing Time + RF2/RF1 Processing Time + third-party response time (for HTTP2 Feed)."
- Filter service memory and CPU requirements may need to increase based on the number of CORRELATION_FILTERED feeds configured. The above requirements are given for a single configuration.
- For DISK I/O refer to Disk Throughput Requirements
- For Kafka PVC-Storage refer to Kafka PVC Storage Requirements
- It is mandatory to create CORRELATED/CORRELATED_FILTERED ACL feeds before making a correlation configuration.
- Calculate the PVC size of the Kafka broker in advance for correlation configurations, as each new CORRELATED ACL feed type correlation configuration creates 1 new topic, and each new CORRELATED_FILTERED ACL feed type correlation configuration creates 2 new topics.
- CPU and memory requirements in Kafka will increase based on the number of CORRELATED or CORRELATED_FILTERED configurations. Resources are mentioned below for a maximum of 2 configurations.
- Resource requirements for the correlation service may vary when all messages of a transaction are not received and the value of "maxTransactionWaitTime" is set higher. (It is recommended to use a lower value in these scenarios.)

3.1.3.2.2.7 Message Sequencing and Metadata Enrichment 135K MPS All Feed Types

- **Replication Factor:** 2
- **Message Size:** 3500
- **Feed Type:** HTTP2/TCP/KAFKA

Table 3-47 Resource Requirement

Service	vCPU	Memory Required (Gi)	TTopic Partitiota Repli ca
ocnaddkafka (Kafka with RF=2)	6	164	6-
MESSAGE_SEQUENCING_TYPE = TRANSACTION, TRANSACTION_MSG_SEQUENCING_EXPIRY_TIMER= 200ms and METADATA ENRICHMENT ON/OFF			
ocnaddscpaggregation	2	24	530(SCP)
MESSAGE_SEQUENCING_TYPE = TIME_WINDOW, WINDOW_MSG_SEQUENCING_EXPIRY_TIMER=10ms			
ocnaddscpaggregation	2	24	530(SCP)
MESSAGE_SEQUENCING_TYPE = REQUEST_RESPONSE, REQUEST_RESPONSE_MSG_SEQUENCING_EXPIRY_TIMER=10ms and METADATA ENRICHMENT ON/OFF			
ocnaddscpaggregation	2	16	530(SCP)
INGRESS FILTER is ON			
MESSAGE_SEQUENCING_TYPE = TRANSACTION, TRANSACTION_MSG_SEQUENCING_EXPIRY_TIMER= 200ms and METADATA ENRICHMENT ON/OFF			
ocnaddscpaggregation	2	36	636(SCP)
MESSAGE_SEQUENCING_TYPE = TIME_WINDOW, WINDOW_MSG_SEQUENCING_EXPIRY_TIMER=10ms			
ocnaddscpaggregation	2	36	636(SCP)
MESSAGE_SEQUENCING_TYPE = REQUEST_RESPONSE, REQUEST_RESPONSE_MSG_SEQUENCING_EXPIRY_TIMER=10ms and METADATA ENRICHMENT ON/OFF			
ocnaddscpaggregation	2	24	636(SCP)
HTTP2 Feed (FILTER = OFF)			
consumeradapter	3	24	1135(MAIN)
SYNTHETIC Feed (TCP CONNECTION MESSAGE and/or MESSAGE SEGEMENTATION = ON) (FILTER=OFF)			
consumeradapter	3	12	166(MAIN)1

> **Note**
>
> - Update value of parameter "numIoThreads" to 128 in custom-value.yaml file
> - The performance run has been completed with 90% success rate of transactions (Success Trasanction = All 4 message of Transaction ("RxRequest, TxRequest.RxResponse,TxResponse") are received from SCP NF)
> - The number of instances for SCP aggregation may increase from defined number in resource profile based on message sequencing timer expiry configuration (using Max timer expiry value) and Transaction success rate.
> - Additional memory is required for SCP aggregation service if Metadata Enrichment feature is enabled and value of properties "METADATA_MAP_CACHE_EXPIRY_TIME_MS" and "METADATA_MAP_CACHE_SCHEDULER_TIME_MS" is increased to a higher value.
> - The end-2-end latency may increase based on **"Timer Expiry Value + Processing Time+ RF2 Processing Time+ 3rd party response time (For HTTP2 Feed)"**

3.1.3.2.2.8 Correlated 30K MPS Kafka Feed

> **Note**
>
> - Creating a CORRELATED or CORRELATED_FILTERED ACL feed is mandatory before making a correlation configuration.
> - Calculate the PVC size of a Kafka broker in advance, as each new CORRELATED ACL feed type correlation configuration creates one new topic, and each new CORRELATED_FILTERED ACL feed type correlation configuration creates two new topics.
> - The CPU and memory requirement in Kafka increase based on the number of CORRELATED or CORRELATED_FILTERED configurations; the resources mentioned in the below table are for a maximum of two configurations.
> - Resource requirements for correlation service vary when all the transaction messages are not received and the value of *maxTransactionWaitTime* is set to higher value (it is recommended to have a lower value for this scenario).

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** CORRELATED

15K NRF Profile

Table 3-48 15K NRF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-

Table 3-48 (Cont.) 15K NRF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kafkaBroker	3	24	4	-
EXPORT/TRACE(1K MPS rate is supported for inbound OCNADD data) for 3 export configuration				
ocnaddexport	3	24	1	EXPORT/TRACE (1K MPS rate supported for inbound OCNADD data)
kafkaBroker (with replicated feed)	3	24	4	-
ocnaddnrfaggregation	2	2	1	NRF=6 (Each Instance 6 partitions)
Feed TYPE = CORRELATED				
ocnaddcorrelation	3	64	3	MAIN=18, -CORRELATED=18 or as per consumer
Feed TYPE = CORRELATED_FILTERED (Minimum 20% data filter is configured)				
ocnaddfilter	2	3	3	MAIN=18, -FILTERED=18
ocnaddcorrelation (Filtered)	3	48	3	-FILTERED-CORRELATED=18 or as per consumer
Per Correlation Feed(1K MPS supported with 24 hours retention)				
storageadapter	3	16	1	Per Correlation Feed (1K MPS supported with 24 hours retention)

30K SCP Profile

Table 3-49 30K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	4	24	4	-
EXPORT/TRACE(1K MPS rate is supported for inbound OCNADD data) for 3 export configuration				
ocnaddexport	3	24	1	EXPORT/TRACE (1K MPS rate supported for inbound OCNADD data)
kafkaBroker (with replicated feed)	5	32	4	-
ocnaddscpaggregation	2	2	2	SCP=12 (Each Instance 6 partitions)
Feed TYPE = CORRELATED				

Table 3-49 (Cont.) 30K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddcorrelation	3	64	4	MAIN=24, -CORRELATED=24 or as per consumer
Feed TYPE = CORRELATED_FILTERED (Minimum 20% data filter is configured)				
ocnaddfilter	2	3	4	MAIN=24, -FILTERED=24
ocnaddcorrelation (Filtered)	3	64	4	FILTERED-CORRELATED=24 or as per consumer
Per Correlation Feed(1K MPS supported with 24 hours retention)				
storageadapter	3	16	1	Per Correlation Feed (1K MPS supported with 24 hours retention)

30K SEPP Profile

Table 3-50 30K SEPP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	4	24	4	-
EXPORT/TRACE(1K MPS rate is supported for inbound OCNADD data) for 3 export configuration				
ocnaddexport	3	24	1	EXPORT/TRACE (1K MPS rate supported for inbound OCNADD data)
kafkaBroker (with replicated feed)	5	32	4	-
ocnaddseppaggregation	2	2	2	SEPP=12 (Each Instance 6 partitions)
Feed TYPE = CORRELATED				
ocnaddcorrelation	3	64	4	MAIN=24, -CORRELATED=24 or as per consumer
Feed TYPE = CORRELATED_FILTERED (Minimum 20% data filter is configured)				
ocnaddfilter	2	3	4	MAIN=24, FILTERED=24
ocnaddcorrelation (Filtered)	3	64	4	FILTERED-CORRELATED=24 or as per consumer
Per Correlation Feed(1K MPS supported with 24 hours retention)				
storageadapter	3	16	1	Per Correlation Feed (1K MPS supported with 24 hours retention)

30K Profile (SCP: 15K, NRF: 5K, SEPP: 10K)

Table 3-51 30K Profile (SCP: 15K, NRF: 5K, SEPP: 10K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	4	24	4	-
EXPORT/TRACE(1K MPS rate is supported for inbound OCNADD data) for 3 export configuration				
ocnaddexport	3	24	1	EXPORT/TRACE (1K MPS rate supported for inbound OCNADD data)
kafkaBroker (with replicated feed)	5	32	4	-
ocnaddscpaggregation	2	2	1	SCP=6 (Each Instance 6 partitions)
ocnaddnrfaggregation	2	2	1	NRF=6 (Each Instance 6 partitions)
ocnaddseppaggregation	2	2	1	SEPP=6 (Each Instance 6 partitions)
Feed TYPE = CORRELATED				
ocnaddcorrelation	3	64	4	MAIN=24, -CORRELATED=24 or as per consumer
Feed TYPE = CORRELATED_FILTERED (Minimum 20% data filter is configured)				
ocnaddfilter	2	3	4	MAIN=24, FILTERED=24
ocnaddcorrelation (Filtered)	3	64	4	FILTERED-CORRELATED=24 or as per consumer
Per Correlation Feed(1K MPS supported with 24 hours retention)				
storageadapter	3	16	1	Per Correlation Feed (1K MPS supported with 24 hours retention)

> **Note**
>
> - Resource requirement may vary for filter service based on % data allowed after filtering and number of filter condition with values configured.
> - Resource requirement for correlation service may vary when all messages of transaction are not received and value of "maxTransactionWaitTime" is set to higher (It is recommended to have lower value for these scenario).
> - Kafka broker resource requirement will increase in case of rf=2 and/or replicated feed is running and end-2-end latency might get increased when DISK I/O is slow,
> - The above resource requirement of correlation service is mentioned for single feed and in case of replicated feed, Additional resource will be required in kafka.
> - Filter service memory and cpu requirement may need to increase based on number of CORRLATION_FILTERED feed is/are configured. Above requirement is given for single configuration.
> - For DISK I/O refer to Disk Throughput Requirements
> - For Kafka PVC-Storage refer to Kafka PVC Storage Requirements

3.1.3.2.2.9 Aggregated 135K MPS Kafka Feed

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** KAFKA

15K NRF Profile

Table 3-52 15K NRF Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	2	24	3	-
kafkaBroker (with replicated feed)	2	24	3	-
ocnaddnrfaggregation (Ingress FILTER is OFF)	2	2	1	NRF=6 (Each Instance 6 partition)
ocnaddnrfaggregation (Ingress Filter is ON)	2	2	2	NRF=12 (Each Instance 6 partition)

90K SCP Profile

Table 3-53 90K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	6	24	4	-

Table 3-53 (Cont.) 90K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
kafkaBroker (with replicated feed)	7	48	4	-
ocnaddscpaggregation (Ingress FILTER is OFF)	2	4	5	SCP=30 (Each Instance 6 partition)
ocnaddscpaggregation (Ingress FILTER is OFF)	2	4	6	SCP=36 (Each Instance 6 partition)

30K SEPP Profile

Table 3-54 30K SEPP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	5	18	3	-
kafkaBroker (with replicated feed)	6	24	3	-
ocnaddseppaggregation (Ingress FILTER is OFF)	2	4	2	SEPP=12 (Each Instance 6 partition)
ocnaddseppaggregation (Ingress Filter is ON)	2	4	3	SEPP=18 (Each Instance 6 partition)

135K Profile (SCP:90K, NRF:15K, SEPP:30K)

Table 3-55 135K Profile (SCP:90K, NRF:15K, SEPP:30K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	6.5	48	6	-
kafkaBroker (with replicated feed)	7.5	96	6	-
ocnaddscpaggregation (Ingress FILTER is OFF)	2	4	5	SCP=30 (Each Instance 6 partition)
ocnaddnrfaggregation (Ingress FILTER is OFF)	2	2	1	NRF=6 (Each Instance 6 partition)
ocnaddseppaggregation (Ingress FILTER is OFF)	2	4	2	SEPP=12 (Each Instance 6 partition)
ocnaddscpaggregation (Ingress Filter is ON)	2	4	6	SCP=36 (Each Instance 6 partition)

Table 3-55 (Cont.) 135K Profile (SCP:90K, NRF:15K, SEPP:30K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddnrfaggregation (Ingress Filter is ON)	2	2	2	NRF=12 (Each Instance 6 partition)
ocnaddseppaggregation (Ingress Filter is ON)	2	4	3	SEPP=18 (Each Instance 6 partition)

135K SCP Profile

Table 3-56 135K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
kafkaBroker	6.5	48	6	-
kafkaBroker (with replicated feed)	7.5	96	6	-
ocnaddscpaggregation (Ingress FILTER is OFF)	2	4	8	SCP=48 (Each Instance 6 partition)
ocnaddscpaggregation (Ingress Filter is ON)	2	4	9	SCP=54 (Each Instance 6 partition)

> **Note**
>
> The number of partitions for MAIN topic can be configured similar to the partition count recommended for Synthetic Feed. However, the partition count may increase or decrease as per the design of consumer application.

3.1.3.2.2.10 SCP 270K MPS Kafka Feed

When Weighted Load Balancing is ON/OFF and Filter is OFF

- **Replication Factor:** 1
- **Message Size :** 3500
- **FEED Type:** KAFKA
- **FILTER:** OFF
- **WLB:** WLB is ON/OFF

Table 3-57 270K MPS KAFKA FEED

Services	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
zookeeper	1	1	3	-

Table 3-57 (Cont.) 270K MPS KAFKA FEED

Services	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
kafkaBroker	5	48	11	-
ocnaddscpaggregation	2	4	11	SCP=66 (Each instance 6 partition)
ocnaddscpaggregation MESSAGE SEQUENCING =ON DD METADATA = ON/OFF	2	48	14	SCP=84 (Each instance 6 partition)

Note

- The number of instance for SCP aggregation may increase from defined number in resource profile based on message sequencing timer expiry configuration (using Max timer expiry value) and Transaction success rate.
- Additional memory is required for SCP aggregation service if Metadata Enrichment feature is enabled and value of properties "METADATA_MAP_CACHE_EXPIRY_TIME_MS" and "METADATA_MAP_CACHE_SCHEDULER_TIME_MS" is increased to a higher value.
- End-to-end latency may increase based on "Timer Expiry Value + Processing Time+ RF2/RF1 Processing Time
- More instances of the Kafka broker might be required when running with RF=2, based on setup performance. End-to-end latency might also increase if DISK I/O is slow.
- For DISK I/O refer to Disk Throughput Requirements
- For Kafka PVC-Storage refer to Kafka PVC Storage Requirements

3.1.3.2.2.11 5K MPS Non-Oracle Network Function Feed

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** Non-Oracle Network Function Feed

Table 3-58 Resource Requirement

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
ocnaddingressadapter	3	8	1	-

Table 3-58 (Cont.) Resource Requirement

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partitions
zookeeper	1	1	3	-
ocnaddnonoracleaggregation	2	2	1	NON_ORACLE=6
kafkaBroker	2	16	3	-
consumeradapter	3	6	1	MAIN=9
kafkaBroker (with replicated feed)	2	24	3	-
consumeradapter	3	6	2	MAIN=18

3.1.3.2.2.12 Resource Profile for Default Deployment

This profile can stream NFs (SCP, NRF, SEPP) data up to 15K MPS and can be scaled to handle up to 100K MPS for HTTP2 feed when *weighted_lb* and Filter (Ingress and Egress) are "OFF".

Replication Factor should be "1" and the incoming message size on OCNADD should be less than or equal to 3500K.

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** HTTP2, SYNTHETIC

Replication Factor should be 1 and the incoming message size on OCNADD should be less than or equal to 3500K.

Table 3-59 Default Deployment Profile

Services	vCPU Req	vCPU Limit	Memory Req (Gi)	Memory Limit (Gi)	Min Replica	Max Replica	Partitions	Topic Name
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddalarm	1	1	1	1	1	1	-	-
ocnaddadmin	1	1	1	1	1	1	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-
ocnaddscpaggregation (55K)	2	2	4	4	1	4	24	SCP
ocnaddnrfaggregation (15K)	2	2	2	2	1	1	6	NRF

Table 3-59 (Cont.) Default Deployment Profile

Services	vCPU Req	vCPU Limit	Memory Req (Gi)	Memory Limit (Gi)	Min Replica	Max Replica	Partitions	Topic Name
ocnaddseppaggregation (30K)	2	2	4	4	1	2	12	SEPP
ocnaddbsfaggregation(9K)	2	2	4	4	1	1	6	BSF
ocnaddpcfaggregation(30K)	2	2	4	4	1	2	12	PCF
consumer adapter	3	3	6	6	HTTP2: 2 SYNTHETIC: 1	HTTP2: 13 SYNTHETIC: 9	117	MAIN
kafkaBroker	6	6	48	48	4	4	-	-
zookeeper	1	1	1	2	3	3	-	-
ocnaddgui	1	2	1	1	1	1	-	-
ocnadduirouter	1	2	1	1	1	1	-	-

Note

- Four instances of Kafka brokers might be required when running Replication Factor `rf=2`, based on the setup performance. The end-to-end latency might increase when DISK I/O is slow.
- For DISK I/O, see Disk Throughput Requirements.
- For Kafka PVC-Storage, see Kafka PVC Storage Requirements.

3.1.3.3 Resource Profile for OCI Environment

This section displays the profile resource requirements in OCI environment.

3.1.3.3.1 Profile Resource Requirements for HTTP2 Feed for 5K MPS in OCI Environment

The following table displays the profile resource requirements for HTTP2 feed in OCI environment.

> **Note**
>
> - This test is performed without enabling the Ingress or Egress features.
> - The replicated HTTP2 feed's end-to-end latency is between 2ms to 8ms.
> - The single HTTP2 feed's end-to-end latency is between 1ms to 3ms.

- **Replication Factor =** 1
- **Message Size =** 3500
- **Feed Type:** HTTP2

5K Profile (SCP:3K NRF:1K SEPP:1K)

Table 3-60 5K Profile (SCP:3K NRF:1K SEPP:1K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddconfiguration	1	1	1	-
ocnaddalarm	1	1	1	-
ocnaddadmin	1	1	1	-
ocnaddhealthmonitoring	1	1	1	-
ocnaddgui	2	1	1	-
ocnadduirouter	2	1	1	-
zookeeper	1	1	3	-
ocnaddkafka	2	24	4	-
Replicated Feed (Avg Latency: 1ms)				
ocnaddkafka	3	32	4	-
Single Feed (Avg Latency: 1ms)				
ocnaddscpaggregation	2	2	1	SCP=6 (Each Instance 6 partition)
ocnaddnrfaggregation	2	2	1	NRF=6 (Each Instance 6 partition)
ocnaddseppaggregation	2	2	1	SEPP=12 (Each Instance 6 partition)
ocnaddadapter	3	3	2	MAIN=18 (Each instance 9 partition)

5K SCP Profile

Table 3-61 5K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddconfiguration	1	1	1	-
ocnaddalarm	1	1	1	-
ocnaddadmin	1	1	1	-
ocnaddhealthmonitoring	1	1	1	-
ocnaddgui	2	1	1	-
ocnadduirouter	2	1	1	-
zookeeper	1	1	3	-
ocnaddkafka	2	24	4	-
Replicated Feed (Avg Latency: 1ms)				
ocnaddkafka	3	32		-
Single Feed (Avg Latency: 1ms)				
ocnaddscpaggregation	2	2	2	SCP=12 (Each instance 6 partition)
ocnaddnrfaggregation	-	-	-	-
ocnaddseppaggregation	-	-	-	-
ocnaddadapter	3	3	2	MAIN=18 (Each instance 9 partition)

3.1.3.3.2 Profile Resource Requirements for Aggregated Kafka Feed for 5K MPS in OCI Environment

The following table displays the profile resource requirements for Aggregated feed in OCI environment.

> **Note**
>
> - This test is performed without enabling the Ingress or Egress features.

- **Replication Factor:** 1
- **Message Size:** 3500
- **Feed Type:** AGGREGATED KAFKA

5K Profile (SCP:3K NRF:1K SEPP:1K)

Table 3-62 5K Profile (SCP:3K NRF:1K SEPP:1K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddconfiguration	1	1	1	-
ocnaddalarm	1	1	1	-
ocnaddadmin	1	1	1	-
ocnaddhealthmonitoring	1	1	1	-
ocnaddgui	2	1	1	-
ocnadduirouter	2	1	1	-
zookeeper	1	1	3	-
ocnaddkafka	2	24	4	-
Replicated Feed				
ocnaddkafka	3	32		-
Single Feed				
ocnaddscpaggregation	2	2	1	SCP=6 (Each Instance 6 partition)
ocnaddnrfaggregation	2	2	1	NRF=6 (Each Instance 6 partition)
ocnaddseppaggregation	2	2	1	SEPP=12 (Each Instance 6 partition)

5K SCP Profile

Table 3-63 5K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddconfiguration	1	1	1	-
ocnaddalarm	1	1	1	-
ocnaddadmin	1	1	1	-
ocnaddhealthmonitoring	1	1	1	-
ocnaddgui	2	1	1	-
ocnadduirouter	2	1	1	-
zookeeper	1	1	3	-
ocnaddkafka	2	24	4	-
Replicated Feed				
ocnaddkafka	3	32		-

Table 3-63 (Cont.) 5K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
Single Feed				
ocnaddscpaggregation	2	2	2	SCP=12 (Each instance 6 partition)
ocnaddnrfaggregation	-	-	-	-
ocnaddseppaggregation	-	-	-	-

3.1.3.3.3 Profile Resource Requirements for Synthetic Feed for 5K MPS in OCI Environment

The following table displays the profile resource requirements for Synthetic feed in OCI environment.

> **Note**
>
> - This test is performed without enabling the Ingress or Egress features.
> - The replicated TCP feed's end-to-end average latency is 3ms. The Block Volume Performance is 50% Balanced and 50% High Performance.
> - The single TCP feed's end-to-end average latency is 3ms. The Block Volume Performance is "Balanced".

- **Replication Factor:** 1
- **Message Size =** 3500
- **Feed Type:** TCP

5K Profile (SCP:3K NRF:1K SEPP:1K)

Table 3-64 5K Profile (SCP:3K NRF:1K SEPP:1K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddconfiguration	1	1	1	-
ocnaddalarm	1	1	1	-
ocnaddadmin	1	1	1	-
ocnaddhealthmonitoring	1	1	1	-
ocnaddgui	2	1	1	-
ocnadduirouter	2	1	1	-
zookeeper	1	1	3	-

Table 3-64 (Cont.) 5K Profile (SCP:3K NRF:1K SEPP:1K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddkafka	3	24	4	-
Replicated Feed (Avg Latency: 0.3ms)				
ocnaddkafka	4	32	4	-
Single Feed (Avg Latency: 0.3ms)				
ocnaddscpaggregation	2	2	1	SCP=6 (Each Instance 6 partition)
ocnaddnrfaggregation	2	2	1	NRF=6 (Each Instance 6 partition)
ocnaddseppaggregation	2	2	1	SEPP=12 (Each Instance 6 partition)
ocnaddadapter	3	3	2	MAIN=12 (Each instance 6 partition)

5K SCP Profile

Table 3-65 5K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddconfiguration	1	1	1	-
ocnaddalarm	1	1	1	-
ocnaddadmin	1	1	1	-
ocnaddhealthmonitoring	1	1	1	-
ocnaddgui	2	1	1	-
ocnadduirouter	2	1	1	-
zookeeper	1	1	3	-
ocnaddkafka	3	24	4	-
Replicated Feed (Avg Latency: 0.3ms)				
ocnaddkafka	4	32	4	-
Single Feed (Avg Latency: 0.3ms)				
ocnaddscpaggregation	2	2	2	SCP=12 (Each instance 6 partition)
ocnaddnrfaggregation	-	-	-	-
ocnaddseppaggregation	-	-	-	-

Table 3-65 (Cont.) 5K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddadapter	3	3	2	MAIN=12 (Each instance 6 partition)

3.1.3.3.4 Profile Resource Requirements for Correlated Kafka Feed for 5K MPS in OCI Environment

The following table displays the profile resource requirements for Correlated Kafka feed in OCI environment.

- **Replication Factor:** 1
- **Message Size:** 3500
- **ACL Feed Type:** CORRELATED

5K Profile (SCP:3K NRF:1K SEPP:1K)

Table 3-66 5K Profile (SCP:3K NRF:1K SEPP:1K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddconfiguration	1	1	1	-
ocnaddalarm	1	1	1	-
ocnaddadmin	1	1	1	-
ocnaddhealthmonitoring	1	1	1	-
ocnaddgui	2	1	1	-
ocnadduirouter	2	1	1	-
zookeeper	1	2	3	-
ocnaddkafka	3	32	4	-
Feed TYPE = CORRELATED				
ocnaddscpaggregation	2	2	2	SCP=12 (Each instance 6 partition)
ocnaddnrfaggregation	-	-	-	-
ocnaddseppaggregation	-	-	-	-
ocnaddcorrelation	3	24	3	MAIN=18,<feed-name>-CORRELATED=18 or as per consumer
Feed TYPE = CORRELATED_FILTERED (Minimum 20% data filter is configured)				

Table 3-66 (Cont.) 5K Profile (SCP:3K NRF:1K SEPP:1K)

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddfilter	2	3	3	MAIN=18,<feed-name>-FILTERED=18
ocnaddcorrelation	2	16	3	<feed-name>-FILTERED-CORRELATED=18 or as per consumer

5K SCP Profile

Table 3-67 5K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddconfiguration	1	1	1	-
ocnaddalarm	1	1	1	-
ocnaddadmin	1	1	1	-
ocnaddhealthmonitoring	1	1	1	-
ocnaddgui	2	1	1	-
ocnadduirouter	2	1	1	-
zookeeper	1	1	3	-
ocnaddkafka	3	32	4	-
Feed TYPE = CORRELATED				
ocnaddscpaggregation	2	2	1	SCP=6 (Each Instance 6 partition)
ocnaddnrfaggregation	2	2	1	NRF=6 (Each Instance 6 partition)
ocnaddseppaggregation	2	2	1	SEPP=12 (Each Instance 6 partition)
ocnaddcorrelation	3	24	3	MAIN=18,<feed-name>-CORRELATED=18 or as per consumer
Feed TYPE = CORRELATED_FILTERED (Minimum 20% data filter is configured)				
ocnaddfilter	2	3	3	MAIN=18,<feed-name>-FILTERED=18

Table 3-67 (Cont.) 5K SCP Profile

Service	vCPU	Memory Required (Gi)	Total Replica	Topic Partition
ocnaddcorrelation	2	16	3	<feed-name>-FILTERED-CORRELATED=18 or as per consumer

Note

- The filter service's resource requirements may vary based on the percentage of data allowed post-filtering and the number of filter conditions with configured values.
- The correlation service's resource requirements may vary when all transaction messages are not received and the value of "maxTransactionWaitTime" is set to a higher value (Use a lower value for such scenarios).
- The Kafka broker's resource requirement increases if the Replication Factor is "2" and (or) the Replicated Feed is running, and the end-to-end latency increases when DISK I/O is slow.
- The resource requirement in the above table is for a single feed. Additional Kafka resources are required for replicated feeds.
- Depending on the number of CORRLATION_FILTERED feeds configured, you might have to increase the filter service memory and CPU requirements. The requirements mentioned in the above table are for a single configuration.

3.2 Pod Affinity (or Anti-affinity) Rules

In the Data Director, support for node affinity has been added. The rules are currently defined for the services mentioned in the table below. The rules are currently disabled; however, the user can enable them for the supported services. The rules are provided to control the deployment of certain traffic processing services on a particular set of identified nodes.

Services name:

- Consumer Adapter
- Kafka
- ocnaddnrfaggregation
- ocnaddscpaggregation
- ocnaddseppaggregation
- ocnaddnonoracleaggregation
- ocnaddbsfaggregation
- ocnaddpcfaggregation

Node Affinity Rules

1. Step1: Update the "affinity" section in the ocnadd-custom-values.yaml file

```
affinity: {}
                # Node Affinity Configuration:
                #
                # To enable node affinity, remove the empty curly braces
({}) above and un-comment the nodeAffinity section below.
                # This allows you to specify rules for scheduling pods on
specific nodes.
                #
                # Example Configuration:
                ###################################
                # nodeAffinity:
                #   requiredDuringSchedulingIgnoredDuringExecution:
                #     nodeSelectorTerms:
                #     - matchExpressions:
                #       - key: kubernetes.io/hostname
                #         operator: NotIn
                #         values:
                #         - k8s-node-26
                #         - k8s-node-24
                #       - key: kubernetes.io/hostname
                #         operator: In
                #         values:
                #         - k8s-node-2
                #         - k8s-node-3
                ##########################################
                # Explanation:
                #
                # - The 'NotIn' expression prevents pods from being
scheduled on nodes k8s-node-26 and k8s-node-24.
                # - The 'In' expression ensures pods are scheduled on
nodes k8s-node-2 and k8s-node-3.
                #
                # To customize, modify the 'key', 'operator', and 'values'
fields according to your needs.
                # You can add or remove 'matchExpressions' to create more
complex scheduling rules.
                #
                # Remember to remove the empty 'affinity: {}' and un-
comment the desired nodeAffinity configuration to enable it.
```

2. Helm upgrade the corresponding worker group or the default group

```
helm upgrade <source-release-name> -f ocnadd-custom-values-<worker-
group>.yaml --namespace <source-release-namespace> <target-release-helm-
chart>
```

Where,

- `<source-release-name>` is the release name of the source release deployment.
- `ocnadd-custom-values-<worker-group>.yaml` is the custom values file created for default-worker-group or the Worker Group in separate namespace.

- `<source-release-namespace>` is the OCNADD namespace of the source release.
- `<target-release-helm-chart>` is the location of the Helm chart of the target release.

For example:

```
helm upgrade ocnadd -f ocnadd-custom-values-wg.yaml --namespace ocnadd-deploy ocnadd_wg
```

3. Verify that PODs of the modified services have been deployed as per the configured affinity rules.

3.3 Ephemeral Storage Requirements

The following table describes the Ephemeral Storage requirements for OCNADD:

Table:Ephemeral Storage

Table 3-68 Ephemeral Storage Requirements

Service Name	Ephemeral Storage (Request) in Mi	Ephemeral Storage (Limit) in Mi	Description
OAM Services			
ocnaddadminservice	200	200	-
ocnaddalarm	100	500	-
ocnaddhealthmonitoring	100	500	-
ocnaddconfiguration	100	500	-
ocnadduirouter	500	500	-
ocnaddexport	1000	2000	-
ocnaddredundancyagent	100	500	Required only when Geo Redundancy is enabled for OCNADD
Worker Group Services			
<app-name>-adapter (consumeradapter)	1000	1000	-
ocnaddscpaggregation	100	500	-
ocnaddseppaggregation	100	500	-
ocnaddnrfaggregation	100	500	-
ocnaddbsfaggregation	100	500	-
ocnaddpcfaggregation	100	500	-
ocnaddnonoracleaggregation	100	500	Required only when Data processing is enabled from Non-oracle NFs
ocnaddcorrelation	400	800	-
ocnaddstorageadapter	400	800	-
ocnaddingressadapter	400	800	-
ocnaddfilter	100	800	Required only when "*Filtered*" or "*Correlated Filtered*" feed is created

3.4 Disk Throughput Requirements

The following table describes the disk throughput requirements in OCNADD:

Table 3-69 Disk Throughput Requirements

Avg Size (in Bytes)	Rate	RF (Kafka Replication Factor)	Topic (NF+MAIN)	Consumer Feed	Total Write Throughput (MB/s)	Total Read Throughput (MB/s)	No. of Broker	Per Broker Write Throughput (MB/s)	Per Broker Read Throughput (MB/s)	Total per Broker Throughput (MB/s) with 10% buffer	Total Disk Throughput (MB/s) for the Cluster with 10% Buffer
1941	39000	1	2	1	145	145	3	54	54	108	324
1941	39000	2	2	1	289	289	3	106	106	212	636
3769	39000	1	2	1	281	281	3	104	104	208	624
3769	39000	2	2	1	561	561	3	206	206	412	1236

Note

- The average size of OCNADD Ingress message captured in the table includes the size of `metadata list + header list` of original `5G HTTP2 header frame + 5G-SBI-Message`.
- Currently, it is recommended to set the Replication Factor (RF) value to **1** with the assumption that the underlying storage provides data redundancy. RF value of "2" will be supported in a future release.

The disk throughput calculations are as follows:

```
Writes: W * RF * T
Reads: ((RF*T)+C- 1) * W
Disk Throughput (Write + Read): (W * RF *T) + (L * W)
W -> MB/sec of data that will be written
RF -> Replication factor
T   -> No of topics to which data copied. As of now, each message will be
copied into two topics.
C   -> Number of consumer groups, that is the number of readers for each
write
L   -> (RF*T) + C -1
```

Average Message in Table:

```
Average Message Size= (a1b1+a2b2+..+a(n)b(n))/(a1+a2+..+a(n))
a1   -> SCP MPS
b1   -> SCP message size
a2   -> NRF MPS
```

```
b2   -> NRF message size
a(n) -> NF(n) MPS
b(n) -> NF(n) message size
```

Example:

Average message size for row 1 = ((1624*30000)+(3000*9000))/(30000+9000) = 1941 Bytes (approx)

Average message size for row 4 = ((4000*30000)+(3000*9000))/(30000+9000) = 3769 Bytes (approx)

The following table describes the disk throughput for SCP and NRF:

Table 3-70 SCP, NRF, and SEPP Disk Throughput

SCP Message		NRF Message	SEPP Message		RF (Kafka Replication Factor)	Topic (NF+ MAIN)	Consumer Feed	Total Write Throughput (MB/s)	Total Read Throughput (MB/s)	No.of Broker	Per Broker Write Throughput (MB/s)	Per Broker Read Throughput (MB/s)	Total per Broker Throughput (MB/s) with 10% buffer	Total Disk Throughput (MB/s) for Cluster with 10% Buffer	
Avg Size (Bytes)	Rate	Avg Size (Bytes)	Rate	Avg Size (Bytes)											Rate
1624	30000	3000	9000	3000	15000	1	2	1	145	145	3	54	54	108	324
1624	30000	3000	9000	3000	15000	2	2	1	289	289	3	106	106	212	636
4000	30000	3000	9000	3000	15000	1	2	1	281	281	3	104	104	208	624
4000	30000	3000	9000	3000	15000	2	2	1	561	561	3	206	206	412	1236

> **Note**
>
> - The average size of OCNADD Ingress message captured in the table includes the size of `metadata list + header list` of original `5G HTTP2 header frame + 5G-SBI-Message`.
> - Currently, it is recommended to set the Replication Factor (RF) value to **1** with the assumption that the underlying storage provides data redundancy.

3.5 Kafka PVC Storage Requirements

The following table describes the retention period per topic for different NFs:

Table 3-71 Retention Period Per Topic

Topic Name	Retention Period
SCP	5 Minutes
NRF	5 Minutes

Table 3-71 (Cont.) Retention Period Per Topic

Topic Name	Retention Period
SEPP	5 Minutes
BSF	5 Minutes
PCF	5 Minutes
MAIN	6 Hours (Max)

The following calculation is for storage requirements for a topic:

> **Important**
>
> For the 6 hrs storage in the MAIN topic, the storage requirement must be calculated using the following information:

```
Storage Requirement for a topic = MPS * Retention Period * RF * Average
Message Size
```

Where,

MPS is "Message Per Second"

RF is "Replication Factor"

Examples:

1. **Average Message Size = 1941 Bytes**
   The following example uses the values from the first row of the Table 3-70 table. For more information about the table, see Disk Throughput Requirements:

   ```
   Storage Requirement for SCP and NRF Topics = MPS * Retention Period * RF *
   Message Size = 39000 * 5 Minutes * 3 * 1941

       = 39000 * 5 * 60 * 3 * 1941

       = ~ 63.45 GB
   Storage Requirement for MAIN = MPS * Retention Period * RF * Message Size
   =  39000 * 6 Hours * 3 * 1941

       =  39000 * 6 * 60 * 60 * 3 * 1941

       =  ~ 4.46 TB
   Total Storage Requirement for the Broker Cluster = Storage for SCP +
   Storage for NRF + Storage for MAIN

       = 63.45 GB + 4.46 TB

       = ~ 4.53 TB
   Total Storage for each broker = (4.53/Number of Brokers) TB = (4.53/3) TB
   = ~ 1.51 TB [Assuming 3 Broker cluster]
   ```

2. **Average Message Size = 3769 Bytes**

The following example uses the values from the fourth row of the Table 3-70 table. For more information about the table, see Disk Throughput Requirements:

```
Storage Requirement for SCP and NRF Topics = MPS * Retention Period * RF *
Message Size = 39000 * 5 Minutes * 3 * 3769

             = 39000 * 5 * 60 * 3 * 3769

             = ~ 123.20 GB

Storage Requirement for MAIN = MPS * Retention Period * RF * Message Size
=  39000 * 6 Hours * 3 * 3769

             =  39000 * 6 * 60 * 60 * 3 * 3769

             = ~ 8.66 TB
Total Storage Requirement for the Broker Cluster = Storage for SCP +
Storage for NRF + Storage for MAIN

             = 123.20 GB + 8.66 TB

             = ~ 8.79 TB
Total Storage for each broker = (8.79/Number of Brokers) TB = (8.79/3) TB
= ~ 2.93 TB [Assuming 3 Broker cluster]
```

4 OCNADD Benchmarking Testing

This section describes the performance testing scenarios and results for the Message Feed functionality provided by Oracle Communications Network Analytics Data Director (OCNADD). The message feed feature is tested with SCP, NRF, SEPP, BSF, and PCF as the source of the message feed.

4.1 vCNE Cluster Environment

This section gives the details of the performance tests done in LBVM vCNE Cluster Environment.

4.1.1 Performance Benchmarking for 360K MPS SCP and 450K Egress Traffic with TCP and HTTP2 Feed

This performance benchmarking evaluates the deployment of OCNADD handling an SCP traffic of 360K MPS and Egress traffic of 450K MPS. The benchmark utilizes 3 TCP feeds and 1 HTTP2 feed:

The benchmarking results are provided below:

> **Note**
>
> One Ingress message from a NF is "1" MPS for OCNADD.

Benchmark Test Environment

Execution Details

- **Execution Time:** 12+ Hours

Call Rate

- **Total Traffic:** 360K MPS

Call Mix

- **Model:** SCP Model-C

Setup Details

- **Environment:** OCCNE 24.3.1
- **Cluster:** vCNE
- **OCNADD Version:** 25.1.200
- **cnDBTier:** 24.3.0
- **NF Version:** 25.1.100
- **Third-Party Application**: One endpoint configured

Configuration Details

- **SCP:** Worker `messageCopy` enabled
- **SASL/SSL:** Enabled between SCP and OCNADD
- **OCNADD Replication Factor:** 1
- **OCNADD Data Feed:** HTTP2
- **OCNADD Kafka PVC:** 400 Gi
- **Average Message Size:** 3564 Bytes

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with SCP.
  - Message Ingestion Rate: 360K MPS

  Resource Specifications:

Table 4-1 Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Min Memory Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Partitions/ Retention	Topics
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddalarm	1	1	1	1	1	1	-	-
ocnaddadminservice	1	1	1	1	1	1	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-
ocnaddscpaggregation	2	2	4	4	13	13	78	SCP
tcpfeed-adapter	3	3	6	6	20	20	120	MAIN
tcpfeed-2-adapter	3	3	10	10	7	7	120	MAIN
tcpfeed-3-adapter	3	3	10	10	7	7	120	MAIN
http2feed-adapter	3	3	28	28	5	5	120	MAIN
ocnaddkafka	5	5	96	96	16	16	-	-
kraft-controller	1	1	2	2	3	3	-	-
ocnaddgui	1	2	1	1	1	2	-	-
ocnadduirouter	1	2	1	1	1	2	-	-
ocnaddfilter	2	2	3	3	1	1	-	-
ocnaddexport	2	4	4	64	1	2	-	-

- **SCP**: SCP Traffic is 180K TPS using two trigger points.

Benchmark Test Results

Traffic Feed Details

Table 4-2 Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
OCNADD	NA	360K MPS	12	http: 8ms tcp(360k): 20ms tcp(18k): 10ms	Feed: 99.99%
SCP	Worker	180K TPS	12	NA	99.99%

CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

Table 4-3 OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
ocnaddscpaggregation	77	20	13
tcpfeed-adapter	75.40	38.97	20
tcpfeed-2-adapter	81	31	7
tcpfeed-3-adapter	85	21	7
http2feed-adapter	80.60	58.52	5
kafka-broker	31	10.6	16
kraft-controller	3	51	3
zookeeper	0	0	0
ocnaddadminservice	0.20	36.80	1
ocnaddalarm	0.20	45.10	1
ocnaddconfiguration	0.10	47.60	1
ocnaddexport	0.10	56.90	1
ocnaddgui	0.10	3.30	1
ocnaddhealthmonitoring	0.20	38.80	1
ocnadduirouter	0.10	34.80	1

4.1.2 Performance Benchmarking for 360K MPS SCP Traffic with Synthetic (TCP) Feed

This performance benchmarking evaluates the deployment of OCNADD handling an SCP traffic of 360K MPS. The benchmark utilizes a TCP feed:

The benchmarking results are provided below:

> **Note**
>
> One Ingress message from a NF is "1" MPS for OCNADD.

Benchmark Test Environment

Execution Details

- **Execution Time:** 12+ Hours

Call Rate

- **Total Traffic:** 360K MPS

Call Mix

- **Model:** SCP Model-C

Setup Details

- **Environment:** OCCNE 24.3.1
- **Cluster Topology:**
  - **DD:** Cluster-1
  - **NF:** Cluster-2
  - **Third-Party Consumers:** Cluster-3
- **OCNADD Version:** 25.1.200
- **cnDBTier:** 25.1.100
- **SCP Version:** 25.1.100
- **Third-Party Application**: One endpoint configured

Configuration Details

- **SCP:** Default configuration

Security & Data Feed

- **OCNADD Replication Factor:** 1
- **OCNADD Data Feed:** Synthetic (TCP)
- **OCNADD Kafka PVC:** 400 GB
- **Average Message Size:** ~3500 Bytes

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with SCP.
  - Message Ingestion Rate: 360K MPS

  Resource Specifications:

Table 4-4 OCNADD Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Memory Request Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Partitions/ Retention	Topics
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddalarm	1	1	1	1	1	1	-	-
ocnaddadminservice	1	1	1	1	1	1	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-
ocnaddscpaggregation	2	2	4	4	13	13	78	SCP
ocnaddadapter	3	3	6	6	20	20	120	MAIN
ocnaddkafka	5	5	48	48	11	11	-	-
kraft-controller	1	1	2	2	3	3	-	-
ocnaddgui	1	2	1	1	1	2	-	-
ocnadduirouter	1	2	1	1	1	2	-	-

- **SCP**: SCP Traffic is 180K TPS using two trigger points

Benchmark Test Results

Traffic Feed Details

Table 4-5 Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
OCNADD	NA	360K MPS	12	22.6ms	Feed: 99.99%
SCP	Ingress Gateway (Request) Egress Gateway (Request)	180K TPS	12	NA	99.99%

CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

Table 4-6 OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
ocnaddscpaggregation	77	20	13
TCP: adapter (360k)	78.4	36.97	20
kafka-broker	35	15	11

Table 4-6 (Cont.) OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
kraft-controller	5	48	3
ocnaddadminservice	0.2	36.8	1
ocnaddalarm	0.2	45.1	1
ocnaddconfiguration	0.1	47.6	1
ocnaddgui	0.1	3.3	1
ocnaddhealthmonitoring	0.2	38.8	1
ocnadduirouter	0.1	34.8	1

4.2 Bare Metal Cluster Environment

This section gives the details of the performance tests done in Bare Metal Cluster Environment.

4.2.1 CNLB

This section gives the details of the performance tests done in CNLB Bare Metal Cluster Environment.

4.2.1.1 Performance Benchmarking for 360K MPS SCP and 450K Egress Traffic with Synthetic (TCP) and HTTP2 Feed

This performance benchmarking evaluates the deployment of OCNADD handling an SCP traffic of 360K MPS and Egress traffic of 450K MPS. The benchmark utilizes 3 synthetic (TCP) feeds and 1 HTTP2 feed:

The benchmarking results are provided below:

> **Note**
>
> One Ingress message from a NF is "1" MPS for OCNADD.

Benchmark Test Environment

- **Execution Time:** 24+ Hours
- **Call Rate:** 360K MPS
- **Call Mix:** SCP Model-C

Setup Details

- **Environment:** OCCNE 24.3.1
- **Cluster Topology:**
  - **DD:** Deployed in Cluster-1
  - **NF:** Deployed in Cluster-2
  - **Third-Party Consumers:** Deployed in Cluster-3

- **Component Versions:**
  - **OCNADD:** 25.1.200
  - **cnDBTier:** 25.1.100
  - **SCP Version:** 25.1.100
  - **Third-Party Consumers:** Two endpoints with two different egress NADs (configured in round-robin)

Configuration Details

- **SCP:** messageCopy enabled
- **Security:** SASL/SSL enabled between SCP and OCNADD
- **OCNADD:**
  - **Replication Factor**: 1
  - **Kafka PVC Size**: 400 GB
- **Data Feed Configuration:**
  - **TCP Feed:** Ingress 360K and Egress 360K
  - **TCP Filtered Feed (1):** Ingress 360K and Egress 36K
  - **TCP Filtered Feed (2):** Ingress 360K and Egress 36K
  - **HTTP Filtered Feed:** Ingress 360K and Egress 16K
- **Message Size:** Approximately 3500–4000 bytes

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with SCP.
  - Message Ingestion Rate: 360K MPS

  Resource Specifications:

Table 4-7 Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Min Memory Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Partitions/ Retention	Topics
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddalarm	1	1	1	1	1	1	-	-
ocnaddadminservice	1	1	1	1	1	1	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-
ocnaddscpaggregation	2	2	4	4	13	13	78	SCP
tcpfeedcnlb-sig1-sig2-egr1-adapter	3	3	6	6	20	20	120	MAIN

Table 4-7 (Cont.) Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Min Memory Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Paritions/ Retention	Topics
tcpfeedcnlb-2-sig3-sig4-egr1-adapter	3	3	10	10	7	7	120	MAIN
tcpfeedcnlb-sig3-sig4-egr1-adapter	3	3	10	10	7	7	120	MAIN
http2feed-sig3-sig4-egr1-cnlb-adapter	3	3	28	28	5	5	120	MAIN
ocnaddkafka	5	5	96	96	16	16	-	-
kraft-controller	1	1	2	2	3	3	-	-
ocnaddgui	1	2	1	1	1	2	-	-
ocnadduirouter	1	2	1	1	1	2	-	-
ocnadduirouter	1	2	1	1	1	2	-	-
ocnaddfilter	2	2	3	3	1	1	-	-

- **SCP**: SCP Traffic is 180K TPS using two trigger points.

Benchmark Test Results

Traffic Feed Details

Table 4-8 Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
OCNADD	NA	360K MPS	24	httpfeed~ 21.6ms tcp feed1~ 22.2ms tcp feed3~ 28.5ms tcp feed3~ 22.7ms	NA
SCP	Ingress Gateway (Request) Egress Gateway (Request)	180K TPS	24	NA	NA

CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

Table 4-9 OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
ocnaddscpaggregation	67.6	24.86	13
tcpfeedcnlb-sig1-sig2-egr1-adapter	65.55	36.25	20
tcpfeedcnlb-sig3-sig4-egr1-adapter	56.8	46.72	7
tcpfeedcnlb-2-sig3-sig4-egr1-adapter	56.85	46.72	7
http2feed-sig3-sig4-egr1-cnlb-adapter	65.6	55.52	5
kafka-broker	48.57	46.4	16
kraft-controller	0.5	47	3
ocnaddadminservice	0.1	36.8	1
ocnaddalarm	0.2	45.1	1
ocnaddconfiguration	0.2	47.6	1
ocnaddgui	0.1	3.3	1
ocnaddhealthmonitoring	0.2	38.8	1
ocnadduirouter	0.1	34.8	1

4.2.1.2 Performance Benchmarking for 360K MPS SCP Traffic with Synthetic (TCP) Feed

This performance benchmarking evaluates the deployment of OCNADD handling an SCP traffic of 360K MPS. The benchmark utilizes a synthetic (TCP) feed:

The benchmarking results are provided below:

> **Note**
>
> One Ingress message from a NF is "1" MPS for OCNADD.

Benchmark Test Environment

- **Execution Time:** 48+ Hours
- **Call Rate:** 360K MPS
- **Call Mix:** SCP Model-C

Setup Details

- **Environment:** OCCNE 24.3.1
- **Cluster Topology:**
  - **DD:** Deployed in Cluster-1
  - **NF:** Deployed in Cluster-2
  - **Third-Party Consumers**: Deployed in Cluster-3
- **Component Versions:**

- **OCNADD:** 25.1.200
- **cnDBTier:** 25.1.100
- **SCP Version:** 25.1.100
- **Third-Party Consumers:** Two endpoints with two different egress NADs (configured in round-robin)

Configuration Details

- **SCP:** messageCopy enabled
- **Security:** SASL/SSL enabled between SCP and OCNADD
- **OCNADD:**
  - **Replication Factor**: 1
  - **Data Feed Protocol**: Synthetic (TCP)
  - **Kafka PVC Size**: 400 GB
- **Message Size:** Approximately 3500–4000 bytes

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with SCP.
  - Message Ingestion Rate: 360 K MPS

  Resource Specifications:

Table 4-10 Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Memory Request Per Pod (Gi)	Min Memory Per Pod (Gi)	Min Replicas	Max Replicas	Paritions/ Retention	Topics
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddalarm	1	1	1	1	1	1	-	-
ocnaddadminservice	1	1	1	1	1	1	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-
ocnaddscpaggregation	2	2	4	4	13	13	78	SCP
ocnaddadapter	3	3	6	6	20	20	120	MAIN
ocnaddkafka	5	5	48	48	16	16	-	-
kraft-controller	1	1	2	2	3	3	-	-
ocnaddgui	1	2	1	1	1	2	-	-
ocnadduirouter	1	2	1	1	1	2	-	-

- **SCP**: SCP Traffic is 180K TPS using two trigger points.

Benchmark Test Results

Traffic Feed Details

Table 4-11 Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
OCNADD	NA	360K MPS	48	19ms	NA
SCP	Ingress Gateway (Request) Egress Gateway (Request)	180K TPS	48	NA	NA

CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

Table 4-12 OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
ocnaddscpaggregation	57.50	18.75	13
adapter	55.66	26.25	20
kafka-broker	35.15	12.8	16
kraft-controller	0.20	46.70	3
ocnaddadminservice	0.20	36.80	1
ocnaddalarm	0.20	45.10	1
ocnaddconfiguration	0.10	47.60	1
ocnaddgui	0.10	3.30	1
ocnaddhealthmonitoring	0.20	38.80	1
ocnadduirouter	0.10	34.80	1

4.2.1.3 Performance Benchmarking for 270K MPS Aggregated Traffic with Synthetic (TCP) Feed

This performance benchmarking evaluates the deployment of OCNADD handling an aggregated feed of 270K MPS. The breakdown includes SCP traffic (64K TPS with 2 trigger points), NRF 15K MPS (7.5K TPS with 2 trigger points) and SEPP 60K MPS (15K TPS with 4 trigger points), BSF 10K MPS (with 2 trigger points) PCF 58K MPS (with 2 trigger points). The benchmark utilizes a synthetic (TCP) feed:

The benchmarking results are provided below:

> **Note**
>
> One Ingress message from a NF is "1" MPS for OCNADD.

Benchmark Test Environment

Execution Details

- **Execution Time:** 12+ Hours

Call Rate

- **SCP Traffic:** 128K MPS (64K TPS with 2 trigger points)
- **NRF:** 15K MPS (7.5K TPS with 2 trigger points)
- **SEPP:** 60K MPS (15K TPS with 4 trigger points)
- **BSF:** 10K MPS (2 trigger points)
- **PCF:** 58K MPS (2 trigger points)

Call Mix

- **NF Call Mix:** SCP, NRF, SEPP, BSF and PCF NF Call mix models

Setup Details

- **Environment:** OCCNE 24.3.1
- **Cluster Topology:**
  - **DD:** Cluster-1
  - **NF:** Cluster-2
  - **Third-Party Consumers:** Cluster-3
- **OCNADD Version:** 25.1.200
- **cnDBTier:** 25.1.100

Network Functions (NFs)

- **SCP:** 25.1.100
- **NRF:** 25.1.100
- **SEPP:** 25.1.100
- **BSF:** 25.1.100
- **PCF:** 25.1.100

Third-Party Consumers

- Two endpoints with two different egress NADs (round-robin)

Configuration Details

- **NRF:** Ingress Gateway and Egress Gateway `messageCopy` enabled
- **SCP:** Default configuration
- **cSEPP:**Ingress PLMN/N32 and Egress PLMN/N32 `messageCopy` enabled
- **pSEPP:**`messageCopy` disabled
- **PCF:** Ingress Gateway and Egress Gateway `messageCopy` enabled
- **BSF:** Ingress Gateway and Egress Gateway `messageCopy` enabled

Security and Data Feed

- **SASL/SSL:** Enabled between BSF and OCNADD

- **OCNADD Replication Factor:** 1
- **OCNADD Data Feed:** HTTP2
- **OCNADD Kafka PVC:** 400 GB
- **Average Message Size:** ~3500 Bytes

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with aggregation rules set for SCP, NRF, SEPP, BSF, and PCF.
  - Message Ingestion Rate: 270K MPS

  Resource Specifications:

Table 4-13 OCNADD Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Min Memory Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Paritions/ Retention	Topics
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddalarm	1	1	1	1	1	1	-	-
ocnaddadminservice	1	1	1	1	1	1	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-
ocnaddscpaggregation	2	2	4	4	5	5	30	SCP
ocnaddnrfaggregation	2	2	2	2	1	1	6	NRF
ocnaddseppaggregation	2	2	4	4	3	3	18	SEPP
ocnaddadapter	3	3	6	6	15	15	90	MAIN
ocnaddkafka	4	4	48	48	11	11	-	-
kraft-controller	1	1	1	2	3	3	-	-
ocnaddgui	1	2	1	1	1	2	-	-
ocnadduirouter	1	2	1	1	1	2	-	-
ocnaddfilter	2	2	3	3	1	1	-	-
ocnaddexport	2	4	4	64	1	2	-	-
ocnaddpcfaggregation	2	2	2	2	3	3	18	PCF
ocnaddbsfaggregation	2	2	2	2	1	1	6	BSF

- **SCP Traffic:** 128K MPS (64K TPS with 2 trigger points)
- **NRF:** 15K MPS (7.5K TPS with 2 trigger points)
- **SEPP:** 60K MPS (15K TPS with 4 trigger points)

- **BSF:** 10K MPS (2 trigger points)
- **PCF:** 58K MPS (2 trigger points)

Benchmark Test Results

Traffic Feed Details

Table 4-14 Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
OCNADD	NA	270K MPS	12	33.6ms	Feed: 99.98%
PCF	Ingress Gateway (Request) Egress Gateway (Request)	58K TPS	12	NA	99.99%
SCP	Ingress Gateway (Request) Egress Gateway (Request)	128K TPS	12	NA	99.95%
BSF	Ingress Gateway (Request) Egress Gateway (Request)	10K TPS	12	NA	100%
NRF	Ingress Gateway (Request) Egress Gateway (Request)	15K TPS	12	NA	99.98%
SEPP	Ingress plmn/n32 Gateway (Request) Egress plmn/n32 Gateway (Request)	60K TPS	12	NA	99.91%

CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

Table 4-15 OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
ocnaddnrfaggregation	58.4	31.9	1

Table 4-15 (Cont.) OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
ocnaddpcfaggregation	55.2	27.8	3
ocnaddbsfaggregation	35.4	20.9	1
ocnaddscpaggregation	62.4	19.9	5
ocnaddseppaggregation	58.2	17.1	3
adapter	59.5	13.1	15
kafka-broker	57.2	11.6	11
kraft-controller	0.455	42.4	3
ocnaddadminservice	0.417	29.3	1
ocnaddalarm	0.137	33.7	1
ocnaddconfiguration	0.129	34.2	1
ocnaddgui	0.00100	3.32	1
ocnaddhealthmonitoring	0.382	33.8	1
ocnadduirouter	0.00838	29.5	1

4.2.1.4 Performance Benchmarking for 270K MPS Aggregated Traffic with HTTP2 Feed

This performance benchmarking evaluates the deployment of OCNADD handling an aggregated feed of 270K MPS. The breakdown includes 128K MPS SCP traffic (64K TPS with 2 trigger points), NRF 15K MPS (7.5K TPS with 2 trigger points) & SEPP 60K MPS (15K TPS with 4 trigger points), BSF 10K MPS (with 2 trigger points) PCF 58K MPS (with 2 trigger points). The benchmark utilizes an HTTP2 feed:

The benchmarking results are provided below:

> **Note**
>
> One Ingress message from a NF is "1" MPS for OCNADD.

Benchmark Test Environment

Execution Details

- **Execution Time:** 12+ Hours

Call Rate

- **SCP Traffic:** 128K MPS (64K TPS with 2 trigger points)
- **NRF:** 15K MPS (7.5K TPS with 2 trigger points)
- **SEPP:** 60K MPS (15K TPS with 4 trigger points)
- **BSF:** 10K MPS (2 trigger points)
- **PCF:** 58K MPS (2 trigger points)

Call Mix

- **NF Call Mix:** SCP, NRF, SEPP, BSF and PCF NF Call mix models

Setup Details

- **Environment:** OCCNE 24.3.1
- **Cluster Topology:**
  - **DD:** Cluster-1
  - **NF:** Cluster-2
  - **Third-Party Consumers:** Cluster-3
- **OCNADD Version:** 25.1.200
- **cnDBTier:** 25.1.100

Network Functions (NFs)

- **SCP:** 25.1.100
- **NRF:** 25.1.100
- **SEPP:** 25.1.100
- **BSF:** 25.1.100
- **PCF:** 25.1.100

Third-Party Consumers

- Two endpoints with two different egress NADs
- **Load Balancing:** Weighted (50–50% or 60–40% distribution)

Configuration Details

- **NRF:** Ingress Gateway & Egress Gateway `messageCopy` enabled
- **SCP:** Default configuration
- **cSEPP:** Ingress PLMN/N32 and Egress PLMN/N32 `messageCopy` enabled
- **pSEPP:** `messageCopy` disabled
- **PCF:** Ingress Gateway & Egress Gateway `messageCopy` enabled
- **BSF:** Ingress Gateway & Egress Gateway `messageCopy` enabled

Security & Data Feed

- **SASL/SSL:** Enabled between BSF and OCNADD
- **OCNADD Replication Factor:** 1
- **OCNADD Data Feed:** HTTP2
- **OCNADD Kafka PVC:** 400 GB
- **Average Message Size:** ~3500 Bytes

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with aggregation rules set for SCP, NRF, SEPP, BSF, and PCF.
  - Message Ingestion Rate: 270K MPS

  Resource Specifications:

Table 4-16 OCNADD Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Memory Request Per Pod (Gi)	Memory Limit Per Pod (Gi)	Min Replicas	Max Replicas	Partitions/ Retention	Topics
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddalarm	1	1	1	1	1	1	-	-
ocnaddadminservice	1	1	1	1	1	1	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-
ocnaddscpaggregation	2	2	4	4	5	5	30	SCP
ocnaddnrfaggregation	2	2	2	2	1	1	6	NRF
ocnaddseppaggregation	2	2	4	4	3	3	18	SEPP
ocnaddadapter	3	3	6	6	23	23	207	MAIN
ocnaddkafka	4	4	48	48	11	11	-	-
kraft-controller	1	1	2	2	3	3	-	-
ocnaddgui	1	2	1	1	1	2	-	-
ocnadduirouter	1	2	1	1	1	2	-	-
ocnaddfilter	2	2	3	3	1	1	-	-
ocnaddexport	2	4	4	64	1	2	-	-
ocnaddpcfaggregation	2	2	2	2	2	2	12	PCF
ocnaddbsfaggregation	2	2	2	2	1	1	6	BSF

- **SCP Traffic:** 128K MPS (64K TPS with 2 trigger points)
- **NRF:** 15K MPS (7.5K TPS with 2 trigger points)
- **SEPP:** 60K MPS (15K TPS with 4 trigger points)
- **BSF:** 10K MPS (2 trigger points)
- **PCF:** 58K MPS (2 trigger points)

Benchmark Test Results

Traffic Feed Details

Table 4-17 Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
OCNADD	NA	270K MPS	12	33.6ms	Feed: 99.98%

Table 4-17 (Cont.) Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
PCF	Ingress Gateway (Request) Egress Gateway (Request)	58K TPS	12	NA	99.99%
SCP	Ingress Gateway (Request) Egress Gateway (Request)	128K TPS	12	NA	99.95%
BSF	Ingress Gateway (Request) Egress Gateway (Request)	10K TPS	12	NA	100%
NRF	Ingress Gateway (Request) Egress Gateway (Request)	15K TPS	12	NA	99.98%
SEPP	Ingress plmn/n32 Gateway (Request) Egress plmn/n32 Gateway (Request)	60K TPS	12	NA	99.91%

CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

Table 4-18 OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
ocnaddnrfaggregation	62.3	35.5	1
ocnaddpcfaggregation	61.8	30.7	2
ocnaddbsfaggregation	40.3	17.9	1
ocnaddscpaggregation	65.3	21.3	5
ocnaddseppaggregation	60.2	18.7	3
adapter	42.6	55.9	23
kafka-broker	61.1	42.6	11

Table 4-18 (Cont.) OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
kraft-controller	0.448	50.3	3
ocnaddadminservice	0.0581	28.5	1
ocnaddalarm	5.77	32.3	1
ocnaddconfiguration	0.135	34.1	1
ocnaddgui	0.000994	3.32	1
ocnaddhealthmonitoring	0.496	33.6	1
ocnadduirouter	0.00817	29.7	1

4.2.2 LBVM

This section gives the details of the performance tests done in LBVM Bare Metal Cluster Environment.

4.2.2.1 Performance Benchmarking for 135K MPS Traffic with Synthetic Feed Replication

This performance benchmarking evaluates a centralized deployment with a single worker group, handling an aggregated feed of 135K MPS. The breakdown includes 90K MPS for SCP (45K TPS with 2 trigger points), 30K MPS for SEPP (15K TPS with 2 trigger points), and 15K MPS for NRF (7.5K TPS with 2 trigger points). The benchmark utilizes a replicated synthetic feed:

The benchmarking results are provided below:

> **Note**
>
> One Ingress message from a NF is "1" MPS for OCNADD.

Benchmark Test Environment

- **Ingress Traffic Rate**: 135K MPS
- **Observation Period**: 3+ hours
- **Deployment**: OCNADD single-site, ASM disabled
- **Kafka Replication Factor**: 1
- **Kafka PVC**: 400GB
- **Data Feed**: Two TCP (Synthetic) Feeds (TLS enabled)
- **Third-Party Applications**: 1 endpoint per feed
- **Software Versions**:
  - **cnDBTier**: 24.3.0
  - **SCP**: 24.3.0
  - **NRF**: 24.3.0

  - **SEPP**: 24.3.0
  - **CNCC**: 24.3.0
- **Security**: SASL/SSL enabled between NRF, SCP, SEPP, and OCNADD
- **Message Size**: ~3500 Bytes
- **Execution Time**: 24 hours
- **Call Mix**: SCP, NRF, and SEPP NF CALL MIX models

Setup Details

- **Environment**: OCCNE (Bare metal) 23.3.4
- **OCNADD**: 25.1.100

Configuration

- **NRF**: Ingress Gateway and Egress Gateway messageCopy enabled
- **SCP**: Default configuration
- **cSEPP**: PLMN Ingress Gateway messageCopy enabled
- **pSEPP**: messageCopy disabled
- **OCNADD**:
  - Replication Factor: 1
  - Kafka PVC: 400GB. For more information about PVC requirements, see Kafka PVC Storage Requirements.

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with aggregation rules set for SCP, NRF and SEPP.
  - Message Ingestion Rate: 135K MPS

  Resource Specifications:

Table 4-19 OCNADD Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Min Memory Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Partitions/ Retention	Topics
ocnaddadapter	3	3	6	6	11	11	66	MAIN
ocnaddadminservice	1	1	1	1	1	1	-	-
ocnaddalarm	1	1	1	1	1	1	-	-
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddexport	2	4	4	64	1	2	-	-
ocnaddgui	1	2	1	1	1	2	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-

Table 4-19 (Cont.) OCNADD Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Min Memory Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Partitions/ Retention	Topics
ocnaddkafka	7.5	7.5	96	96	6	6	-	-
ocnaddnrfaggregation	2	2	2	2	1	1	6	NRF
ocnaddscpaggregation	2	2	4	4	5	5	30	SCP
ocnaddseppaggregation	2	2	4	4	2	2	12	SEPP
ocnadduirouter	1	2	1	1	1	2	-	-
zookeeper	1	1	1	2	3	3	-	-

- **SCP**: 90K MPS traffic (45K TPS with 2 trigger points)
- **NRF**: 15K MPS traffic (7.5K TPS with 2 trigger points)
- **SEPP** 30K MPS traffic (15K TPS with 2 trigger points)

Benchmark Test Results

Traffic Feed Details

Table 4-20 Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
OCNADD	NA	135K MPS	24	Feed-1: 26.9 msec Feed-2: 26.5 msec	Feed-1: 99.98% Feed-2: 99.98%
SCP	Ingress Gateway (Request) Egress Gateway (Request)	45K TPS	24	NA	99.98%
NRF	Ingress Gateway (Request) Egress Gateway (Request)	7.5K TPS	24	NA	99.98%
SEPP	Ingress Gateway (Request) Egress Gateway (Request)	15K TPS	24	NA	99.98%

CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

Table 4-21 OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
adapter-1	60.6	19.0	11
adapter-2	63.0	19.4	11
kafka-broker	40.1	25.8	6
ocnaddadminservice	0.138	24.1	1
ocnaddalarm	0.217	27.5	1
ocnaddconfiguration	0.164	34.9	1
ocnaddexport	0.0115	2.33	1
ocnaddgui	0.00108	3.12	1
ocnaddhealthmonitoring	0.530	34.5	1
ocnaddnrfaggregation	70.4	32.4	1
ocnaddscpaggregation	58.0	18.6	5
ocnaddseppaggregation	70.0	20.3	2
ocnadduirouter	0.00758	28.7	1
zookeeper	0.125	31.0	3

4.2.2.2 Performance Benchmarking for 270K MPS SCP Traffic with Synthetic Feed

This performance benchmarking evaluates a centralized deployment with a single worker group, handling an SCP Model-C traffic of 270K MPS. The benchmark utilizes a synthetic feed:

The benchmarking results are provided below:

> **Note**
>
> One Ingress message from a NF is "1" MPS for OCNADD.

Benchmark Test Environment

- **Ingress Traffic Rate**: 270K MPS
- **Observation Period**: 3+ hours
- **Deployment**: OCNADD single-site, ASM disabled
- **Kafka Replication Factor**: 1
- **Kafka PVC**: 300GB
- **Data Feed**: TCP (Synthetic)
- **Third-Party Applications**: 1 endpoint per feed
- **Software Versions**:
  - **cnDBTier**: 24.3.0
  - **NRF**: 24.3.0
  - **CNCC**: 24.3.0
- **Security**: SASL/SSL enabled between between SCP and OCNADD

- **Message Size**: ~3500 - 4000 Bytes
- **Execution Time**: 14 hours
- **Call Mix**: SCP Model-C

Setup Details

- **Environment**: OCCNE (Bare metal) 23.3.4
- **OCNADD**: 25.1.100

Configuration

- **SCP**: Default configuration, messageCopy enabled
- **OCNADD**:
  - Replication Factor: 1
  - Kafka PVC: 300GB. For more information about PVC requirements, see Kafka PVC Storage Requirements.

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with SCP.
  - Message Ingestion Rate: 270K MPS

  Resource Specifications:

Table 4-22 OCNADD Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Min Memory Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Paritions/ Retention	Topics
ocnaddadapter(TCPs)	3	3	6	6	21	21	126	MAIN
ocnaddadminservice	1	1	1	1	1	1	-	-
ocnaddalarm	1	1	1	1	1	1	-	-
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddexport	2	4	4	64	1	2	-	-
ocnaddgui	1	2	1	1	1	2	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-
ocnaddkafka	5	5	48	48	11	11	-	-
ocnaddscpaggregation	2	2	4	4	11	11	66	SCP
ocnadduirouter	1	2	1	1	1	2	-	-
zookeeper	1	1	1	2	3	3	-	-

- **SCP**: SCP Traffic is 135K TPS using two trigger points.

Benchmark Test Results

Traffic Feed Details

Table 4-23 Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
OCNADD	NA	270K MPS	14	51.1 msec	99.99%
SCP	Ingress Gateway (Request) Egress Gateway (Request)	135K MPS	14	NA	99.98%

CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

Table 4-24 OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
ocnaddscpaggregation	65.5	29.8	11
ocnaddadapter(TCPs)	58.1	29.0	21
kafka-broker	44.1	60.5	11
zookeeper	0.152	33.7	3
ocnaddadminservice	0.134	27.9	1
ocnaddalarm	0.399	18.4	1
ocnaddconfiguration	0.232	33.9	1
ocnaddexport	0.0183	2.21	1
ocnaddgui	0.00110	3.12	1
ocnaddhealthmonitoring	0.710	33.2	1
ocnadduirouter	0.00812	25.3	1

4.2.2.3 Performance Benchmarking for 270K MPS SCP Traffic with Kafka Feed

This performance benchmarking evaluates a centralized deployment with a single worker group, handling an SCP traffic of 270K MPS. The benchmark utilizes a Kafka feed:

The benchmarking results are provided below:

> **Note**
>
> One Ingress message from a NF is "1" MPS for OCNADD.

Benchmark Test Environment

- **Ingress Traffic Rate**: 270K MPS

- **Observation Period**: 3+ hours
- **Deployment**: OCNADD single-site, ASM disabled
- **Kafka Replication Factor**: 1
- **Kafka PVC**: 300GB
- **Data Feed**: Kafka-feed
- **Third-Party Consumers**: 1 endpoint per feed
- **Software Versions**:
  - **cnDBTier**: 24.3.0
  - **SCP**: 24.3.0
  - **CNCC**: 24.3.0
- **Security**: SASL/SSL enabled between between SCP and OCNADD
- **Message Size**: ~3500 - 4000 Bytes
- **Execution Time**: 12 hours
- **Call Mix**: SCP SCP Model-C

Setup Details

- **Environment**: OCCNE (Bare metal) 23.3.4
- **OCNADD**: 25.1.100

Configuration

- **SCP**: Default configuration, messageCopy enabled
- **OCNADD**:
  - Replication Factor: 1
  - Kafka PVC: 300GB. For more information about PVC requirements, see Kafka PVC Storage Requirements.

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with SCP.
  - Message Ingestion Rate: 270 K MPS

  Resource Specifications:

Table 4-25 Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Memory Request Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Paritions/ Retention	Topics
ocnaddadapter	-	-	-	-	-	-	261	MAIN
ocnaddadminservice	1	1	1	1	1	1	-	-

Table 4-25 (Cont.) Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Memory Request Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Paritions/ Retention	Topics
ocnaddalarm	1	1	1	1	1	1	-	-
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddexport	2	4	4	64	1	2	-	-
ocnaddgui	1	2	1	1	1	2	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-
ocnaddkafka	5	5	48	48	11	11	-	-
ocnaddscpaggregation	2	2	4	4	11	11	66	SCP
ocnadduirouter	1	2	1	1	1	2	-	-
zookeeper	1	1	1	2	3	3	-	-

- **SCP**: SCP Traffic is 135K TPS using two trigger points.

Benchmark Test Results

Traffic Feed Details

Table 4-26 Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
OCNADD	NA	270K MPS	12	Feed-1: 26.9 msec Feed-2: 26.5 msec	Feed-1: 99.98% Feed-2: 99.98%
SCP	Ingress Gateway (Request) Egress Gateway (Request)	135K TPS	12	NA	99.98%

CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

Table 4-27 OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
kafka-broker	46.1	16.3	11
ocnaddadminservice	0.0855	25.9	1

Table 4-27 (Cont.) OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
ocnaddalarm	0.80	26.8	1
ocnaddconfiguration	0.139	33.2	1
ocnaddexport	0.0115	2.18	1
ocnaddgui	0.000999	3.10	1
ocnaddhealthmonitoring	0.339	35.0	1
ocnaddscpaggregation	68.2	27.9	11
ocnadduirouter	0.00654	54.0	1
zookeeper	0.121	28.8	3

4.2.2.4 Performance Benchmarking for 9K BSF Traffic with HTTP2 Feed

The performance benchmarking test is performed on OCNADD with 9K traffic with HTTPS feed. The traffic includes:

- BSF Traffic: 9K MPS
- Enabled BSF Ingress Gateway and Egress Gateway Message Copy Feature.

The benchmarking results are provided below:

> **Note**
>
> One Ingress message from a NF is "1" MPS for OCNADD.

Benchmark Test Environment

- **Ingress Traffic Rate**: 9K MPS
- **Observation Period**: 3+ hours
- **Deployment**: OCNADD single-site, ASM disabled
- **Kafka Replication Factor**: 1
- **Kafka PVC**: 30GB
- **Data Feed**: HTTP2
- **Third-Party Applications**: 1 endpoint per feed
- **Software Versions**:
  - **cnDBTier**: 24.3.0
  - **BSF**: 24.3.0
  - **CNCC**: 24.3.0
- **Security**: SASL/SSL enabled between between BSF and OCNADD
- **Message Size**: ~1200 Bytes
- **Execution Time**: 12 hours
- **Call Mix**: Binding-Create/Delete

Setup Details

- **Environment**: OCCNE (Bare metal) 23.3.4
- **OCNADD**: 25.1.100

Configuration

- **BSF**: Ingress Gateway and Egress Gateway messageCopy enabled
- **OCNADD**:
  - Replication Factor: 1
  - Kafka PVC: 30GB. For more information about PVC requirements, see Kafka PVC Storage Requirements.

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with BSF.
  - Message Ingestion Rate: 9K MPS

  Resource Specifications:

Table 4-28 OCNADD Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Min Memory Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Partitions/ Retention	Topics
ocnaddadapter	3	3	4	4	1	1	9	MAIN
ocnaddadminservice	1	1	1	1	1	1	-	-
ocnaddalarm	1	1	1	1	1	1	-	-
ocnaddbsfaggregation	3	3	4	4	1	1	6	BSF
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddexport	2	4	4	64	1	2	-	-
ocnaddfilter	2	2	3	3	1	1	-	-
ocnaddgui	1	2	1	1	1	2	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-
ocnaddkafka	2	2	24	24	4	4	-	-
ocnadduirouter	1	2	1	1	1	2	-	-
zookeeper	1	1	1	2	3	3	-	-

- **BSF** : BSF Traffic: 4.5K TPS using two trigger points.

Benchmark Test Results

Traffic Feed Details

Table 4-29 Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
OCNADD	NA	9K MPS	12	20.20ms	Feed: 100%
BSF	Ingress Gateway (Request) Egress Gateway (Request)	4.5K TPS	12	NA	100%

CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

Table 4-30 OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
adapter	33.5	32.1	1
kafka-broker	12.3	11.4	4
ocnaddadminservice	0.287	27.5	1
ocnaddalarm	0.0963	37.7	1
ocnaddbsfaggregation	31.0	22.1	1
ocnaddconfiguration	0.110	36.7	1
ocnaddexport	0.00686	2.32	1
ocnaddgui	0.00107	3.13	1
ocnaddhealthmonitoring	0.0898	35.1	1
ocnadduirouter	0.00664	29.5	1
zookeeper	0.122	27.0	3

4.2.2.5 Performance Benchmarking for 30K MPS PCF Traffic with HTTP2 Feed

The performance benchmarking test is performed on OCNADD with 31K MPS traffic with HTTP2 feed. The traffic includes:

- PCF Traffic: 30K MPS
- Enabled PCF Ingress Gateway and Egress Gateway Message Copy Feature.

The benchmarking results are provided below:

> **Note**
>
> One Ingress message from a NF is "1" MPS for OCNADD.

Benchmark Test Environment

- **Ingress Traffic Rate**: 30K MPS

- **Observation Period**: 3+ hours
- **Deployment**: OCNADD single-site, ASM disabled
- **Kafka Replication Factor**: 1
- **Kafka PVC**: 50GB
- **Data Feed**: HTTP2
- **Third-Party Applications**: 1 endpoint per feed
- **Software Versions**:
  - **cnDBTier**: 24.3.0
  - **PCF**: 24.3.0
  - **CNCC**: 24.3.0
- **Security**: SASL/SSL enabled between between PCF and OCNADD
- **Message Size**: ~2079 Bytes
- **Execution Time**: 12 hours
- **Call Mix**: Session Management (SM) traffic

Setup Details

- **Environment**: OCCNE (Bare metal) 23.3.4
- **OCNADD**: 25.1.100

Configuration

- **PCF**: Ingress Gateway and Egress Gateway messageCopy enabled
- **OCNADD**:
  - Replication Factor: 1
  - Kafka PVC: 50GB. For more information about PVC requirements, see Kafka PVC Storage Requirements.

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with PCF.
  - Message Ingestion Rate: 30K MPS

  Resource Specifications:

Table 4-31 OCNADD Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Min Memory Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Paritions/ Retention	Topics
ocnaddadapter	3	3	4	4	3	3	27	MAIN
ocnaddadminservice	1	1	1	1	1	1	-	-
ocnaddalarm	1	1	1	1	1	1	-	-

Table 4-31 (Cont.) OCNADD Resource Specifications

Services	Min CPU Per Pod	Max CPU Per Pod	Min Memory Per Pod (Gi)	Max Memory Per Pod (Gi)	Min Replicas	Max Replicas	Paritions/ Retention	Topics
ocnaddpcfaggregation	2	2	2	2	2	2	12	PCF
ocnaddconfiguration	1	1	1	1	1	1	-	-
ocnaddexport	2	4	4	64	1	2	-	-
ocnaddfilter	2	2	3	3	1	1	-	-
ocnaddgui	1	2	1	1	1	2	-	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-	-
ocnaddkafka	2	2	24	24	4	4	-	-
ocnadduirouter	1	2	1	1	1	2	-	-
zookeeper	1	1	1	2	3	3	-	-

- **PCF** : PCF Traffic: 15K TPS using two trigger point.

Benchmark Test Results

Traffic Feed Details

Table 4-32 Traffic Feed Details

NF	NF Traffic Copy Trigger Points	Traffic Rate	Duration in hours	E2E Traffic Feed Average Latency	E2E Traffic Feed Success Rate
OCNADD	NA	30K MPS	12	33.6ms	Feed: 99.99%
PCF	Ingress Gateway (Request) Egress Gateway (Request)	15K TPS	12	NA	99.99%

CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

Table 4-33 OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
httpsfeed-adapter	51.6	62.10	3
kafka-broker	50.8	18.10	4
ocnaddadminservice	0.08	33.90	1
ocnaddalarm	0.12	19.30	1
ocnaddconfiguration	0.09	40.70	1
ocnaddexport	0.03	2.05	1

Table 4-33 (Cont.) OCNADD CPU and Memory Utilization

Micro-Service/ Container	CPU Utilization (%)	Memory Utilization (%)	Total Replica
ocnaddgui	0.00	3.09	1
ocnaddhealthmonitoring	0.13	35.70	1
ocnaddpcfaggregation	61.4	32.90	2
ocnadduirouter	0.01	32.50	1
zookeeper	0.14	48.20	3