# Oracle® Communications

# Network Analytics Data Director Benchmarking Guide

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Oracle Communications Network Analytics Data Director Benchmarking Guide, Release 25.1.100

G24452-02

# Contents

# 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 25.1.1xx in *Oracle Communications Network Analytics Data Director Benchmarking Guide*.

**Release 25.1.100 - G24452-02, May 2025**

- Relocated the Preface section for improved document structure and readability.

**Release 25.1.100 - G24452-01, February 2025**

Updated the following sections:

- Performed the following updates in Resource Requirement chapter:
  - Added the SCP 270K MPS HTTP2 Feed .
  - Updated the 30K MPS PCF Profile in SCP 270K MPS Synthetic Feed section.
  - Added the SCP 270K MPS Kafka Feed .
- Updated the Kafka PVC Storage Requirements for BSF and PCF.
- Updated the following scenarios in OCNADD Benchmarking Testing chapter:
  - Performance Benchmarking for 135K MPS Traffic with Synthetic Feed Replication
  - Performance Benchmarking for 270K MPS SCP Traffic with Kafka Feed
  - Performance Benchmarking for 270K MPS SCP Traffic with Synthetic Feed
  - Performance Benchmarking for 9K BSF Traffic with HTTP2 Feed
  - Performance Benchmarking for 30K MPS PCF Traffic with 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

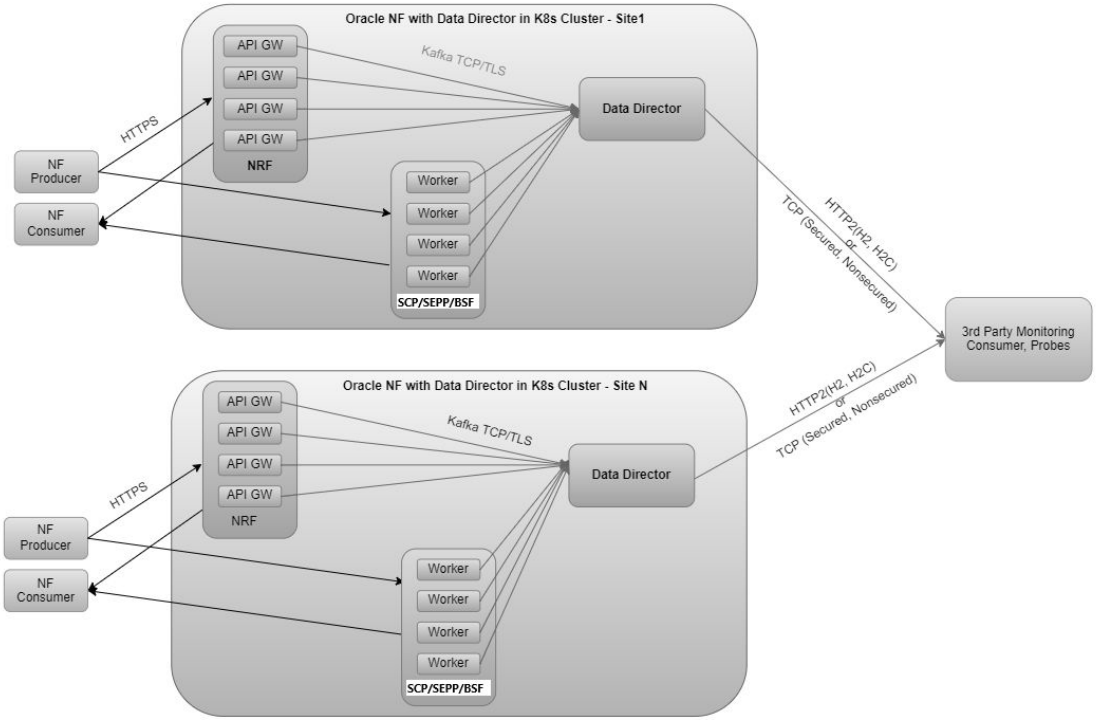
For more information about OCNADD, see the following documents:

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

**Table 3-3 (Cont.) Resource Requirement**

| cnDBTier Pods | Replica | vCPU | | Memory | |
|---|---|---|---|---|---|
| | | Min | Max | Min | Max |
| **Database** (ndbmtd)<br>**Kubernetes Resource Type:** StatefulSet | 4 | 8 | 8 | 128Gi | 128Gi |

> **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 | Resources | | | Description |
|---|---|---|---|---|
| | vCPU | Memory Required (Gi) | Total Replica | |
| 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 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 3-5 15K NRF Profile**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
|---|---|---|---|---|
| zookeeper | 1 | 3 | 1 | - |
| kafkaBroker | 2 | 3 | 24 | - |
| kafkaBroker (with replicated feed) | 2 | 3 | 24 | - |
| ocnaddnrfaggregation | 2 | 1 | 2 | NRF=6 (Each Instance 6 partitions) |
| consumeradapter (HTTP2 feed) | 3 | 2 | 3 | MAIN=18 |

**90K SCP Profile**

**Table 3-6 90K SCP Profile**

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

**30K SEPP Profile**

**Table 3-7 30K SEPP Profile**

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

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

**Table 3-8 135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
|---|---|---|---|---|
| zookeeper | 1 | 3 | 1 | - |
| kafkaBroker | 6.5 | 6 | 48 | - |
| kafkaBroker (with replicated feed) | 7.5 | 6 | 96 | - |
| ocnaddscpaggregation | 2 | 5 | 4 | SCP=30 (Each Instance 6 partitions) |
| ocnaddnrfaggregation | 2 | 1 | 2 | NRF=6 (Each Instance 6 partitions) |
| ocnaddseppaggregation | 2 | 2 | 4 | SEPP=12 (Each Instance 6 partitions) |
| consumeradapter (HTTP2 feed) | 3 | 15 | 24 | MAIN=135 (Each instance 9 partitions) |

### 135K SCP Profile

**Table 3-9 135K SCP Profile**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
|---|---|---|---|---|
| zookeeper | 1 | 3 | 1 | - |
| kafkaBroker | 6.5 | 6 | 48 | - |
| kafkaBroker (with replicated feed) | 7.5 | 6 | 96 | - |
| ocnaddscpaggregation | 2 | 8 | 4 | SCP=48 (Each Instance 6 partitions) |

**Table 3-9 (Cont.) 135K SCP Profile**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
|---|---|---|---|---|
| consumeradapter (HTTP2 feed) | 3 | 15 | 24 | 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 3-10 15K NRF Profile**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
|---|---|---|---|---|
| ocnaddnrfaggregation (Ingress Filter is ON) | 2 | 2 | 2 | NRF=12 (Each Instance 6 partitions) |
| consumeradapter (HTTP2 feed with Egress Filter ON) | 3 | 3 | 3 | MAIN=27 (Each instance 9 partitions) |

**90K SCP Profile**

**Table 3-11 90K SCP Profile**

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

**30K SEPP Profile**

**Table 3-12 30K SEPP Profile**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
|---|---|---|---|---|
| ocnaddseppaggregation (Ingress Filter is ON) | 2 | 3 | 2 | SEPP=18 (Each Instance 6 partitions) |

**Table 3-12 (Cont.) 30K SEPP Profile**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
|---|---|---|---|---|
| consumeradapter (HTTP2 feed with Egress Filter ON) | 3 | 5 | 3 | MAIN=45 (Each instance 9 partitions) |

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

**Table 3-13 135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)**

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

### 135K SCP Profile

**Table 3-14 135K SCP Profile**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
|---|---|---|---|---|
| ocnaddscpaggregation (Ingress Filter is ON) | 2 | 9 | 4 | SCP=54 (Each Instance 6 partitions) |
| consumeradapter (HTTP2 feed with Egress Filter ON) | 3 | 16 | 24 | 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 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 3-15 270K MPS HTTP2 FEED**

| Services | vCPU | Total Replica | Memory Required (Gi) | Topic Partition |
|---|---|---|---|---|
| zookeeper | 1 | 3 | 1 | - |
| kafkaBroker | 5 | 11 | 48 | - |
| ocnaddscpaggregation | 2 | 11 | 4 | SCP=66<br>(Each instance 6 partition) |
| ocnaddscpaggregation<br>MESSAGE SEQUENCING =ON<br>DD METADATA = ON/OFF | 2 | 14 | 48 | SCP=84<br>(Each instance 6 partition) |
| consumeradapter (HTTP2 feed) | 3 | 29 | 24 | MAIN=261<br>(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

## 3.1.3.3 Aggregated 135K MPS Synthetic Feed

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

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

**15K NRF Profile**

**Table 3-16 15K NRF Profile**

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

**90K SCP Profile**

**Table 3-17 90K SCP Profile**

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

### 30K SEPP Profile

**Table 3-18 30K SEPP Profile**

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

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

**Table 3-19 135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)**

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

**Table 3-19 (Cont.) 135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
|---|---|---|---|---|
| consumeradapter (Synthethic feed) | 3 | 11 | 6 | MAIN=66 (Each Instance 6 partitions) |

### 135K SCP Profile

**Table 3-20 135K SCP Profile**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
|---|---|---|---|---|
| zookeeper | 1 | 3 | 1 | - |
| kafkaBroker | 6 | 6 | 48 | - |
| kafkaBroker (with replicated feed) | 6.5 | 6 | 96 | - |
| ocnaddscpaggregation | 2 | 8 | 4 | SCP=48 (Each Instance 6 partitions) |
| consumeradapter (Synthethic feed) | 3 | 11 | 6 | 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 3-21 15K NRF Profile**

| Service | vCPU | Total Replica | Memory Required (Gi) | 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 3-22 90K SCP Profile**

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

### 30K SEPP Profile

**Table 3-23 30K SEPP Profile**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
|---|---|---|---|---|
| ocnaddseppaggregation (Ingress Filter is ON) | 2 | 3 | 4 | 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 3-24 135K Profile (SCP: 90K, NRF: 15K, SEPP: 30K)**

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

### 135K SCP Profile

**Table 3-25 135K SCP Profile**

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

## 3.1.3.4 SCP 270K MPS Synthetic Feed

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

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

**Table 3-26 270K MPS SCP Profile**

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

**Table 3-26 (Cont.) 270K MPS SCP Profile**

| Services | vCPU | Total Replica | Memory Required (Gi) | Topic Partition |
|---|---|---|---|---|
| ocnaddscpaggregation<br>MESSAGE SEQUENCING =ON<br>DD METADATA = ON/OFF | 2 | 14 | 48 | SCP=84<br>(Each instance 6 partition) |
| consumeradapter (Synthethic feed) | 3 | 21 | 6 | MAIN=126<br>(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

## 3.1.3.5 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 3-27 9K MPS BSF Profile**

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

## 3.1.3.6 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 3-28 30K MPS PCF Profile**

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

### 3.1.3.7 Message Sequencing and Metadata Enrichment 135K MPS All Feed Types

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

**Table 3-29 Resource Requirement**

| Service | vCPU | Total Replica | Memory Required (Gi) | Topic Partition |
|---|---|---|---|---|
| ocnaddkafka<br>(Kafka with RF=2) | 6 | 6 | 164 | - |
| **MESSAGE_SEQUENCING_TYPE = TRANSACTION, TRANSACTION_MSG_SEQUENCING_EXPIRY_TIMER= 200ms and METADATA ENRICHMENT ON/OFF** | | | | |
| ocnaddscpaggregation | 2 | 5 | 24 | 30(SCP) |
| **MESSAGE_SEQUENCING_TYPE = TIME_WINDOW, WINDOW_MSG_SEQUENCING_EXPIRY_TIMER=10ms** | | | | |
| ocnaddscpaggregation | 2 | 5 | 24 | 30(SCP) |
| **MESSAGE_SEQUENCING_TYPE = REQUEST_RESPONSE, REQUEST_RESPONSE_MSG_SEQUENCING_EXPIRY_TIMER=10ms and METADATA ENRICHMENT ON/OFF** | | | | |
| ocnaddscpaggregation | 2 | 5 | 16 | 30(SCP) |
| **INGRESS FILTER is ON** | | | | |
| **MESSAGE_SEQUENCING_TYPE = TRANSACTION, TRANSACTION_MSG_SEQUENCING_EXPIRY_TIMER= 200ms and METADATA ENRICHMENT ON/OFF** | | | | |
| ocnaddscpaggregation | 2 | 6 | 36 | 36(SCP) |
| **MESSAGE_SEQUENCING_TYPE = TIME_WINDOW, WINDOW_MSG_SEQUENCING_EXPIRY_TIMER=10ms** | | | | |
| ocnaddscpaggregation | 2 | 6 | 36 | 36(SCP) |
| **MESSAGE_SEQUENCING_TYPE = REQUEST_RESPONSE, REQUEST_RESPONSE_MSG_SEQUENCING_EXPIRY_TIMER=10ms and METADATA ENRICHMENT ON/OFF** | | | | |
| ocnaddscpaggregation | 2 | 6 | 24 | 36(SCP) |
| **HTTP2 Feed (FILTER = OFF)** | | | | |
| consumeradapter | 3 | 15 | 24 | 135(MAIN) |
| **SYNTHETIC Feed (TCP CONNECTION MESSAGE and/or MESSAGE SEGEMENTATION = ON) (FILTER=OFF)** | | | | |
| consumeradapter | 3 | 11 | 12 | 66(MAIN) |

**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)"**

### 3.1.3.8 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 3-30 15K NRF Profile**

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

**Table 3-30 (Cont.) 15K NRF Profile**

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

### 30K SCP Profile

**Table 3-31 30K SCP Profile**

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

**Table 3-31 (Cont.) 30K SCP Profile**

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

### 30K SEPP Profile

**Table 3-32 30K SEPP Profile**

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

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

**Table 3-33 30K Profile (SCP: 15K, NRF: 5K, SEPP: 10K)**

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

## 3.1.3.9 Aggregated 135K MPS Kafka Feed

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

**15K NRF Profile**

**Table 3-34 15K NRF Profile**

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

**90K SCP Profile**

**Table 3-35 90K SCP Profile**

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

**Table 3-35 (Cont.) 90K SCP Profile**

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

### 30K SEPP Profile

**Table 3-36 30K SEPP Profile**

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

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

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

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

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

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

**135K SCP Profile**

**Table 3-38 135K SCP Profile**

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

## 3.1.3.10 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 3-39 270K MPS KAFKA FEED**

| Services | vCPU | Total Replica | Memory Required (Gi) | Topic Partition |
|---|---|---|---|---|
| zookeeper | 1 | 3 | 1 | - |
| kafkaBroker | 5 | 11 | 48 | - |
| ocnaddscpaggregation | 2 | 11 | 4 | SCP=66<br>(Each instance 6 partition) |
| ocnaddscpaggregation<br>MESSAGE SEQUENCING =ON<br>DD METADATA = ON/OFF | 2 | 14 | 48 | SCP=84<br>(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

## 3.1.3.11 5K MPS Non-Oracle Network Function Feed

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

**Table 3-40 Resource Requirement**

| Service | 5K NON ORACLE NF Profile | | | |
|---|---|---|---|---|
| | vCPU | Total Replica | Memory Required (Gi) | Topic Partitions |
| ocnaddingressadapter | 3 | 1 | 8 | - |
| zookeeper | 1 | 3 | 1 | - |
| ocnaddnonoracleaggregation | 2 | 1 | 2 | NON_ORACLE=6 |
| kafkaBroker | 2 | 3 | 16 | - |
| consumeradapter | 3 | 1 | 6 | MAIN=9 |
| kafkaBroker (with replicated feed) | 2 | 3 | 24 | - |
| consumeradapter | 3 | 2 | 6 | MAIN=18 |

## 3.1.3.12 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 3-41 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 |

**Table 3-41 (Cont.) Default Deployment Profile**

| Services | vCPU Req | vCPU Limit | Memory Req (Gi) | Memory Limit (Gi) | Min Replica | Max Replica | Partitions | Topic Name |
|---|---|---|---|---|---|---|---|---|
| ocnaddnrfaggregation (15K) | 2 | 2 | 2 | 2 | 1 | 1 | 6 | NRF |
| 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<br>SYNTHETIC: 1 | HTTP2: 13<br>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.

## 3.1.4 Resource Profile for OCI Environment

This section displays the profile resource requirements in OCI environment.

### 3.1.4.1 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

**Table 3-42 Resource Requirement**

| Service | 5K Profile (SCP:3K NRF:1K SEPP:1K) | | | | 5K SCP Profile | | | |
|---|---|---|---|---|---|---|---|---|
| | vCPU | Total Replica | Memory Required (Gi) | Topic Partition | vCPU | Total Replica | Memory Required (Gi) | Topic Partition |
| 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 | - |
| ocnaddgui | 2 | 1 | 1 | - | 2 | 1 | 1 | - |
| ocnadduirouter | 2 | 1 | 1 | - | 2 | 1 | 1 | - |
| zookeeper | 1 | 3 | 1 | - | 1 | 3 | 1 | - |
| ocnaddkafka | 2 | 4 | 24 | - | 2 | 4 | 24 | - |
| **Replicated Feed (Avg Latency: 1ms)** | | | | | | | | |
| ocnaddkafka | 3 | 4 | 32 | - | 3 | 4 | 32 | - |
| **Single Feed (Avg Latency: 1ms)** | | | | | | | | |
| ocnaddscpaggregation | 2 | 1 | 2 | SCP=6 (Each Instance 6 partition) | 2 | 2 | 2 | SCP=12 (Each instance 6 partition) |
| ocnaddnrfaggregation | 2 | 1 | 2 | NRF=6 (Each Instance 6 partition) | - | - | - | - |
| ocnaddseppaggregation | 2 | 1 | 2 | SEPP=12 (Each Instance 6 partition) | - | - | - | - |

**Table 3-42 (Cont.) Resource Requirement**

| Service | 5K Profile (SCP:3K NRF:1K SEPP:1K) | | | | 5K SCP Profile | | | |
|---|---|---|---|---|---|---|---|---|
| | vCPU | Total Replica | Memory Required (Gi) | Topic Partition | vCPU | Total Replica | Memory Required (Gi) | Topic Partition |
| ocnaddadapter | 3 | 2 | 3 | MAIN=18 (Each instance 9 partition) | 3 | 2 | 3 | MAIN=18 (Each instance 9 partition) |

## 3.1.4.2 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

**Table 3-43 Resource Requirement**

| Service | 5K Profile (SCP:3K NRF:1K SEPP:1K) | | | | 5K SCP Profile | | | |
|---|---|---|---|---|---|---|---|---|
| | vCPU | Total Replica | Memory Required (Gi) | Topic Partition | vCPU | Total Replica | Memory Required (Gi) | Topic Partition |
| 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 | - |
| ocnaddgui | 2 | 1 | 1 | - | 2 | 1 | 1 | - |
| ocnadduirouter | 2 | 1 | 1 | - | 2 | 1 | 1 | - |
| zookeeper | 1 | 3 | 1 | - | 1 | 3 | 1 | - |
| ocnaddkafka | 2 | 4 | 24 | - | 2 | 4 | 24 | - |

**Table 3-43 (Cont.) Resource Requirement**

| Service | 5K Profile (SCP:3K NRF:1K SEPP:1K) | | | | 5K SCP Profile | | | |
|---|---|---|---|---|---|---|---|---|
| | vCPU | Total Replica | Memory Required (Gi) | Topic Partition | vCPU | Total Replica | Memory Required (Gi) | Topic Partition |
| **Replicated Feed** | | | | | | | | |
| ocnaddkafka | 3 | 4 | 32 | - | 3 | 4 | 32 | - |
| **Single Feed** | | | | | | | | |
| ocnaddscpaggregation | 2 | 1 | 2 | SCP=6 (Each Instance 6 partition) | 2 | 2 | 2 | SCP=12 (Each instance 6 partition) |
| ocnaddnrfaggregation | 2 | 1 | 2 | NRF=6 (Each Instance 6 partition) | - | - | - | - |
| ocnaddseppaggregation | 2 | 1 | 2 | SEPP=12 (Each Instance 6 partition) | - | - | - | - |

## 3.1.4.3 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

**Table 3-44 Resource Requirement**

| Service | 5K Profile (SCP:3K NRF:1K SEPP:1K) | | | | 5K SCP Profile | | | |
|---|---|---|---|---|---|---|---|---|
| | vCPU | Total Replica | Memory Required (Gi) | Topic Partition | vCPU | Total Replica | Memory Required (Gi) | Topic Partition |
| 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 | - |
| ocnaddgui | 2 | 1 | 1 | - | 2 | 1 | 1 | - |
| ocnadduirouter | 2 | 1 | 1 | - | 2 | 1 | 1 | - |
| zookeeper | 1 | 3 | 1 | - | 1 | 3 | 1 | - |
| ocnaddkafka | 3 | 4 | 24 | - | 3 | 4 | 24 | - |
| **Replicated Feed (Avg Latency: 0.3ms)** | | | | | | | | |
| ocnaddkafka | 4 | 4 | 32 | - | 4 | 4 | 32 | - |
| **Single Feed (Avg Latency: 0.3ms)** | | | | | | | | |
| ocnaddscpaggregation | 2 | 1 | 2 | SCP=6 (Each Instance 6 partition) | 2 | 2 | 2 | SCP=12 (Each instance 6 partition) |
| ocnaddnrfaggregation | 2 | 1 | 2 | NRF=6 (Each Instance 6 partition) | - | - | - | - |
| ocnaddseppaggregation | 2 | 1 | 2 | SEPP=12 (Each Instance 6 partition) | - | - | - | - |
| ocnaddadapter | 3 | 2 | 3 | MAIN=12 (Each instance 6 partition) | 3 | 2 | 3 | MAIN=12 (Each instance 6 partition) |

## 3.1.4.4 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

**Table 3-45 Resource Requirement**

| Service | 5K SCP Profile | | | | 5K Profile (SCP:3K NRF:1K SEPP:1K) | | | |
|---|---|---|---|---|---|---|---|---|
| | vCPU | Total Replica | Memory Required (Gi) | Topic Partition | vCPU | Total Replica | Memory Required (Gi) | Topic Partition |
| 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 | - |
| ocnaddgui | 2 | 1 | 1 | - | 2 | 1 | 1 | - |
| ocnadduirouter | 2 | 1 | 1 | - | 2 | 1 | 1 | - |
| zookeeper | 1 | 3 | 1 | - | 1 | 3 | 2 | - |
| ocnaddkafka | 3 | 4 | 32 | - | 3 | 4 | 32 | - |
| **Feed TYPE = CORRELATED** | | | | | | | | |
| ocnaddscpaggregation | 2 | 1 | 2 | SCP=6 (Each Instance 6 partition) | 2 | 2 | 2 | SCP=12 (Each instance 6 partition) |
| ocnaddnrfaggregation | 2 | 1 | 2 | NRF=6 (Each Instance 6 partition) | - | - | - | - |
| ocnaddseppaggregation | 2 | 1 | 2 | SEPP=12 (Each Instance 6 partition) | - | - | - | - |
| ocnaddcorrelation | 3 | 3 | 24 | MAIN=18,<feed-name>-CORRELATED=18 or as per consumer | 3 | 3 | 24 | MAIN=18,<feed-name>-CORRELATED=18 or as per consumer |
| **Feed TYPE = CORRELATED_FILTERED (Minimum 20% data filter is configured)** | | | | | | | | |

**Table 3-45 (Cont.) Resource Requirement**

| Service | 5K SCP Profile | | | | 5K Profile (SCP:3K NRF:1K SEPP:1K) | | | |
|---|---|---|---|---|---|---|---|---|
| | vCPU | Total Replica | Memory Required (Gi) | Topic Partition | vCPU | Total Replica | Memory Required (Gi) | Topic Partition |
| ocnaddfilter | 2 | 3 | 3 | MAIN=18,<feed-name>-FILTERED=18 | 2 | 3 | 3 | MAIN=18,<feed-name>-FILTERED=18 |
| ocnaddcorrelation | 2 | 3 | 16 | <feed-name>-FILTERED-CORRELATED=18 or as per consumer | 2 | 3 | 16 | <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

The ocnaddkafka and Zookeeper services use the POD anti-affinity rules. The rules are intended to support even distribution of Kafka and Zookeeper pods across the available nodes.

#### Zookeeper Service Anti-affinity Rules

Zookeeper service anti-affinity rules are listed below:

```
spec:
      affinity:
        podAntiAffinity:
          preferredDuringSchedulingIgnoredDuringExecution:
          - weight: 100
            podAffinityTerm:
              labelSelector:
                matchExpressions:
                - key: app
                  operator: In
                  values:
                  - zookeeper
              topologyKey: topology.kubernetes.io/zone
```

#### *ocnaddkafka* Service Anti-affinity Rules

*ocnaddkafka* service anti-affinity rules are listed below:

```
spec:
      topologySpreadConstraints:
        - maxSkew: 1
          topologyKey: kubernetes.io/hostname
          whenUnsatisfiable: ScheduleAnyway
          labelSelector:
            matchLabels:
              app1 : nodeselection
```

The configuration ensures the scheduler keeps equal number of pods matching the constraint on every node. However, the parameter `whenUnsatisfiable` set to `ScheduleAnyway`, helps to schedule the pod, but the scheduler prioritizes honoring the skew to not make the cluster more imbalanced.

## 3.3 Ephemeral Storage Requirements

The following table describes the Ephemeral Storage requirements for OCNADD:

Table:Ephemeral Storage

**Table 3-46 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 | - |

**Table 3-46 (Cont.) Ephemeral Storage Requirements**

| Service Name | Ephemeral Storage (Request) in Mi | Ephemeral Storage (Limit) in Mi | Description |
|---|---|---|---|
| ocnadduirouter | 500 | 500 | - |
| ocnaddexport | 1000 | 2000 | - |
| ocnaddredundancyagent | 100 | 500 | Required only when Geo Redundancy is enabled for OCNADD |
| Worker Group Services | | | |
| <app-name>-adapter | 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 3-47 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 3-48 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 3-49 Retention Period Per Topic**

| Topic Name | Retention Period |
|---|---|
| SCP | 5 Minutes |
| NRF | 5 Minutes |
| 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 3-48 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 3-48 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. The message feed feature is tested with SCP, NRF, and SEPP as the source of the message feed.



## 4.1 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 4-1 OCNADD Resource Specifications**

| Services | CPU Request Per Pod | CPU Limit Per Pod | Memory Request Per Pod (Gi) | Memory Limit Per Pod (Gi) | min Replicas | max Replicas | Paritions/ 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 | - | - |
| ocnaddkafka | 7.5 | 7.5 | 96 | 96 | 6 | 6 | - | - |

**Table 4-1 (Cont.) OCNADD Resource Specifications**

| Services | CPU Request Per Pod | CPU Limit Per Pod | Memory Request Per Pod (Gi) | Memory Limit Per Pod (Gi) | min Replicas | max Replicas | Paritions/ Retention | Topics |
|---|---|---|---|---|---|---|---|---|
| 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 4-2 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 | 135K MPS | 24 | Feed-1: 26.9 msec<br>Feed-2: 26.5 msec | Feed-1: 99.98%<br>Feed-2: 99.98% |
| SCP | Ingress Gateway (Request)<br>Egress Gateway (Request) | 45K TPS | 24 | NA | 99.98% |
| NRF | Ingress Gateway (Request)<br>Egress Gateway (Request) | 7.5K TPS | 24 | NA | 99.98% |
| SEPP | Ingress Gateway (Request)<br>Egress Gateway (Request) | 15K TPS | 24 | NA | 99.98% |

#### CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

**Table 4-3 OCNADD CPU and Memory Utilization**

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

# 4.2 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 4-4 OCNADD Resource Specifications**

| Services | CPU Request Per Pod | CPU Limit Per Pod | Memory Request Per Pod (Gi) | Memory Limit Per Pod (Gi) | min Replicas | max Replicas | Partitions/ 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 | - | - |

**Table 4-4 (Cont.) OCNADD Resource Specifications**

| Services | CPU Request Per Pod | CPU Limit Per Pod | Memory Request Per Pod (Gi) | Memory Limit Per Pod (Gi) | min Replicas | max Replicas | Paritions/ Retention | Topics |
|---|---|---|---|---|---|---|---|---|
| zookeeper | 1 | 1 | 1 | 2 | 3 | 3 | - | - |

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

### Benchmark Test Results

#### Traffic Feed Details

**Table 4-5 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 | 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 4-6 OCNADD CPU and Memory Utilization**

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

# 4.3 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 Applications**: 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 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:

| Services | CPU Request Per Pod | CPU Limit Per Pod | Memory Request Per Pod (Gi) | Memory Limit Per Pod (Gi) | min Replicas | max Replicas | Partitions/ Retention | Topics |
|---|---|---|---|---|---|---|---|---|
| ocnaddadapter | - | - | - | - | - | - | 261 | 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 4-7 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<br>Feed-2: 26.5 msec | Feed-1: 99.98%<br>Feed-2: 99.98% |
| SCP | Ingress Gateway (Request)<br>Egress Gateway (Request) | 135K TPS | 12 | NA | 99.98% |

#### CPU and Memory Utilization

The following table describes the OCNADD CPU and memory utilization:

**Table 4-8 OCNADD CPU and Memory Utilization**

| Micro-Service/ Container | Pod Count | CPU Utilization (%) | Memory Utilization (%) |
|---|---|---|---|
| kafka-broker | 11 | 46.1 | 16.3 |
| ocnaddadminservice | 1 | 0.0855 | 25.9 |
| ocnaddalarm | 1 | 0.80 | 26.8 |
| ocnaddconfiguration | 1 | 0.139 | 33.2 |
| ocnaddexport | 1 | 0.0115 | 2.18 |
| ocnaddgui | 1 | 0.000999 | 3.10 |
| ocnaddhealthmonitoring | 1 | 0.339 | 35.0 |
| ocnaddscpaggregation | 11 | 68.2 | 27.9 |
| ocnadduirouter | 1 | 0.00654 | 54.0 |
| zookeeper | 3 | 0.121 | 28.8 |

# 4.4 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 4-9 OCNADD Resource Specifications**

| Services | CPU Request Per Pod | CPU Limit Per Pod | Memory Request Per Pod (Gi) | Memory Limit Per Pod (Gi) | min Replicas | max Replicas | Paritions/ 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 4-10 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 4-11 OCNADD CPU and Memory Utilization**

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

## 4.5 Performance Benchmarking for 30K MPS PCF Traffic with HTTP2 Feed

The performance benchmarking test is performed on OCNADD with 31K MPS traffic 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 4-12 OCNADD Resource Specifications**

| Services | CPU Request Per Pod | CPU Limit Per Pod | Memory Request Per Pod (Gi) | Memory Limit 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 | - | - |
| 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 4-13 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 4-14 OCNADD CPU and Memory Utilization**

| Micro-Service/ Container | Pod Count | CPU Utilization (%) | Memory Utilization (%) |
|---|---|---|---|
| httpsfeed-adapter | 3 | 51.6 | 62.10 |

**Table 4-14 (Cont.) OCNADD CPU and Memory Utilization**

| Micro-Service/ Container | Pod Count | CPU Utilization (%) | Memory Utilization (%) |
|---|---|---|---|
| kafka-broker | 4 | 50.8 | 18.10 |
| ocnaddadminservice | 1 | 0.08 | 33.90 |
| ocnaddalarm | 1 | 0.12 | 19.30 |
| ocnaddconfiguration | 1 | 0.09 | 40.70 |
| ocnaddexport | 1 | 0.03 | 2.05 |
| ocnaddgui | 1 | 0.00 | 3.09 |
| ocnaddhealthmonitoring | 1 | 0.13 | 35.70 |
| ocnaddpcfaggregation | 2 | 61.4 | 32.90 |
| ocnadduirouter | 1 | 0.01 | 32.50 |
| zookeeper | 3 | 0.14 | 48.20 |