Oracle® Communications

Network Analytics Data Director Benchmarking Guide

Release 24.3.0.0.1
G12506-03
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Oracle Communications Network Analytics Data Director Benchmarking Guide, Release 24.3.0.0.1

G12506-03

Contents

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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 Detailed Record

What's New in This Guide

This section lists the documentation updates for Network Analytics Suite release 24.3.x.

Release 24.3.0.0.1 - G12506-03, March 2025

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

Release 24.3.0 - G12506-02, February 2025

- Removed all the references of PCF as it is not supported in this release.

Release 24.3.0 - G12506-01, November 2024

Updated the following sections:

- Performed the following updates in Resource Requirement chapter:
  - Updated Database profile for "ndbmysqld" pod in Resource Profile for Database section.
  - Added Resource Profile for Synthetic Feed For 270K MPS.
  - Updated Resource Profile for Default Deployment.
  - Updated Ephemeral Storage Requirements
- Added the following scenarios in OCNADD Benchmarking Testing chapter:
  - Performance Benchmarking with 270K MPS SCP Traffic with Synthetic Feed
  - Performance Benchmarking for 9K MPS BSF Traffic with Message Copy

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

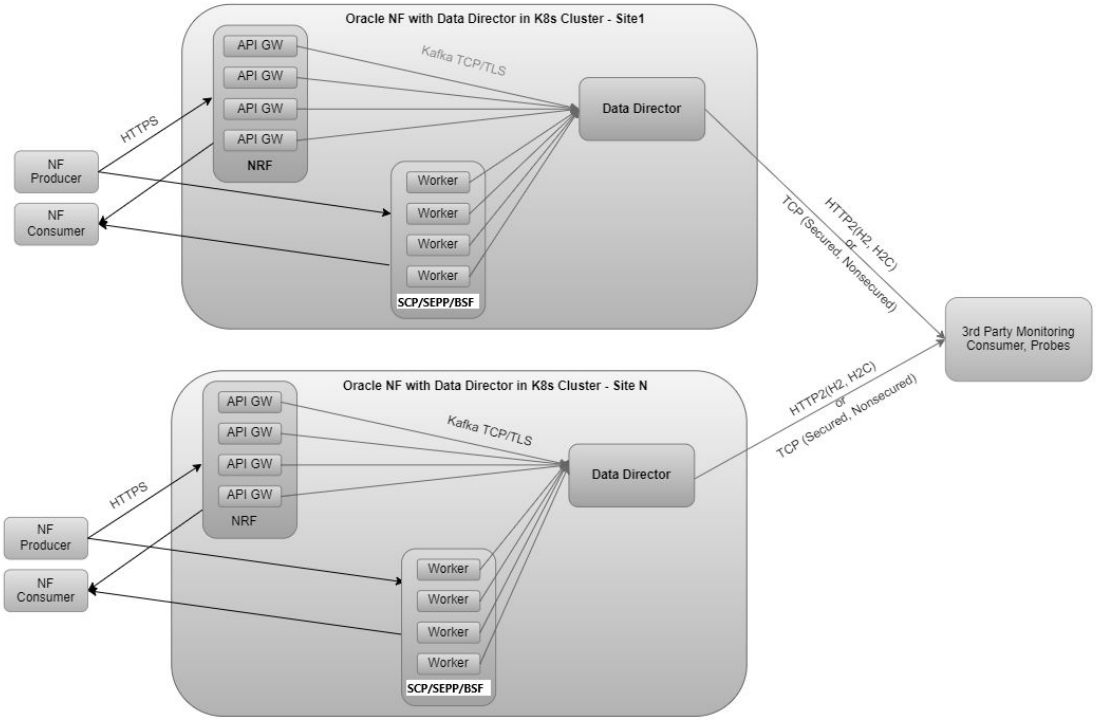
For more information about OCNADD, see the following documents:

- *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) **Kubernetes Resource Type:** StatefulSet	0	1	1	1Gi	1Gi
SQL (ndbappmysqld) **Kubernetes Resource Type:** Statefulset	2	1	1	1Gi	1Gi
MGMT (ndbmgmd) **Kubernetes Resource Type:** StatefulSet	2	1	1	1Gi	1Gi
Database (ndbmtd) **Kubernetes Resource Type:** StatefulSet	2	1	1	4Gi	4Gi
Backup Manager Service (db-backup-manager-svc) **Kubernetes Resource Type:** Deployment	1	0.1	0.1	128Mi	128Mi
Monitor Service (db-monitor-svc) **Kubernetes Resource Type:** Deployment	1	0.2	0.2	500Mi	500Mi
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	Replica	vCPU		Memory	
		Min	Max	Min	Max
Database (ndbmtd) **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 Resource Profile for Correlated Kafka Feed for 30K MPS.
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 Resource Profile for HTTP2 Feed for 135K MPS

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

Table 3-5 Resource Requirement

Service	15K NRF Profile				90KSCP Profile				30KSEPP Profile				135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile			
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
zookeeper	1	3	1		1	3	1		1	3	1		1	3	1		1	3	1	
ocnaddkafka	2	3	24		6	4	48		5	3	18		6.5	6	48		6.5	6	48	
Replicated Feed																				
ocnaddkafka	2	3	24		7	4	48		6	3	24		7.5	6	96		7.5	6	96	
WLB is ON/OFF, FILTER is OFF																				

Table 3-5 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile				30KSEPP Profile				135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile							
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddscpaggregation	-	-	-	-	2	5	4	SCP=30	-	-	-	-	2	5	4	SCP=30 (Each Instance 6 partit	2	8	4	SCP=48 (Each instance 6 partit

Table 3-5 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135KSCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition		
																ion)				ion)		

Table 3-5 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile				30KSEPP Profile				135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile							
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddnrfaggregation	2	1	2	NRF=6	-	-	-	-	-	-	-	-	2	1	2	NRF=6 (Each Instance 6 partit	-	-	-	-

Table 3-5 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile	135K Profile (SCP: 90K NRF: 15K SEPP: 30K)		135KSCP Profile														
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				

Table 3-5 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile				30KSEPP Profile				135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135KSCP Profile			
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddseppaggregation	-	-	-	-	-	-	-	-	2	2	4	SEPP=12	2	2	4	SEPP=12 (Each Instance 6 partit	-	-	-	-

Table 3-5 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile	135K Profile (SCP: 90K NRF: 15K SEPP: 30K)		135KSCP Profile														
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				

Table 3-5 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile				30KSEPP Profile				135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135KSCP Profile			
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddadapter	3	2	3	MAIN=18	3	10	16	MAIN=90	3	4	8	MAIN=36	3	15	24	MAIN=135 (Each instance 9 partit	3	15	24	MAIN=135 (Each instance 95 partit

Table 3-5 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition		
																ion)				ion)		

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

Table 3-6 Resource Requirement

SERVICE	15K NRF Profile				90K SCP Profile		30K SEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile											
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition				
Ingress Filter is ON																								

Table 3-6 (Cont.) Resource Requirement

SERVICE	15K NRF Profile				90KSCP Profile				30KSEPP Profile				135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile			
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddscpaggregation	-	-	-	-	2	6	4	SCP=36	-	-	-	-	2	6	4	SCP=36 (Each Instance 6 partit	2	9	4	SCP=54 (Each instance 6 partit

Table 3-6 (Cont.) Resource Requirement

SERVICE	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition		
																ion)				ion)		

Table 3-6 (Cont.) Resource Requirement

SERVICE	15K NRF Profile				90KSCP Profile				135KSCP Profile											
	30KSEPP Profile																			
	135K Profile (SCP:90KNRF:15KSEPP:30K)																			
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddnrfaggregation	2	2	2	NRF=12	-	-	-	-	-	-	-	-	2	2	2	NRF=12 (Each Instance 6 partit	-	-	-	-

Table 3-6 (Cont.) Resource Requirement

SERVICE	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15KSEPP: 30K)				135KSCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition		
																ion)						

Table 3-6 (Cont.) Resource Requirement

SERVICE	15K NRF Profile				90KSCP Profile				30KSEPP Profile				135K Profile (SCP: 90KNRF: 15KSEPP: 30K)				135KSCP Profile			
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddseppaggregation	-	-	-	-	-	-	-	-	2	3	2	SEPP=18	2	3	4	SEPP=18 (Each Instance 6 partit	-	-	-	-

Table 3-6 (Cont.) Resource Requirement

SERVICE	15K NRF Profile				90K SCP Profile		30K SEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				
Egress Filter is ON																				

Table 3-6 (Cont.) Resource Requirement

SERVICE	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP:90KNRF:15KSEPP:30K)				135KSCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddadapter	3	3	3	MAIN=27	3	11	3	MAIN=99	3	5	3	MAIN=45	3	16	24	MAIN=144 (Each instance 9 partit	3	16	24	MAIN=144 (Each instance 9 partit

Table 3-6 (Cont.) Resource Requirement

SERVICE	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition		
																ion)				ion)		

> **Note**
>
> - When advanced features such as Ingress filtering, Egress filtering, and Weighted load balancing are enabled simultaneously, the resource requirement for "*ocnaddadapter*" 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 Resource Profile for Synthetic Feed For 135K MPS

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

Table 3-7 Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile							
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
zookeeper	1	3	1		1	3	1		1	3	1		1	3	1		1	3	1	
ocnaddkafka	2	3	24		6	4	48		5	3	18		6.5	6	48		6.5	6	48	
Replicated Feed																				
ocnaddkafka	2	3	24		7	4	48		6	3	24		7.5	6	96		7.5	6	96	
WEIGHTED-LB is ON/OFF, L3L4 Mapping is ON/OFF and FILTER is OFF																				

Table 3-7 (Cont.) Resource Requirement

Service	15K NRF Profile				90K SCP Profile				30K SEPP Profile				135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile							
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddscpaggregation	-	-	-	-	2	5	4	SCP=30	-	-	-	-	2	5	4	SCP=30 (Each Instance 6 partit	2	8	4	SCP=48 (Each instance 6 partit

Table 3-7 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition		
																ion)				ion)		

Table 3-7 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddnrfaggregation	2	1	2	NRF=6	-	-	-	-	-	-	-	-	2	1	2	NRF=6 (Each Instance 6 partit	-	-	-	-

Table 3-7 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile	135K Profile (SCP:90K NRF:15K SEPP:30K)	135KSCP Profile											
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																io n)				

Table 3-7 (Cont.) Resource Requirement

Service	15K NRF Profile				90K SCP Profile		30K SEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddseppaggregation	-	-	-	-	-	-	-	-	2	2	4	SEPP=12	2	2	4	SEPP=12 (Each Instance 6 partit	-	-	-	-

Table 3-7 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				

Table 3-7 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddadapter	3	2	3	MAIN=12	3	8	3	MAIN=48	3	3	3	MAIN=18	3	11	6	MAIN=66 (Each instance 6 partit	3	11	6	MAIN=66 (Each instance 6 partit

Table 3-7 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile	30KSEPP Profile	135K Profile (SCP: 90K NRF: 15K SEPP: 30K)	135KSCP Profile												
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				ion)

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

Table 3-8 Resource Requirement

Service	15K NRF Profile				90K SCP Profile		30K SEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile											
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition				
Ingress Filter is ON																								

Table 3-8 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile				30KSEPP Profile				135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile							
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddscpaggregation	-	-	-	-	2	6	4	SCP=36	-	-	-	-	2	6	4	SCP=36 (Each Instance 6 partit	2	9	4	SCP=54 (Each Instance 6 partit

Table 3-8 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition		
																ion)				ion)		

Table 3-8 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile				30KSEPP Profile				135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile			
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddnrfaggregation	2	2	2	NRF=12	-	-	-	-	-	-	-	-	2	2	2	NRF=12 (Each Instance 6 partit	-	-	-	-

Table 3-8 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																io n)				

Table 3-8 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135KSCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddseppaggregation	-	-	-	-	-	-	-	-	2	3	4	SEPP=18	2	3	4	SEPP=18 (Each Instance 6 partit	-	-	-	-

Table 3-8 (Cont.) Resource Requirement

Service	15K NRF Profile				90K SCP Profile		30K SEPP Profile	135K Profile (SCP: 90K NRF: 15K SEPP: 30K)		135K SCP Profile														
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				
Egress Filter is ON																				

Table 3-8 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile				135KSCP Profile											
	30KSEPP Profile												135K Profile (SCP:90K NRF:15K SEPP:30K)							
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddadapter	3	3	3	MAIN=18	3	9	3	MAIN=54	3	3	3	MAIN=18	3	11	6	MAIN=66 (Each instance 6 partit	3	11	6	MAIN=66 (Each instance 6 partit

Table 3-8 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		135KProfile (SCP:90KNRF:15KSEPP:30K)		135KSCP Profile											
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				ion)

> **Note**
>
> - When advance OCNADD features like Ingress filtering, Egress filtering. L3-L4 and Weighted load balancing are enabled simultaneously, then resource requirement for "ocnaddadapter" 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

3.1.3.3 Resource Profile for Synthetic Feed For 270K MPS

270K MPS SCP Profile

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

Table 3-9 270K MPS SCP Profile

Services	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
zookeeper	1	3	1	-
ocnaddkafka	5	11	48	-
ocnaddscpaggregation	2	11	4	SCP=66 (Each instance 6 partition)
	MESSAGE SEQUENCING =ON and DD METADATA = ON/OFF			
ocnaddscpaggregation	2	14	48	SCP=84 (Each instance 6 partition)
ocnaddadapter(TCP)	3	21	6	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

9K MPS BSF Profile

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

Table 3-10 9K MPS BSF Profile

Services	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions
zookeeper	1	3	1	-
ocnaddkafka	2	4	24	-
ocnaddbsfaggregation	2	1	2	BSF=6
	MESSAGE SEQUENCING =ON and DD METADATA = ON/OFF			
ocnaddbsfaggregation	2	1	16	BSF=6
ocnaddconsumeradapter(TCP FEED)	3	1	4	MAIN=6
ocnaddconsumeradapter(HTT2 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

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

Services	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions
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.)

3.1.3.4 Resource Profile for 135K MPS Message Sequencing and Metadata Enrichment

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

Table 3-11 Resource Requirement

Service	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
Kafka with RF=2				
ocnaddkafka	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)				
ocnaddadapter	3	15	24	135(MAIN)
SYNTHETIC Feed (TCP CONNECTION MESSAGE and/or MESSAGE SEGEMENTATION = ON) (FILTER=OFF)				
ocnaddadapter	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)"**

3.1.3.5 Resource Profile for Aggregated Kafka Feed for 135K MPS

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

Table 3-12 Resource Requirement

Service	15K NRF Profile				90K SCP Profile		30K SEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
zookeeper	1	3	1		1	3	1		1	3	1		1	3	1		1	3	1	
ocnaddkafka	2	3	24		6	4	24		5	3	18		6.5	6	48		6.5	6	48	
Replicated Feed																				
ocnaddkafka	2	3	24		7	4	48		6	3	24		7.5	6	96		7.5	6	96	
Ingress FILTER is OFF																				

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90K SCP Profile		30K SEPP Profile	135K Profile (SCP: 90K NRF: 15K SEPP: 30K)	135K SCP Profile												
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddscpaggregation	-	-	-	-	2	5	4	SCP=30	-	-	-	-	2	5	4	SCP=30 (Each Instance 6 partit	2	8	4	SCP=48 (Each instance 6 partit

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135KSCP Profile											
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition				
																ion)				ion)				

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile				135KSCP Profile											
	30KSEPP Profile																			
	135K Profile (SCP:90KNRF:15KSEPP:30K)																			
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddnrfaggregation	2	1	2	NRF=6	-	-	-	-	-	-	-	-	2	1	2	NRF=6 (Each Instance 6 partit	-	-	-	-

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)		135KSCP Profile													
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90K SCP Profile		30K SEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddseppaggregation	-	-	-	-	-	-	-	-	2	2	4	SEPP=12	2	2	4	SEPP=12 (Each Instance 6 partit	-	-	-	-

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90K SCP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)		135K SCP Profile											
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				
Ingress Filter is ON																				

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90K SCP Profile				30K SEPP Profile				135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile							
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddscpaggregation	-	-	-	-	2	6	4	SCP=36	-	-	-	-	2	6	4	SCP=36 (Each Instance 6 partit	2	9	4	SCP=54 (Each instance 6 partit

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile	30KSEPP Profile	135K Profile (SCP: 90K NRF: 15K SEPP: 30K)	135KSCP Profile												
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				ion)

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile				30KSEPP Profile				135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135K SCP Profile							
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddnrfaggregation	2	2	2	NRF=12	-	-	-	-	-	-	-	-	2	2	2	NRF=12 (Each Instance 6 partit	-	-	-	-

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)		135KSCP Profile													
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135KSCP Profile									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddseppaggregation	-	-	-	-	-	-	-	-	2	3	4	SEPP=18	2	3	4	SEPP=18 (Each Instance 6 partit	-	-	-	-

Table 3-12 (Cont.) Resource Requirement

Service	15K NRF Profile				90KSCP Profile		30KSEPP Profile		135K Profile (SCP: 90K NRF: 15K SEPP: 30K)				135KSCP Profile											
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
																ion)				

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.

3.1.3.6 Resource Profile for Correlated Kafka Feed for 30K MPS

> **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

Table 3-13 Resource Requirement

Service	15K NRF Profile				30K SCP Profile	30K SEPP Profile	30K Profile (SCP:15K NRF:5K SEPP:10K)									
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
zookeeper	1	3	1		1	3	1		1	3	1		1	3	1	
ocnaddkafka	3	4	24		4	4	24		4	4	24		4	4	24	
EXPORT/TRACE(1K MPS rate is supported for inbound DD data) for 3 export configuration																

Table 3-13 (Cont.) Resource Requirement

Service	15K NRF Profile				30K SCP Profile		30K SEPP Profile		30K Profile (SCP:15K NRF:5K SEPP:10K)							
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddexport	3	1	24													
Replicated Feed																
ocnaddkafka	3	4	24		5	4	32		5	4	32		5	4	32	
ocnaddscpaggregation	-	-	-	-	2	2	2	SCP=12	-	-	-	-	2	1	2	SCP=6 (Each Instance 6 partition)
ocnaddnrfaggregation	2	1	2	NRF=6	-	-	-	-	-	-	-	-	2	1	2	NRF=6 (Each Instance 6 partition)

Table 3-13 (Cont.) Resource Requirement

Service	15K NRF Profile				30K SCP Profile		30K SEPP Profile	30K Profile (SCP:15K NRF:5K SEPP:10K)								
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddseppaggregation	-	-	-	-	-	-	-	-	2	2	2	SEPP=12	2	1	2	SEPP=6 (Each Instance 6 partition)
Feed TYPE = CORRELATED																

Table 3-13 (Cont.) Resource Requirement

Service	15K NRF Profile				30K SCP Profile		30K SEPP Profile	30K Profile (SCP:15K NRF:5K SEPP:10K)								
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddcorrelation	3	3	64	MAIN=18,<feed-name>-CORRELATED=18 or as per consumer	3	4	64	MAIN=24,<feed-name>-CORRELATED=24 or as per consumer	3	4	64	MAIN=24,<feed-name>-CORRELATED=24 or as per consumer	3	4	64	MAIN=24,<feed-name>-CORRELATED=24 or as per consumer
Feed TYPE = CORRELATED_FILTERED (Minimum 20% data filter is configured)																

Table 3-13 (Cont.) Resource Requirement

Service	15K NRF Profile				30K SCP Profile		30K SEPP Profile	30K Profile (SCP:15K NRF:5K SEPP:10K)								
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	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	4	3	MAIN=24, <feed-name>-FILTERED=24	2	4	3	MAIN=24, <feed-name>-FILTERED=24	2	4	3	MAIN=24, <feed-name>-FILTERED=24

Table 3-13 (Cont.) Resource Requirement

Service	15K NRF Profile				30K SCP Profile		30K SEPP Profile	30K Profile (SCP:15K NRF:5K SEPP:10K)								
	vCPU	Total Replica	Memory Required (Gi)	Topic Partitions	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition	vCPU	Total Replica	Memory Required (Gi)	Topic Partition
ocnaddcorrelation	3	3	48	<feed-name>-FILTERED-CORRELATED=18 or as per consumer	3	4	64	<feed-name>-FILTERED-CORRELATED=24 or as per consumer	3	4	64	<feed-name>-FILTERED-CORRELATED=24 or as per consumer	3	4	64	<feed-name>-FILTERED-CORRELATED=24 or as per consumer
Per Correlation Feed(1K MPS supported with 24 hours retention)																
storageadapter	3	1	16													

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

3.1.3.7 Resource Profile for Non-Oracle Network Function Feed for 5K MPS

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

Table 3-14 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
ocnaddkafka	2	3	16	
ocnaddadapter	3	1	6	MAIN=9
Replicated Feed				
ocnaddkafka	2	3	24	
ocnaddadapter	3	2	6	MAIN=18

3.1.3.8 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 3-15 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
ocnaddseppaggregation (30K)	2	2	4	4	1	2	12	SEPP
ocnaddbsfaggregation(9K)	2	2	4	4	1	1	6	BSF
ocnaddadapter	3	3	6	6	HTTP2: 2 SYNTHETIC: 1	HTTP2: 13 SYNTHETIC: 9	117	MAIN
ocnaddkafka	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 3-16 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	

Table 3-16 (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
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)	-	-	-	-
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 3-17 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								
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 3-18 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)	-	-	-	-

Table 3-18 (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
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 3-19 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	

Table 3-19 (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
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)								
ocnaddfilter	2	3	3	MAIN=18,<feed-name>-FILTERED=18	2	3	3	MAIN=18,<feed-name>-FILTERED=18

Table 3-19 (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
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 3-20 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	-

Table 3-20 (Cont.) Ephemeral Storage Requirements

Service Name	Ephemeral Storage (Request) in Mi	Ephemeral Storage (Limit) in Mi	Description
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	-
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 3-21 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 3-22 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 (in Bytes)	Rate	Avg Size (in Bytes)	Rate	Avg Size (in 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 3-23 Retention Period Per Topic

Topic Name	Retention Period
SCP	5 Minutes
NRF	5 Minutes
SEPP	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 3-22 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 3-22 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 with 135K MPS SCP Traffic with Synthetic Feed Replication

The performance benchmarking test is performed on OCNADD with 135K MPS SCP traffic (67.5K TPS with 2 trigger points):

The benchmarking results are provided below:

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

Benchmark Test Environment

The test environment specifications are listed below:

- Ingress Traffic Rate: 135K MPS
- The latency, resource utilization, and MPS is observed for the period of 3 hrs or more.
- OCNADD single site deployment with ASM disabled
- OCNADD Release 24.2.0 deployed over CNE (Bare metal) 23.3.4 version
- Kafka Replication Factor (RF): 1
- OCNADD Data Feed: TCP/TLS
- OCNADD Kafka PVC: 400GB
  For more information about PVC requirements, see Kafka PVC Storage Requirements.
- 3rd Party Application: With 2 End-points
- cnDBTier Release 24.2.0
- SCP Release 24.2.0
- SASL/SSL, enabled between NRF, SCP, SEPP and OCNADD
- CNCC Release 24.2.0
- Message Size: 3550 bytes
- Environment: CNE (Bare metal)

- Execution time: 12 Hours

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	Kafka Topic Partitions and Retention
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	-
ocnadduirouter	2	2	1	1	1	1	-
ocnaddscpaggregation	2	2	4	4	8	8	48 (SCP)/ retention.ms = 300000
ocnaddnrfaggregation	2	2	2	2	2	2	6 (NRF)/ retention.ms = 300000
ocnaddseppaggregation	2	2	4	4	3	3	6 (SEPP)/ retention.ms = 300000
ocnaddadapter	3	3	6	6	11	11	66(MAIN)/ retention.ms = 300000
ocnaddkafka	7.5	7.5	96	96	6	6	-
zookeeper	1	1	2	2	3	3	-
ocnaddgui	2	2	1	1	1	1	-

- **SCP**
  SCP Traffic: 67.5K 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	135K MPS	12	Feed-1: 26.9 msec Feed-2: 26.5 msec	Feed-1: 99.98% Feed-2: 99.98%
SCP	2 Ingress Gateway (Request) 2 Egress Gateway (Request)	135K MPS	12	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 (%)
ocnaddfilter	1	50.00%	45.80%
ocnaddnrfaggregation	2	0.06%	16.20%
ocnaddscpaggregation	6	78.50%	28.40%
ocnaddseppaggregation	3	0.06%	10.70%
feed-dd1-adapter	11	76.40%	31.70%
kafka-broker	6	81.40%	37.90%
zookeeper	3	0.13%	19.90%
feed-dd2-adapter	11	75.50%	29.80%
ocnaddadminservice	1	0.12%	32.20%
ocnaddalarm	1	0.18%	20.50%
ocnaddconfiguration	1	0.11%	41.70%
ocnaddexport	1	0.02%	2.04%
ocnaddgui	1	0.00%	2.24%
ocnaddhealthmonitoring	1	0.19%	36.30%
ocnadduirouter	1	0.01%	30.40%

4.2 Performance Benchmarking with 270K MPS SCP Traffic with Synthetic Feed

The performance benchmarking test is performed on OCNADD with 270K MPS SCP traffic (135K TPS with 2 trigger points):

The benchmarking results are provided below:

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

Benchmark Test Environment

The test environment specifications are listed below:

- Ingress Traffic Rate: 270K MPS
- The latency, resource utilization, and MPS is observed for the period of 3 hrs or more.
- OCNADD single site deployment with ASM disabled
- OCNADD Release 24.3.0 deployed over CNE (Bare metal) 23.3.4 version
- Kafka Replication Factor (RF): 1
- OCNADD Data Feed: TCP/syntheticfeed
- OCNADD Kafka PVC: 400GB
  For more information about PVC requirements, see Kafka PVC Storage Requirements.
- 3rd Party Application: With 2 End-points
- cnDBTier Release 24.3.0
- SCP Release 24.3.0
- SASL/SSL, enabled between SCP and OCNADD
- CNCC Release 24.3.0
- Message Size: 3400 bytes
- Environment: CNE (Bare metal)
- Execution time: 48 Hours

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with aggregation rules set for 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	Kafka Topic Partitions and Retention
ocnaddconfiguration	1	1	1	1	1	1	-
ocnaddalarm	1	1	1	1	1	1	-

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	Kafka Topic Partitions and Retention
ocnaddadmin	1	1	1	1	1	1	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-
ocnadduiroouter	2	2	1	1	1	1	-
ocnaddscpaggregation	2.5	2.5	4	4	11	11	66 (SCP)/ retention.ms = 300000
ocnaddadapter	3	3	6	6	21	21	126(MAIN)/ retention.ms = 300000
ocnaddkafka	5	5	48	48	11	11	-
zookeeper	1	1	2	2	3	3	-
ocnaddgui	1	1	1	1	1	1	-

- **SCP**
  SCP Traffic: 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	48	51.1 msec	99.99%
SCP	2 Ingress Gateway (Request) 2 Egress Gateway (Request)	135K MPS	12	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 (%)
ocnaddbsfaggregation	1	0.05%	19.00%
ocnaddfilter	1	0.09%	12.40%
ocnaddnrfaggregation	1	0.06%	15.50%
ocnaddscpaggregation	11	82.60%	29.40%
feed-dd1-adapter	21	85.40%	28.40%
kafka-broker	11	74.00%	19.50%
zookeeper	3	0.16%	24.20%
ocnaddadminservice	3	0.07%	33.50%
ocnaddalarm	1	1.11%	25.00%
ocnaddconfiguration	1	0.09%	43.20%
ocnaddexport	1	0.02%	2.15%
ocnaddgui	1	0.00%	3.05%
ocnaddhealthmonitoring	1	0.21%	37.90%
ocnadduirouter	1	0.01%	32.80%

4.3 Performance Benchmarking for 9K MPS BSF Traffic with Message Copy

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

- BSF Traffic: 4.5K MPS
- Enabled Gateway Features: Oauth, Overload Control, and SBI Correlation Info Header

The benchmarking results are provided below:

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

Benchmark Test Environment

The test environment specifications are listed below:

- Ingress Traffic Rate: 9K MPS
- The latency, resource utilization, and MPS is observed for the period of 3 hrs or more.
- OCNADD single site deployment with ASM disabled
- OCNADD Release 24.3.0 deployed over vCNE 24.3.0 version
- Kafka Replication Factor (RF): 1
- OCNADD Data Feed: https
- OCNADD Kafka PVC: 25GB
  For more information about PVC requirements, see Kafka PVC Storage Requirements.

- 3rd Party Application: With 1 End-point
- cnDBTier Release 24.2.1
- BSF Release 24.3.0
- SASL/SSL, enabled between BSF and OCNADD
- Message Size: 1600 bytes
- Environment: vCNE
- Execution time: 48 Hours

Benchmark Testcase Specifications

The testcase parameters are as follows:

- **OCNADD**
  - A feed is configured using the OCNADD Console with aggregation rules set for BSF, NRF, SCP, and SEPP.
  - Message Ingestion Rate: 9K MPS

  Resource Specifications:

Table 4-7 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	Kafka Topic Partitions and Retention
ocnaddconfiguration	1	1	1	1	1	1	-
ocnaddalarm	1	1	1	2	1	1	-
ocnaddadmin	1	1	1	1	1	1	-
ocnaddhealthmonitoring	1	1	1	1	1	1	-
ocnadduirouter	2	2	1	1	1	1	-
ocnaddbsfaggregation	2	2	2	2	1	1	6 (BSF)/ retention.ms=300000
ocnaddscpaggregation	2	2	4	4	1	1	-
ocnaddnrfaggregation	2	2	2	2	1	1	-
ocnaddsepaggregation	2	2	2	2	1	1	-

Table 4-7 (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	Kafka Topic Partitions and Retention
ocnaddadapter	3	3	4	4	2	2	18 (MAIN)/ retention.ms=300000
ocnaddkafka	2	2	24	24	4	4	-
zookeeper	1	1	2	2	3	3	-
ocnaddgui	2	2	1	1	1	1	-

- **BSF**
  BSF Traffic: 4.5K TPS using one trigger point.

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	9K MPS	48	115ms	Feed: 99.99%
SCP	2 Ingress Gateway (Request) 2 Egress Gateway (Request)	4.5K MPS	48	NA	99.99%

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	Pod Count	CPU Utilization (%)	Memory Utilization (%)
ocnaddfilter	1	0.128%	22.5%
ocnaddnrfaggregation	1	0.584%	18.9%
ocnaddbsfaggregation	1	23.8%	24.9%
ocnaddscpaggregation	1	0.386%	15.5%
ocnaddseppaggregation	1	0.685%	15.9%
https-feed-adapter	2	19.5%	8.43%
kafka-broker	4	25.8%	14.9%
zookeeper	3	0.115%	30.80%
ocnaddadminservice	1	0.0497%	38.7%

Table 4-9 (Cont.) OCNADD CPU and Memory Utilization

Micro-Service/ Container	Pod Count	CPU Utilization (%)	Memory Utilization (%)
ocnaddalarm	1	0.0606%	21.3%
ocnaddconfiguration	1	0.0625%	42.0%
ocnaddexport	1	0.0132%	2.12%
ocnaddgui	1	0.00134%	3.11%
ocnaddhealthmonitoring	1	0.0774%	37.70%
ocnadduirouter	1	0.00667%	34.0%