CA4MN19

CA4MN Installation and Upgrade Guide

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Summary of changes (internal)

|  |  |  |
| --- | --- | --- |
| Version | Date (YYYY-MM-DD) | Description of Change |
|  |  |  |
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|  |  |  |
|  |  |  |

Table of contents

[1 Introduction 1](#_Toc529287396)

[1.1 Overview of CA4MN19 architecture 1](#_Toc529287397)

[1.2 Installation workflow 1](#_Toc529287398)

[2 Prerequisites 1](#_Toc529287399)

[2.1 General requirements 1](#_Toc529287400)

[2.2 Storage and dimensioning requirements 1](#_Toc529287401)

[2.2.1 Storage and dimensioning requirements in Bare Metal configuration 1](#_Toc529287402)

[2.2.2 Storage and dimensioning requirements in vLab configuration 1](#_Toc529287403)

[2.3 Artifacts required to install CA4MN 1](#_Toc529287404)

[2.4 Configuration files needed to install CA4MN 1](#_Toc529287405)

[2.5 CA4MN delivery TAR file 1](#_Toc529287406)

[3 Preparing CA4MN installation 1](#_Toc529287407)

[3.1 Check general requirements 1](#_Toc529287408)

[3.2 Retrieve the required artifacts and configuration files 1](#_Toc529287409)

[3.3 Install Application Platform 1](#_Toc529287410)

[3.4 Verify SSH connection 1](#_Toc529287411)

[3.5 Set permissions of HDFS directories 1](#_Toc529287412)

[3.6 Copy CA4MN images to the deployment server and to a control node of the cluster 1](#_Toc529287413)

[3.7 Updating the customizedValuesca4mn YAML file 1](#_Toc529287414)

[4 Installing CA4MN core components 1](#_Toc529287415)

[4.1 Creating dummy configMaps 1](#_Toc529287416)

[4.2 Installing or Upgrading CA4MN 1](#_Toc529287417)

[4.2.1 Installing CA4MN 1](#_Toc529287418)

[4.2.2 Upgrading CA4MN 1](#_Toc529287419)

[4.3 Deploying metadata set 1](#_Toc529287420)

[5 Installing CA4MN ingesters 1](#_Toc529287421)

[5.1 Installing CA4MN CM ingester 1](#_Toc529287422)

[5.2 Installing CA4MN eNB ingesters 1](#_Toc529287423)

[5.3 Installing CA4MN MME ingesters 1](#_Toc529287424)

[5.3.1 Creating CA4MN MME ingester configuration file (customizedMMEIngestValue.yaml) 1](#_Toc529287425)

[5.3.2 Running the helm install command for CA4MN MME ingester 1](#_Toc529287426)

[6 Post-installation tasks 1](#_Toc529287427)

[6.1 Checking the logs 1](#_Toc529287428)

[6.2 Checking that CA4MN is running 1](#_Toc529287429)

[7 Appendices 1](#_Toc529287430)

[7.1 Appendix A: Configuration files required to install CA4MN 1](#_Toc529287431)

[7.1.1 CA4MN Central profile (ca4mnCentral.yaml file) 1](#_Toc529287432)

[7.1.2 CA4MN Edge profile (ca4mnEdge.yaml file) 1](#_Toc529287433)

[7.1.3 customizedValues4ca4mn yaml files (customizedValues4ca4mnCentral.yaml file and customizedValues4ca4mnEdge.yaml) 1](#_Toc529287434)

[7.2 Appendix B: Configuration files required to install ingesters 1](#_Toc529287435)

[7.2.1 CA4MN CM ingester configuration file (values-customer.yaml) 1](#_Toc529287436)

[7.3 Appendix C : CA4MN Installation durations 1](#_Toc529287437)

[8 References 1](#_Toc529287438)

[9 Glossary 1](#_Toc529287439)

List of figures

[Figure 1 CA4MN19 architecture, Streaming Analytics Edge deployment case 1](#_Toc529287440)

[Figure 2 CA4MN19 architecture, Central deployment case 1](#_Toc529287441)

List of tables

[Table 1 Minimal configuration on Bare Metal (4 nodes) 1](#_Toc529287442)

[Table 2 Standard configuration on Bare Metal 1](#_Toc529287443)

[Table 3 Minimal configuration on vLab 1](#_Toc529287444)

[Table 4 Minimal configuration on vLab: cinder sizing 1](#_Toc529287445)

[Table 5 Standard configuration on vLab 1](#_Toc529287446)

[Table 6 Standard configuration on vLab: cinder sizing 1](#_Toc529287447)

[Table 7 CA4MN artifacts needed in installation 1](#_Toc529287448)

[Table 8 CA4MN configuration files for installation 1](#_Toc529287449)

[Table 9 Contents of CA4MN delivery TAR file 1](#_Toc529287450)

[Table 10 Components of the CA4MN Central profile 1](#_Toc529287451)

[Table 11 Components of the CA4MN Edge profile 1](#_Toc529287452)

[Table 12 CA4MN Installation durations 1](#_Toc529287453)

[Table 13 Terms and abbreviations used in this document 1](#_Toc529287454)

# Introduction

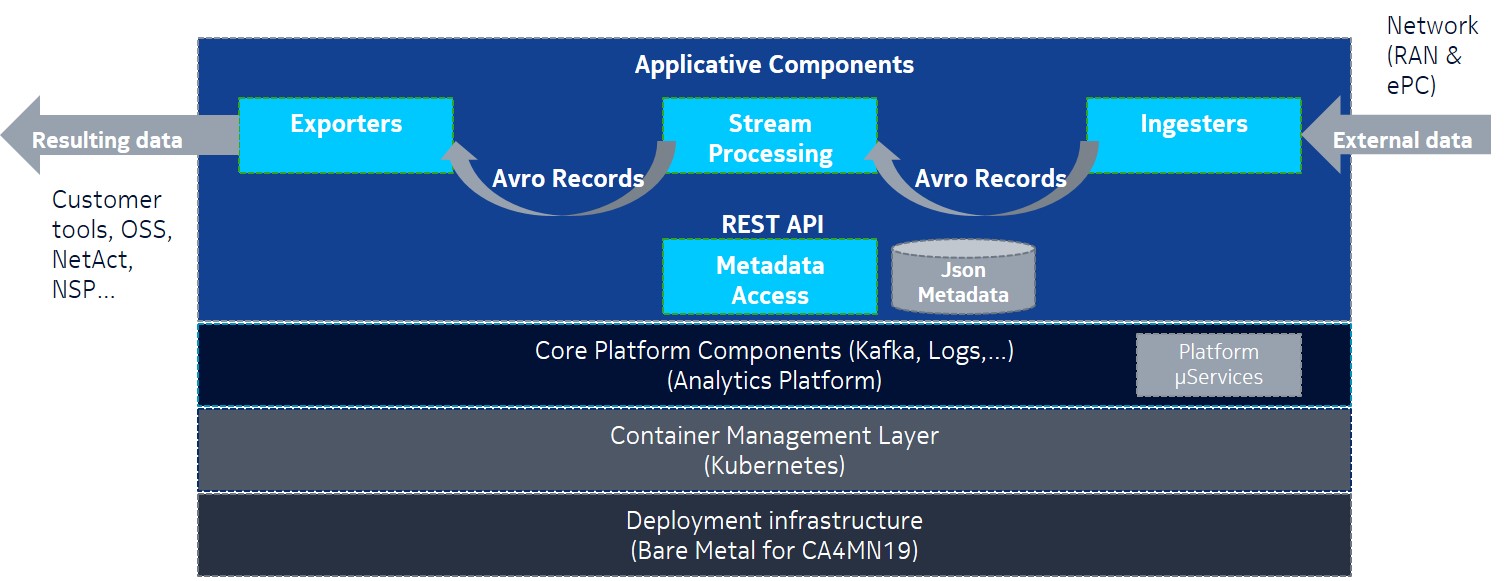
This document provides instructions for installing Cognitive Analytics for Mobile Networks (CA4MN) for version CA4MN19.

## Overview of CA4MN19 architecture

CA4MN is built on Analytics Platform (AP) that provides a platform as a service and is designed around containerized micro services. AP hides the underlying operating system. Refer to Analytics Platform Installation Guide [[1]](#_References) for more details on AP.

The following figure summarizes the architecture of CA4MN19 which focuses on the Edge case and is deployed on Bare Metal infrastructure. The Edge deployment corresponds to situations where user needs only data ingestion and possible correlation of data sources. Therefore, whole CA4MN product is not installed in an Edge deployment: only some parts of CA4MN components are installed.

1. CA4MN19 architecture, Streaming Analytics Edge deployment case



Deployment infrastructure

(Bare Metal for CA4MN19)

Container Management Layer

(Kubernetes)

Core Platform Components (Kafka, Logs,…)

(Analytics Platform)

Applicative Components

Ingesters

Stream

Processing

Exporters

External data

Resulting data

Avro Records

Avro Records

Json

Metadata

Metadata

Access

REST API

Platform

µServices

Network (RAN & ePC)

Customer tools, OSS, NetAct, NSP…

The ingesters are interfaced with the data sources and convert the data received into CA4MN internal data format to ensure the independency of CA4MN from data formats used by the different data sources. Ingesters push the converted records to message bus (Kafka). Several ingesters can be used:

* Nokia NPC PCMD ingesters
* Nokia eNB PCMD ingester (L3DC)
* Nokia MME PCMD ingesters
* Nokia NPC ingesters
* Nokia 5G gNB CU / DU ingesters.

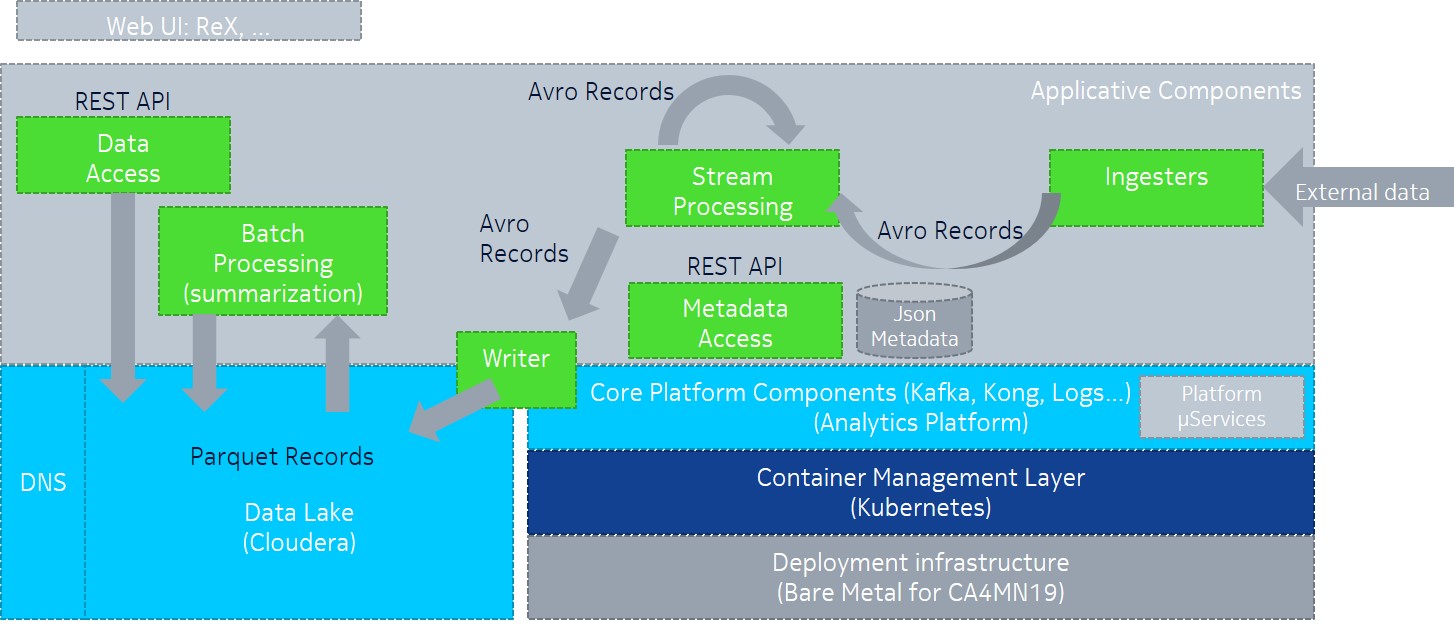
The streaming process oversees the correlation process within CA4MN. The correlation is driven by different metadata according to the different correlations (4G-5G, eNB-MME, CU-DU correlations, etc.)

In CA4MN 19, the Kafka message bus is used as the data sink for all data ingestion and as a data source for correlation, topology and data exports. The different correlation tasks store their results in the message bus and the next correlation uses the output as its source. The message bus functionality is provided by Analytics Platform (AP).

The correlated data can be exported to an external file server, an external tool.

Contrary to the Edge case, the whole CA4MN product is installed in the Central deployment case. Therefore, compared to the Edge case, there are additional microservices provided in the Central case, such as a summarization microservice, data access microservices that enable to support a Web UI.

1. CA4MN19 architecture, Central deployment case



The summarization microservice reads raw data records from a Hadoop data lake (HDFS), applies batch processing (filter, calculate, aggregate according to spatial or temporal dimensions, etc.) and stores the computed “summarized” data in the data lake. Such service enables to compute specialized measures (e.g. Busy Hour calculations, last values), to aggregate data according to an hour, a day, a week, etc. so that it eases both long-term storage of this computed data and reporting functions. The summarization service is metadata driven.

A writer microservice (which is an AP microservice) oversees the data persistency (from Kafka message bus to the data lake).

Data Access microservices are multiple microservices offering REST API for providing services either to other microservices or for support in a Web UI, such as Record Explorer.

Record Explorer (ReX) is a Web graphical interface provided by CA4MN for enabling the user to query the data from the data lake. Complex queries (with filters) can be executed. ReX calls a Data Access REST API to execute queries.

1. This document provides instructions for both Edge and Central deployments cases.

## Installation workflow

CA4MN Installation workflow is the following:

1. Pre-installation steps:
2. Check all the general requirements (network, storage, dimensioning requirements) for both Analytics Platform and CA4MN
3. Retrieve the required artifacts and configuration files.
4. Install Analytics Platform (not in the scope of this document - refer to Analytics Platform Installation Guide [[1]](#_References)):
5. Install data lake (if a data lake is required)
6. Install the container monitoring system (BCMT)
7. Copy the CA4MN\_override\_AP\_values\_<configuration>.yaml file on a control node (beware that this step is not in AP installation guide)
8. Install the components of Analytics Platform
9. Check that AP is correctly installed
10. Prepare CA4MN installation
11. Verify SSH connection
12. Set permissions of HDFS directories
13. Copy CA4MN images to the deployment server and to a control node of the cluster
14. Copy and extract CA4MN delivery TAR file on a control node
15. Update the customized files
16. Install metadata files
17. Install CA4MN core components
18. Create dummy configMaps
19. Install CA4MN core components
20. Deploy metadata sets
21. Install CA4MN ingesters (CM / eNB / MME / NPC / 5G according to required ingesters)
22. Check CA4MN is running

# Prerequisites

This chapter provides information on the prerequisites of the CA4MN19 installation.

## General requirements

* Ensure to have the list of all the cluster nodes (control nodes, worker nodes).
* CA4MN is installed on top of Analytics Platform. Therefore, before installing CA4MN components, you must have completed the installation of the Analytics Platform as described in Analytics Platform Installation Guide [[1]](#_References).
* Beware that after installing the container monitoring system (Kubernetes) and BEFORE installing the components of Analytics Platform, CA4MN\_override\_AP\_values\_<configuration>.yaml configuration file has to be copied on the control node used for the installation. This CA4MN\_override\_AP\_values\_<configuration>.yaml file is the optional customer\_override.yaml file used in the umbrella helm chart deployment of Analytics Platform components:

helm install --name apaas --timeout 1500 -f override\_values\_<config\_type>.yaml -f aPaaS\_config.yaml -f dlk\_config.yaml **<-f customer\_override.yaml>** ../deployment-platform-<version>.tar.gz

* The installation engineer must have administration experience with Linux operating systems.
* A machine, either a physical machine or a Virtual Machine (VM) is used as a deployment server. This machine is not considered as a cluster node. The software requirements for the deployment server are:
* The OS must be RHEL 7.5 or later
* Docker 1.13 or later.
* Nokia recommends using the same deployment server as the one used to deploy Analytics Platform.

## Storage and dimensioning requirements

This section provides more information about the storage and dimensioning requirements for installing CA4MN19.

The CA4MN\_override\_AP\_values\_<configuration>.yaml file is defined from these requirements in order to adapt resources and to install Analytics Platform with the required resources. For each configuration type (minimum or standard configuration in Bare Metal, lab, minimum or standard configuration in vLab), a specific CA4MN\_override\_AP\_values\_<configuration>.yaml file has been created. It enables to install Analytics Platform with resources fitted to the specific configuration type instead of using Analytics Platform default values.

### Storage and dimensioning requirements in Bare Metal configuration

1. Minimal configuration on Bare Metal (4 nodes)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| VM Role | # instances | # vCPUs  per instance | RAM (GB)  per instance | Total Volume / Snapshots (GB)  per instance | File systems mini |
| Deployer | 1 | 32 | 128 | 2\*600 (RAID1) |  |
| Control / Worker / Edge nodes | 3 | 80[[1]](#footnote-1) | 256 | DL360:  6\*600 or 4\*900 (2 disks in RAID1, others in RAID0)  Blades:  2\*1.92TB SATA 6G MU SFF (2.5 in) SC 3 yr warranty DS firmware SSD in RAID1 | /boot 2GB  / 600GB  glusterfs 900 GB |

1. Standard configuration on Bare Metal

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| VM Role | # instances | # vCPUs  per instance | RAM (GB)  per instance | Total Volume / Snapshots (GB)  per instance | File systems mini |
| Deployer | 1 | 32 | 128 | 2\*600 (RAID1) |  |
| Control nodes | Min 3[[2]](#footnote-2) | 80 | 256 | DL360:  6\*600 (2 disks in RAID1, others in RAID0) | /boot 2GB  / 600GB  glusterfs 2400GB |
| Edge nodes | Min 2[[3]](#footnote-3) | 80 | 256 | DL360:  6\*600 (2 disks in RAID1, others in RAID0) | /boot 2GB  / 600GB  glusterfs 2400GB |
| Worker nodes | Min 3[[4]](#footnote-4) | 80 | 256 | DL360:  6\*600 (all disks in RAID1) | /boot 2GB  / 1800GB |

### Storage and dimensioning requirements in vLab configuration

1. Minimal configuration on vLab

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| VM Role | Profile | # instances | # vCPUs  per instance | RAM (GB)  per instance | Total Volume / Snapshots (GB)  per instance |
| Deployer |  | 1 | 4 | 16 | 80 |
| Control nodes |  | 3 | 4 | 16 | 40 |
| Worker/edge nodes | Lab | 10[[5]](#footnote-5) | 8 | 32 | 40 |
| Worker/edge nodes | Mini (edge) | 18 | 8 | 32 | 40 |
| Worker/edge nodes | Mini (central+edge) | 22 | 8 | 32 | 40 |

1. Minimal configuration on vLab: cinder sizing

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cinder Name | Size (GB) | Volume Type | Purpose | Associated VM |
|  | 20 |  | for each controller | controller |
|  | 50 |  | for each worker / Edge | Worker / Edge |
| Extra cinder space | 1024 (500 for Lab) |  | dynamic pvc assignment to workers  (total size for all) | All workers |

1. Standard configuration on vLab

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| VM Role | # instances | # vCPUs  per instance | RAM (GB)  per instance | Total Volume / Snapshots (GB)  per instance |
| Deployer | 1 | 8 | 32 | 80 |
| Control nodes | Min 3[[6]](#footnote-6) | 8 | 32 | 40 |
| Edge nodes | Min 2[[7]](#footnote-7) | 8 | 32 | 40 |
| Worker nodes | Min 2[[8]](#footnote-8) | 8 | 32 | 40 |

1. Standard configuration on vLab: cinder sizing

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cinder Name | Size (GB) | Volume Type | Purpose | Associated VM |
|  | 20[[9]](#footnote-9) |  | for each controller | controller |
|  | 50[[10]](#footnote-10) |  | for each worker / Edge | Worker / Edge |
| Extra cinder space | 1024[[11]](#footnote-11) |  | dynamic pvc assignment to workers  (total size for all) | All workers |

## Artifacts required to install CA4MN

The artifacts needed for CA4MN installation are in the Nokia Software Artifactory.

They are listed in the following table. The ingesters images have to be selected according to the ingesters that will be installed for the customer. According to the customer case, all or only some ingesters are to consider.

1. CA4MN artifacts needed in installation

|  |  |
| --- | --- |
| Artifact | Description/Purpose |
| ca4mn-master-<version>.tgz or ca4mn-<version>.tar.gz ??? | Bundle containing the docker images and the master umbrella chart for ca4mn |
| ca4mnDelivery\_<version>.tar.gz (Open point called ca4mnDelivery\_<version>.tar.gz or ca4mn-installation-<version>.tar.gz ?) | Package containing YAML configuration files and CA4MN installation scripts |
| CA4MN\_override\_AP\_values\_<configuration>.yaml  For each configuration, a specific file has been created:   * ca4mn\_override\_AP\_values\_baremetal\_mini.yaml * ca4mn\_override\_AP\_values\_baremetal\_standard.yaml * ca4mn\_override\_AP\_values\_vlab\_mini.yaml * ca4mn\_override\_AP\_values\_vlab\_lab.yaml * CA4MN\_override\_AP\_values\_vlab\_standard.yaml | Configuration file defining dimensioning aspects of the cluster specific to customer. For each configuration type (minimum or standard configuration in Bare Metal; lab, minimum or standard configuration in vLab), a specific file has been created.  This file is used during Analytics Platform components installation in order to override Analytics Platform default values with values fitted to the specific configuration type and to CA4MN needs. Refer to section 2.2 for more details about dimensioning. |
| com-nokia-ca4mn-4G-pcmd-sys-rest-<version>.zip | Metadata file |
| com-nokia-ca4mn-common-sys-rest-<version>.zip | Metadata file |
| ingest-master-<version>.tgz | Images for ingesters installation |

## Configuration files needed to install CA4MN

Configuration files used for CA4MN installation:

1. CA4MN configuration files for installation

|  |  |
| --- | --- |
| File | Description/Purpose |
| ca4mnCentral.yaml | Provided in ca4mn delivery TAR (see section 2.3). More details in section 7.1.1. |
| ca4mnEdge.yaml | Provided in ca4mn delivery TAR (see section 2.3). More details in section 7.1.2. |
| customizedValues4ca4mnCentral.yaml | Provided in ca4mn delivery TAR (see section 2.3). |
| customizedValues4ca4mnEdge.yaml | Provided in ca4mn delivery TAR (see section 2.3) |
| values-customer.yaml | Used to install ingesters. More details in section 7.2.1. |
| CA4MN\_override\_AP\_values\_<configuration>.yaml  For each configuration, a specific file has been created:   * ca4mn\_override\_AP\_values\_baremetal\_mini.yaml * ca4mn\_override\_AP\_values\_baremetal\_standard.yaml * ca4mn\_override\_AP\_values\_vlab\_mini.yaml * ca4mn\_override\_AP\_values\_vlab\_lab.yaml   CA4MN\_override\_AP\_values\_vlab\_standard.yaml | Used to install Analytics Platform components. More details in section 2.3. |

## CA4MN delivery TAR file

The CA4MN TAR file corresponding to the delivery (Ca4mnDelivery\_<date>.tar.gz) contains YAML configuration files and scripts as described below:

1. Contents of CA4MN delivery TAR file

|  |  |  |
| --- | --- | --- |
| File/Script | Location | Description |
| ca4mnCentral.yaml | /nokia/ca4mn directory | File to install CA4MN Central product |
| ca4mnEdge.yaml | /nokia/ca4mn directory | File to install CA4MN Edge product |
| customizedValues4ca4mnCentral.yaml | /nokia/ca4mn directory | File that must be customized with the values related to the cluster on which CA4MN Central product will be installed. |
| customizedValues4ca4mnEdge.yaml | /nokia/ca4mn directory | File that must be customized with the values related to the cluster on which CA4MN Edge product will be installed. |
| uploadFiles.sh | /nokia/ca4mn/metadata/ directory | Script that enables to upload metadata into CA4MN. |
| activateFiles.sh | /nokia/ca4mn/metadata/ directory | Script for activating metadata in CA4MN. |
| checkActivatedFiles.sh | /nokia/ca4mn/metadata/ directory | Script for checking which metadata have been activated in CA4MN |
| logExportLauncher.sh | /nokia/ca4mn/logExport/ directory | Script for exporting traces of CA4MN components from the cluster.   * Script usage: logExportLauncher.sh |

# Preparing CA4MN installation

This chapter describes the steps to take as preparation for installing CA4MN on top of the Analytics Platform.

## Check general requirements

Verify the hardware and software resources of each cluster node according to the CA4MN requirements section (section 2.1).

For Analytics Platform network, storage, dimensioning requirements to check, refer to Analytics Platform Installation Guide [[1]](#_References).

## Retrieve the required artifacts and configuration files

The artifacts that are needed for installing ca4mn must be put on a machine that has access to the Nokia Software artifactory. Refer to section 2.3 for the list of artifacts needed for installing CA4MN.

The versions of the artifacts are indicated in CA4MN Release Note [[3]](#_References).

For Analytics Platform artifacts, refer to Analytics Platform Installation Guide [[1]](#_References)

## Install Application Platform

|  |  |
| --- | --- |
|  | **Caution**: Beware that after the installation of container monitoring system (Kubernetes) and before installing the components of Analytics Platform, the CA4MN\_override\_AP\_values\_<configuration>.yaml configuration file has to be copied on the control node used for installing.  This CA4MN\_override\_AP\_values\_<configuration>.yaml file corresponds to the optional customer\_override.yaml file used in the helm umbrella chart deployment of Analytics Platform components[[12]](#footnote-12). |

Refer to Analytics Platform Installation Guide [[1]](#_References).

## Verify SSH connection

Ensure you can connect as root on a control node of the cluster.

## Set permissions of HDFS directories

1. This permission setting concerns only cases where a data lake has been installed (Central deployment case).

For the summarization component (if a data lake has been installed, meaning the Central deployment case), it is necessary that the following HDFS directories have write permission for everyone:

* /apps (HDFS directory where tables are stored)
* /rtna (HDFS directory where SQL templates are stored)
* /user (to be able to write old HDFS files into Trash).

Therefore, we set the permissions of the directories:

1. Connect as root on a data lake control node
2. Enter the following commands:

su - hdfs

hdfs dfs -mkdir /rtna

hdfs dfs -chmod 777 /apps

hdfs dfs -chmod 777 /rtna

hdfs dfs -chmod 777 /user

## Copy CA4MN images to the deployment server and to a control node of the cluster

This section aims to import the CA4MN images in the local registry of the deployment server and to copy the artifacts to one of the cluster control nodes:

1. Copy the CA4MN artifacts (refer to section 2.3) including ingester artifacts to the deployment server.
2. Connect to the deployment server as root user and copy the artifacts to a ca4mn folder using the following commands:

mkdir /root/ca4mn

cp ca4mnDelivery\_<date>.tar.gz /root/ca4mn/.

cp ca4mn-<version>.tar.gz /root/ca4mn/.

cp com-nokia-ca4mn-4G-pcmd-sys-rest-<version>.zip /root/ca4mn/.

cp com-nokia-ca4mn-common-sys-rest-<version>.zip /root/ca4mn/.

cp ingest-master-<version>.tgz /root/ca4mn/. (1 or several ca4mn-ingestXXXXXXXXX-<version>.tgz ????????)

1. Move to /root/ca4mn and extract the installation package:

cd /root/ca4mn

tar xvf ca4mnDelivery-<version>.tar.gz

tar xvf ingest-master-<version>.tgz (from /root/ca4mn or /root/ca4mn/ingest ???)

1. Move to /root/ca4mn/script and execute the cluster\_install\_images script using the following command format:

cd /root/ca4mn/script

./cluster\_install\_images --pass "<admin\_user\_password>" --user admin --tar ../ca4mn-<version>.tar.gz

|  |  |
| --- | --- |
|  | **Notice**: The <admin\_user\_password> was set during the user creation for container monitoring (refer to Analytics Platform Installation Guide [[1]](#_References)) |

1. From the deployment server, copy the artifacts to one of the cluster control nodes using the following commands:

cd /root/ca4mn

chmod 600 /root/ .ssh/id\_rsa

scp ca4mn-<version>.tar.gz <ip control node>:/root/

scp ca4mnDelivery-<version>.tar.gz <ip control node>:/root/

scp com-nokia-ca4mn-4G-pcmd-sys-rest-<version>.zip <ip control node>:/root/

scp com-nokia-ca4mn-common-sys-rest-<version>.zip <ip control node>:/root/

scp ingest-master-<version>.tgz <ip control node>:/root/

1. Connect to the control node from the deployment server using the following command:

ssh <ip control node>

1. Create a working directory and extract the archive containing the installation scripts using the following commands:

mkdir /root/ca4mn

cp /root/ca4mn-<version>.tar.gz /root/ca4mn/.

cp /root/ca4mnDelivery-<version>.tar.gz /root/ca4mn/.

cp /root/ingest-master-<version>.tgz gz /root/ca4mn/. (or an ingest sub dir ???°

cd /root/ca4mn

tar xvf ca4mnDelivery-<version>.tar.gz **(or tar zxvf ca4mnDelivery\_<version>.tar.gz ,????)**

tar xvf ca4mn-<version>.tar.gz

cp /root/ com-nokia-ca4mn-4G-pcmd-sys-rest-<version>.zip /root/ca4mn/metadata

cp /root/ com-nokia-ca4mn-common-sys-rest-<version>.zip /root/ca4mn/metadata

**(to check or:**

**cp /root/ com-nokia-ca4mn-4G-pcmd-sys-rest-<version>.zip /root/nokia /ca4mn/metadata**

**cp /root/ com-nokia-ca4mn-common-sys-rest-<version>.zip /root/nokia/ca4mn/metadata )**

**TO CHECK : /root/nokia/ca4mn/ or /root/ca4mn/ ????**

**cd** /root/ca4mn**/ingest ????**

tar xvf ingest-master-<version>.tgz (from /root/ca4mn or /root/ca4mn/ingest ???)

|  |  |
| --- | --- |
|  | **Notice**: All the instructions that will be executed in sections 3.7 and **Erreur ! Source du renvoi introuvable.**4 will be executed from the control node on which the artifacts have been copied and the user will log as root used on the control node. |

## Updating the customizedValuesca4mn YAML file

The following actions will be done on the **control node of the cluster** on which the artifacts have been copied (refer to section 3.6), the user is logged as root user on this control node.

Update the customizedValuesca4mn YAML file located in /root/nokia/ca4mn/ or /root/ca4mn directory according to the installation to do (Central / Edge):

* customizedValues4ca4mnCentral.yaml in CA4MN Central case
* customizedValues4ca4mnEdge.yaml in CA4MN Edge case

1. go to the /root/nokia/ca4mn/ directory. (TO CHECK exact path)

cd /root/nokia/ca4mn/

1. Edit customizedValues4ca4mnCentral.yaml or customizedValues4ca4mnEdge.yaml according to your case.
2. In the customizedValuesca4mn YAML file, all tags marked @<> must be replaced as indicated in the file.
3. Check also all the other fields to fit the desired dimensioning.

OPEN POINT: Do we need to deliver predefined dimensioning (like small, medium, large, Xlarge, ....) and so keep on the customizedValues4ca4mn.yaml only the ones having the tags @<> ?

# Installing CA4MN core components

## Creating dummy configMaps

In case of Edge profile installation: Temporary Workaround to apply until a fix has been provided at CA4MN component side.

To install CA4MN with the Edge profile (without data lake), dummy configMaps must be created.

* Run the following commands on a control node as the root user:

kubectl create configmap apaas-cdlk-hdfs

kubectl create configmap apaas-cdlk-hive

kubectl create configmap apaas-spark-history

## Installing or Upgrading CA4MN

According to the case, you launch either the installation of CA4MN (first installation or installation from scratch of CA4MN) or the upgrade of CA4MN (when CA4MN has already been installed).

If you install CA4MN, go to section 4.2.1.

If you upgrade CA4MN, go to section 4.2.2.

### Installing CA4MN

|  |  |
| --- | --- |
|  | **Caution**: Follow this section in case of first installation of CA4MN or installation from scratch of CA4MN. |

To launch the installation of CA4MN, execute the following command on a control node as the root user:

cd /root/nokia/ca4mn

nohup helm install --name ca4mn -f <ca4mnProfile> -f customizedValues4<ca4mnProfile>.yaml /root/ca4mn/ca4mn-master-<version>.tgz &

where <ca4mnProfile> is either ca4mnEdge or ca4mnCentral

CHECK the path of the repo of ca4mn master

For example:

nohup helm install --name ca4mn -f ca4mnCentral.yaml -f customizedValues4ca4mnCentral.yaml /root/ca4mn/ca4mn-master-<version>.tgz &

### Upgrading CA4MN

|  |  |
| --- | --- |
|  | **Caution**: Follow this section ONLY in case of upgrade of CA4MN (CA4MN was already installed and a software upgrade is needed). |

To launch the upgrade of CA4MN, execute the following command on a control node as the root user:

cd /root/nokia/ca4mn

nohup helm upgrade ca4mn -f <ca4mnProfile> -f customizedValues4<ca4mnProfile>.yaml /root/ca4mn/ca4mn-master-<version>.tgz &

where <ca4mnProfile> is either ca4mnEdge or ca4mnCentral

CHECK the path of the repo of ca4mn master

For example:

nohup helm upgrade ca4mn -f ca4mnCentral.yaml -f customizedValues4ca4mnCentral.yaml /root/ca4mn/ca4mn-master-<version>.tgz &

## Deploying metadata set

1. Upload all metadata zip files into CA4MN product. Run the following commands on the control node used in chapter 3 as the root user:

cd /root/nokia/ca4mn/metadata

./upload.sh <metadata zip file>

The upload.sh command must be launched for each metadata zip file available. In other terms, launch as many ./upload.sh <metadata zip file> command as there are available metadata zip files.

Check that status is equal to 200.

For example:

./upload.sh com-nokia-ca4mn-common-sys-rest-<version>.zip

{"message":"Archive file com-nokia-ca4mn-common-sys-rest-<version>.zip saved into repository","status":200}

./upload.sh com-nokia-ca4mn-4G-pcmd-sys-rest-<version>.zip

{"message":"Archive file com-nokia-ca4mn-4G-pcmd-sys-rest-<version>.zip saved into repository","status":200}

1. Activate the metadata in CA4MN by triggering the activate.sh command from the same directory (/root/nokia/ca4mn/metadata) of the control node. You must provide the complete list of metadata zip files to be activated (separated by a space) as argument of the command. Check that status is equal to 200:

cd /root/nokia/ca4mn/metadata

./activateFiles.sh <list of metadata zip files to activate>

For example:

./activateFiles.sh com-nokia-ca4mn-common-sys-rest-<version>.zip com-nokia-ca4mn-4G-pcmd-sys-rest-<version>.zip

Following file(s) will be activated (com-nokia-ca4mn-4G-pcmd-sys-rest-<version>.zip,com-nokia-ca4mn-common-sys-rest-<version>.zip)

{"message":"Archive files ['com-nokia-ca4mn-4G-pcmd-sys-rest-<version>.zip', 'com-nokia-ca4mn-common-sys-rest-<version>.zip'] activated","status":200}

# Installing CA4MN ingesters

This chapter describes the installation of CA4MN ingesters (CM, eNB, MME, NPC, 5G). All required ingesters can be installed using ingest-master.

Ingesters images have been copied on deployment server and on the control node of the cluster used in the previous steps of the installation (refer to section 3.6).

To install the CA4MN ingesters, modify values-customer.yaml file according to the information related to the cluster where the installation is done and to the ingesters that have to be installed, and run the helm install command for the ingest-master tgz file

## Update values-customer.yaml file

First, values-customer.yaml file has to be updated. Refer to appendix 7.2 for more details on this file.

Connect on the control node used in chapter 3 as the root user:

cd /root/nokia/ca4mn/ingest-master (or /root/ingest-master) or ????

Update the values-customer.yaml file according to the information related to the cluster where the installation is done and to the ingesters that have to be installed.

## Helm install the ingesters

In the /root/nokia/ca4mn directory of the control node, launch the helm install command for ingest-master tgz file.

cd /root/nokia/ca4mn/ingest-master (or /root/ingest-master)

helm install --name ingest -f values-customer.yaml ingest-master-<version>.tgz

To check that the ingester helm has been deployed, verify that status is DEPLOYED for ingest (where ingest is the argument of –name in helm install command):

helm list | grep ingest

# Post-installation tasks

This chapter describes post-installation tasks that must be done.

## Checking the logs

Check the deployments logs by launching the following command on the control node previously used:

kubectl logs -n kube-system $(kubectl get pod -n kube-system | awk '/tiller/{print $1}')

## Checking that CA4MN is running

Use pilot script to check that CA4MN is running =🡺 will require to add the HealthCheck script and files to ca4mnDelivery\_<version>.tar.gz

For Verizon instead of pilot script: provide the exact command (check exporter and ingester pods only)

# Appendices

List of all the appendices for this chapter are listed below:

Appendix A: Configuration files required to install CA4MN

Appendix B: Configuration files required to install ingesters

Appendix C : CA4MN Installation durations

## Appendix A: Configuration files required to install CA4MN

This appendix describes the configuration files required to install CA4MN.

### CA4MN Central profile (ca4mnCentral.yaml file)

The ca4mnCentral.yaml file is the configuration file to be used for installing CA4MN Central product (all components of CA4MN).

The following components are installed with the ca4mnCentral profile:

1. Components of the CA4MN Central profile

|  |  |
| --- | --- |
| Component | Description |
| metarest | Deploys CA4MN metadata. |
| npc | Performs 4G correlation (eNB/MME correlation). |
| streaming | Computes the measure at 1min (or 5min) based on the metadata definition. |
| Kafka-connect-worker | Writes CA4MN data in the data lake. |
| sumrzmr | Summarization metadaraReader component, which creates the Kafka topics (and pushes the CA4MN avro schemas in the schema registry) and the summarization jobs (to compute measures 15min, hourly, daily, weekly, monthly period) based on the deployed metadata. |
| rex-master | GUI (Record Explorer) for CA4MN product. |

### CA4MN Edge profile (ca4mnEdge.yaml file)

The ca4mnEdge.yaml file is the configuration file to be used for installing CA4MN Edge product. CA4MN Edge product focuses on ingestion and correlation and does not provide the CA4MN GUI (Record Explorer), nor the data lake.

The following components are installed with the ca4mnEdge profile:

1. Components of the CA4MN Edge profile

|  |  |
| --- | --- |
| Component | Description |
| metarest | Deploys CA4MN metadata. |
| npc | Performs 4G correlation (eNB/MME correlation). |
| sumrzmr | Summarization metadaraReader component, which creates the Kafka topics (and pushes the CA4MN avro schemas in the schema registry). |

### customizedValues4ca4mn yaml files (customizedValues4ca4mnCentral.yaml file and customizedValues4ca4mnEdge.yaml)

The customizedValues4ca4mn YAML file is the file that must be customized with the values corresponding to the cluster on which CA4MN will be installed.

In the case of a Central deployment of CA4MN, the file is named customizedValues4ca4mnCentral.yaml

In the case of an Edge deployment of CA4MN, the file is named customizedValues4ca4mnEdge.yaml.

The customizedValues4ca4mn YAML file contains values that must be customized such as:

* dbName: data lake name
* registry: repository of the CA4MN images.

The file also contains values that overwrite default values set by Analytics Platform to fit requirements of CA4MN components such as summarization component, NPC engine, etc. For instance, it enables to define the number of executor instances, cores, memory.

## Appendix B: Configuration files required to install ingesters

This appendix describes the configuration files required to install CA4MN ingesters.

### CA4MN ingester configuration file (values-customer.yaml)

The values-customer.yaml file enables to configure the CA4MN ingesters. This file provides the following information for each datasource (ds):

#------------------------------------------------------------------------------

# cm-ingester:

#------------------------------------------------------------------------------

ds:

-name: <CM ingester name> # instance name  
    OMC\_User: <OMC user> # User for SFTP CM snapshot file  
    OMC\_Pwd: <encrypted password of OMC user> # Encoded Password for SFTP CM snapshot file  
    OMC\_IP: <OMC IP address> # NetAct or NSP IP address where CM snapshot files are stored   
    CMFileDir: <CM File path> # Directory of CM snapshot file  
    TIME\_ZONE: <Time Zone of the CM datasource> # time zone  
    OMC\_Type: NetAct # Type of OMC  
    isFilterEnabled: disable # Filter on object classes or attributes  
    filterFilename: filter\_NETACT-1.xml # Filter file contains object classes or attributes. Only content listed in filter file will be kept  
    isSubclassIncluded: no # yes: all subclasses of specified object classes will also be kept. no: only classes listed in filter file will be kept

AND FOR THE OTHER INGESTERS ?????

HOW do we explain the selection of ingesters ?????

To generate the encoded password, run “echo OMC\_Pwd=yourpasswd |base64” which returns a string corresponding to the encoded password. Copy and paste this encoded password in the corresponding field.

For instance, if there are 2 CM datasources, the values-customer.yaml file will be as follows:

#------------------------------------------------------------------------------

# cm-ingester:

#------------------------------------------------------------------------------

ds:

- name : netact01

OMC\_User: <OMC user>

OMC\_Pwd: <OMC user password>

OMC\_IP: ca4mn-ingest-netact1

CMFileDir: /var/local/netact1/output\_NOKLTE

TIME\_ZONE: Europe/Paris

OMC\_Type: NetAct

isFilterEnabled: disable

filterFilename: filter\_NETACT-1.xml

isSubclassIncluded: no

- name : netact02

OMC\_User: <OMC user>

OMC\_Pwd: <OMC user password>

OMC\_IP: ca4mn-ingest-netact2

CMFileDir: /var/local/netact2/output\_NOKLTE

TIME\_ZONE: Europe/Paris

OMC\_Type: NetAct

isFilterEnabled: disable

filterFilename: filter\_NETACT-1.xml

isSubclassIncluded: no

## Appendix C : CA4MN Installation durations

This section provides average durations for main CA4MN installation steps.

1. CA4MN Installation durations

|  |  |
| --- | --- |
| Installation step | Duration |
| Install CA4MN core components | Between 5min and 10min |
| Deploy Metadata set | 1 min |
| Install CA4MN ingesters | < 5min |

# References

[1] Analytics Platform Installation Guide (DN1000001819) (url site: https://confluence.int.net.nokia.com/display/apaas/Analytics+Platform+18.9+External+Customer+Documentation#AnalyticsPlatform18.9ExternalCustomerDocumentation-AnalyticsPlatformInstallationGuide).

[2] Analytics Platform Release Note (url site: https://confluence.int.net.nokia.com/display/apaas/Analytics+Platform+18.9+Internal+Documentation#AnalyticsPlatform18.9InternalDocumentation-AnalyticsPlatformReleaseNotes)

[3] CA4MN Release Note (url site:xxxx)

# Glossary

1. Terms and abbreviations used in this document

|  |  |
| --- | --- |
| Term | Explanation |
| AP | Analytics Platform |
| CA4MN | Cognitive Analytics for Mobile Networks |
| CU/DU | Central Unit/Distributed Unit |
| eNB | ENodeB. |
| gNB | gNodeB |
| HDFS | Hadoop Distributed File System |
| OS | Operating System |
| ReX | Record Explorer |
| UI | User Interface |

1. 64 for Lab [↑](#footnote-ref-1)
2. Number of nodes depends on customer traffics and options (nb Cells 4G/5G or BEPD,  nb npc, nb l3dc and correlation needs). Contact R&D for dimensioning. [↑](#footnote-ref-2)
3. Number of nodes depends on customer traffics and options (nb Cells 4G/5G or BEPD,  nb npc, nb l3dc and correlation needs). Contact R&D for dimensioning. [↑](#footnote-ref-3)
4. Number of nodes depends on customer traffics and options (nb Cells 4G/5G or BEPD,  nb npc, nb l3dc and correlation needs). Contact R&D for dimensioning. [↑](#footnote-ref-4)
5. Optimized for the lab with 50 4G and 5G cells with a specific installation procedure (would need 18 VM if standard procedure is used). [↑](#footnote-ref-5)
6. Number of nodes depends on customer traffics and options (VM size (nb vcpu/ram), nb Cells 4G/5G or BEPD, nb npc, nb l3dc and correlation needs). Contact R&D for dimensioning. [↑](#footnote-ref-6)
7. Number of nodes depends on customer traffics and options (VM size (nb vcpu/ram), nb Cells 4G/5G or BEPD, nb npc, nb l3dc and correlation needs). Contact R&D for dimensioning. [↑](#footnote-ref-7)
8. Number of nodes depends on customer traffics and options (VM size (nb vcpu/ram), nb Cells 4G/5G or BEPD, nb npc, nb l3dc and correlation needs). Contact R&D for dimensioning. [↑](#footnote-ref-8)
9. Cinder sizing depends on customer traffics and options (VM size (nb vcpu/ram), nb Cells 4G/5G or BEPD, nb npc, nb l3dc and correlation needs). Contact R&D for dimensioning. [↑](#footnote-ref-9)
10. Cinder sizing depends on customer traffics and options (VM size (nb vcpu/ram), nb Cells 4G/5G or BEPD, nb npc, nb l3dc and correlation needs). Contact R&D for dimensioning. [↑](#footnote-ref-10)
11. Cinder sizing depends on customer traffics and options (VM size (nb vcpu/ram), nb Cells 4G/5G or BEPD, nb npc, nb l3dc and correlation needs). Contact R&D for dimensioning. [↑](#footnote-ref-11)
12. helm install --name apaas --timeout 1500 -f override\_values\_<config\_type>.yaml -f aPaaS\_config.yaml -f dlk\_config.yaml  <-f customer\_override.yaml> ../deployment-platform-<version>.tar.gz [↑](#footnote-ref-12)