FORCAM FORCE™
EDGE

FORCAM FORCE EDGE
System Requirements

Document: System Requirements -
FORCAM FORCE EDGE 230127_V04

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Content

1   Disclaimer

The data in this document is based on standardized scenarios. This scenario assumes 50 machines per node and approx. 30 signals per machine. Other requirements may be necessary for customer-specific scenarios and IT landscapes. In this case, our consultants will discuss these with the relevant IT departments in order to plan a possible hardware environment.

Some features like the "Machine Repository" mentioned below are not included in the standard EDGE package and must be purchased separately.

2 Docker Technology

- **For productive use of FORCAM FORCE EDGE, we recommend a Linux operating system with Docker runtime environment for performance reasons.**

- Alternatively, we assume Windows Server 2019
  (Hyper-V + Ubuntu VM + Docker)

- The provision, installation and maintenance of the Docker runtime environment is the responsibility of the customer.

⚠ FORCAM does not assume any warranty regarding stability and performance for the Docker runtime environment!

⚠ Windows desktop operating systems are not supported.

3 System Requirements (Customer Responsibility)

3.1 EDGE Configuration (1 Instance) Minimal Hosting Requirements

The minimal hosting requirements for the different operating systems are as follows.

Ubuntu:

- Ubuntu = 20.04.3 LTS or a newer Version of Ubuntu 20.04
- Docker Engine = 20.10.22
- Docker Compose version = V2.14.1
- OpenSSL version: >= OpenSSL 1.1.0l
- AdoptOpenJDK 11 64 Bit Version >= 11.0.11

Infrastructure:

- >= 8GB RAM
- Quad-Core processor >2Ghz
- Minimum 30 GB free SSD disc space

Windows with Ubuntu VM:

- Windows Server 2019 (>= Version 1809)
- Hyper-V must be enabled in Windows
- Ubuntu 20.04.03 (or a newer Version of Ubuntu 20.04) VM in Hyper-V:
  - Docker Engine = 20.10.22
  - Docker Compose Version = V2.14.1
  - OpenSSL version: >= OpenSSL 1.1.0l
  - AdoptOpenJDK 11 64 Bit Version >= 11.0.11

Infrastructure of the Ubuntu VM:

- >=8GB RAM (must be assigned to the VM)
- Quad-Core processor > 2Ghz (must be assigned to the VM)
- Minimum 30 GB free SSD disc space (must be assigned to the VM)

Client Requirements:

For the Browser: Google Chrome or Microsoft Edge with Chromium engine.

Additional Information:

FORCAM FORCE EDGE Configuration has no direct impact on the machine connection. Therefore, it can be installed on the "FORCE EDGE NODE" server if there is only one single node required.

There are two options for installing the EDGE in one plant. We recommend option 1, which is to install the EDGE Configuration and the EDGE Node on separate servers. Option 2 would be to install both on the same server.
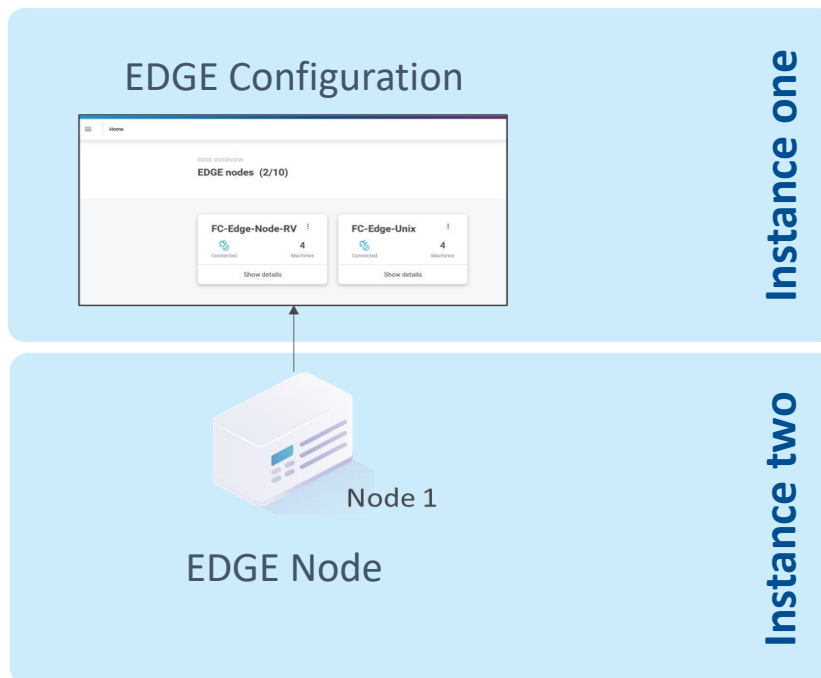
Option 1:

Fig. 1: Installing the EDGE Configuration and the EDGE Node on separate servers
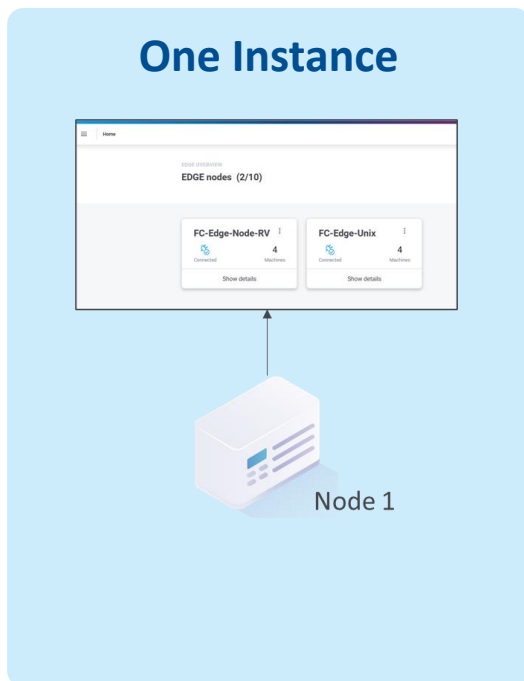
Instances can be virtual machines.

Option 2:

Fig. 2: Installing the EDGE Configuration and the EDGE Node on the same server

Instances can be virtual machines.

⚠ Note: If option 2 is used, the system requirements of both EDGE Configuration and EDGE Node must be considered and added.

3.2   EDGE Node (1 Instance) Minimal Hosting Requirements

Ubuntu:

- Ubuntu = 20.04.3 LTS or a newer Version of Ubuntu 20.04.
- Docker Engine = 20.10.22
- Docker Compose version = V2.14.1
- OpenSSL version: >= OpenSSL 1.1.0l
- AdoptOpenJDK 11 64 Bit version >= 11.0.11

Infrastructure:

- >= 8GB RAM
- Quad-Core processor > 2 Ghz
- Minimum 60 GB free SSD disc space
  - *60 GB is the bare minimum to run the EDGE – in case Data Lake is used, we recommend more disc space*

Windows with Ubuntu VM:

- Windows Server 2019 (>= Version 1809)
- Hyper-V must be enabled in Windows
- Ubuntu 20.04.03 (or a newer Version of Ubuntu 20.04) VM in Hyper-V:
  - Docker Engine = 20.10.22
  - Docker Compose Version = V2.14.1
  - OpenSSL version: >= OpenSSL 1.1.0l
  - AdoptOpenJDK 11 64 Bit Version >= 11.0.11

Infrastructure of the UBUNTU VM:

- >=8GB RAM (must be assigned to the VM)
- Quad-Core processor > 2Ghz (must be assigned to the VM)
- Minimum 60 GB free SSD disc space (must be assigned to the VM)

Additional Information:

The requirements and number of nodes needed depends on:

- The number of connected machines
- The number of configured signals
- The number of configured communication interfaces (DNC / MDC plugins)
- The frequency of outgoing events

3.3   User Rights for Installation

It is mandatory to create a non root user.

The rights must be assigned to the user to be able to install correctly.

User:

- Must be a non root user (name doesn't matter)
- This user must have the right to run the docker + docker compose command
- User id while installing must be the id of the current user (number):
  - *"id"* (command)
- Add the current user into the docker group:
  - *"sudo usermod -aG docker $USER"* (command)
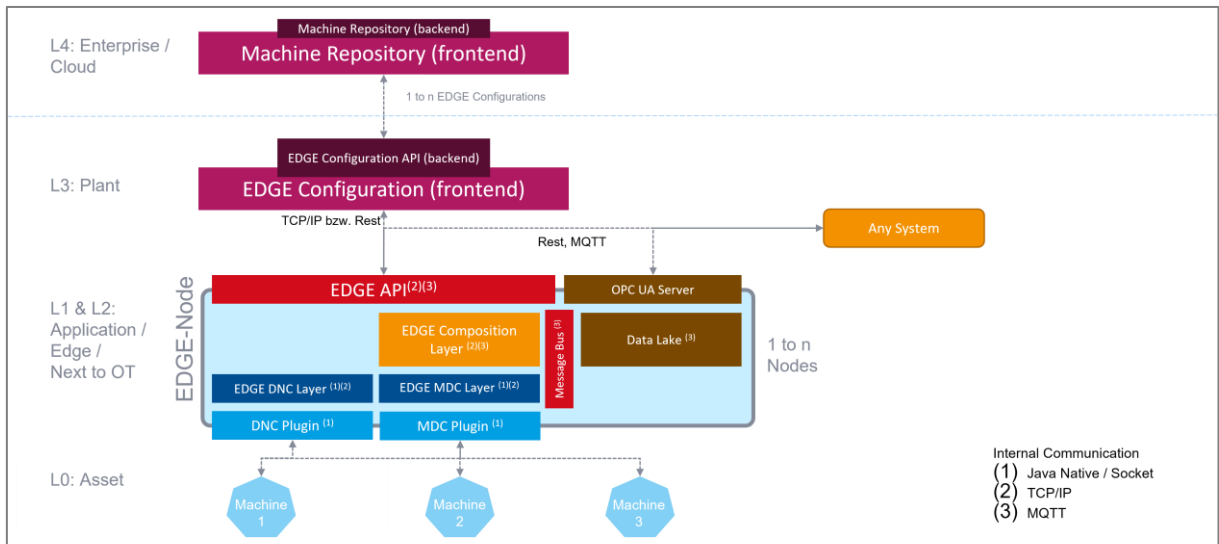
4 EDGE Architectural Concept

Fig. 3: Basic EDGE architectural setup for the use of additional nodes

L4: Machine Repository as a central component with various templates for managing the machine park

L3: User interface with a graphic representation of FORCAM FORCE EDGE and the user administration

L2: Composition layer for data processing with MDC and DNC plugins, Data Lake, and OPC UA

L1: Communication software component that can be accessed using plugins

L0: All assets to be connected

5 Network Requirements

5.1 General Network Requirements

- Active Internet connection

(i) If an online license is involved, the following URLs must be available:
Primary: **https://qlm1.net/forcam/qlmlicenseserver/qlmservice.asmx**
Fallback: **https://qlmdr.com/forcam/qlmlicenseserver/qlmservice.asmx**

5.2 Ports/Firewall

Ports that have to be open:
- 60067 http
- 4840 (OPC UA)
- 60066 FORCE EDGE UI

Optional ports:
- 1883 MQTT
- 61616 ActiveMQ
  - *Only necessary if a 3rd-Party system wants to communicate with the FORCAM system*
    or
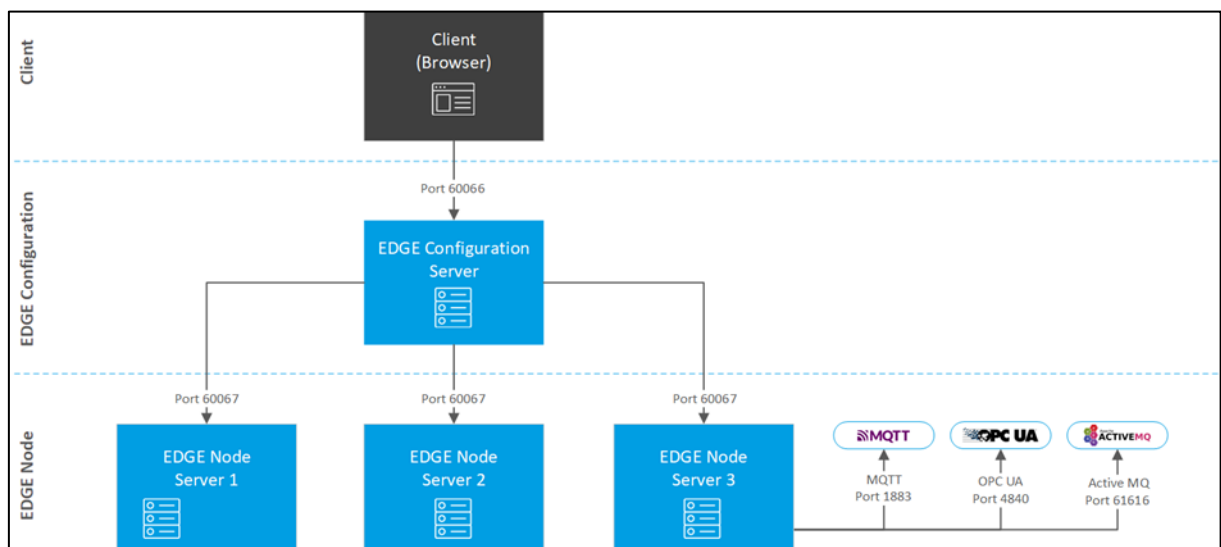 - *if Track & Trace Connectivity with IIoT is used*

Fig. 4: Communication of FORCAM FORCE EDGE with ports and paths