IIP-Ecosphere

Next Level Ecosphere for
Intelligent Industrial Production

Windows Platform Installation Guide

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für Wirtschaft
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IIP-Ecosphere Platform Documentation

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Platform Handbook

- In the Platform Handbook (in the link below), you can find more detailed information about each of the steps in this guide.

https://www.iip-ecosphere.de/wp-content/uploads/2022/09/PlatformHandbook-final-V0.4.pdf

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Platform install using pre-defined Docker image

Docker Engine Installation - step (1)

- If **Docker Engine v20.10.7** is not installed, then Install **Docker Desktop 3.4.0** which uses **Docker Engine v20.10.7** and all the prerequisites it may needs. Please enter the following commands into your console:

```
- curl
  https://desktop.docker.com/win/stable/amd64/65384/Docker%20Desktop%20Install
  er.exe -O DockerDesktopInstaller.exe

- rename "Docker%20Desktop%20Installer.exe" DockerDesktopInstaller.exe

- start /w "" "DockerDesktopInstaller.exe" install
```

Platform install using pre-defined Docker image

Docker Engine Installation - step (2)

- You should install **Windows Sub system for Linux** (**WSL**), which is required for Docker in Windows, please see the Instructions to install **WSL** in Windows:

https://ubuntu.com/tutorials/install-ubuntu-on-wsl2-on-windows-10#1-overview

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Platform install using pre-defined Docker image

Running the Container

- Use the following command to pull the image and run it on your machine
  - `docker run -p 6080:80 -v /dev/shm:/dev/shm iipecosphere/dev-container:0.1`
  - Your screen should look like: (See next slide)

Platform install using pre-defined Docker image

Running the Container

```
2023-01-24 19:09:52,604 INFO Included extra file "/etc/supervisor/conf.d/platform.conf" during parsing
2023-01-24 19:09:52,605 INFO Included extra file "/etc/supervisor/conf.d/supervisord.conf" during parsing
2023-01-24 19:09:52,656 INFO RPC interface 'supervisor' initialized
2023-01-24 19:09:52,657 CRIT Server 'unix_http_server' running without any HTTP authentication checking
2023-01-24 19:09:52,668 INFO supervisord started with pid 26
2023-01-24 19:09:53,773 INFO spawned: 'nginx' with pid 28
2023-01-24 19:09:53,837 INFO spawned: 'web' with pid 29
2023-01-24 19:09:53,940 INFO spawned: 'platform' with pid 30
2023-01-24 19:09:54,081 INFO spawned: 'xvfb' with pid 31
2023-01-24 19:09:54,261 INFO spawned: 'wm' with pid 32
2023-01-24 19:09:54,541 INFO spawned: 'lxpanel' with pid 34
2023-01-24 19:09:54,894 INFO spawned: 'pcmanfm' with pid 35
2023-01-24 19:09:54,959 INFO spawned: 'x11vnc' with pid 36
2023-01-24 19:09:55,418 INFO spawned: 'novnc' with pid 37
2023-01-24 19:09:55,975 INFO success: nginx entered RUNNING state, process has stayed up for > than 1 seconds (startsecs)
2023-01-24 19:09:55,975 INFO success: web entered RUNNING state, process has stayed up for > than 1 seconds (startsecs)
2023-01-24 19:09:55,975 INFO success: platform entered RUNNING state, process has stayed up for > than 1 seconds (startsecs)
2023-01-24 19:09:55,975 INFO success: xvfb entered RUNNING state, process has stayed up for > than 1 seconds (startsecs)
2023-01-24 19:09:55,975 INFO success: wm entered RUNNING state, process has stayed up for > than 1 seconds (startsecs)
2023-01-24 19:09:55,975 INFO success: lxpanel entered RUNNING state, process has stayed up for > than 1 seconds (startsecs)
2023-01-24 19:09:55,975 INFO success: pcmanfm entered RUNNING state, process has stayed up for > than 1 seconds (startsecs)
2023-01-24 19:09:55,975 INFO success: x11vnc entered RUNNING state, process has stayed up for > than 1 seconds (startsecs)
2023-01-24 19:09:55,975 INFO success: novnc entered RUNNING state, process has stayed up for > than 1 seconds (startsecs)
2023-01-24 19:10:01,918 INFO  Listening on http://localhost:6079 (run.py:87)
```

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Platform install using pre-defined Docker image

Development Environment

- To access the pre-defined working environment use any browser with the URL: **localhost:6080** OR replace the **localhost** with the **IP address** of the machine that runs the container.

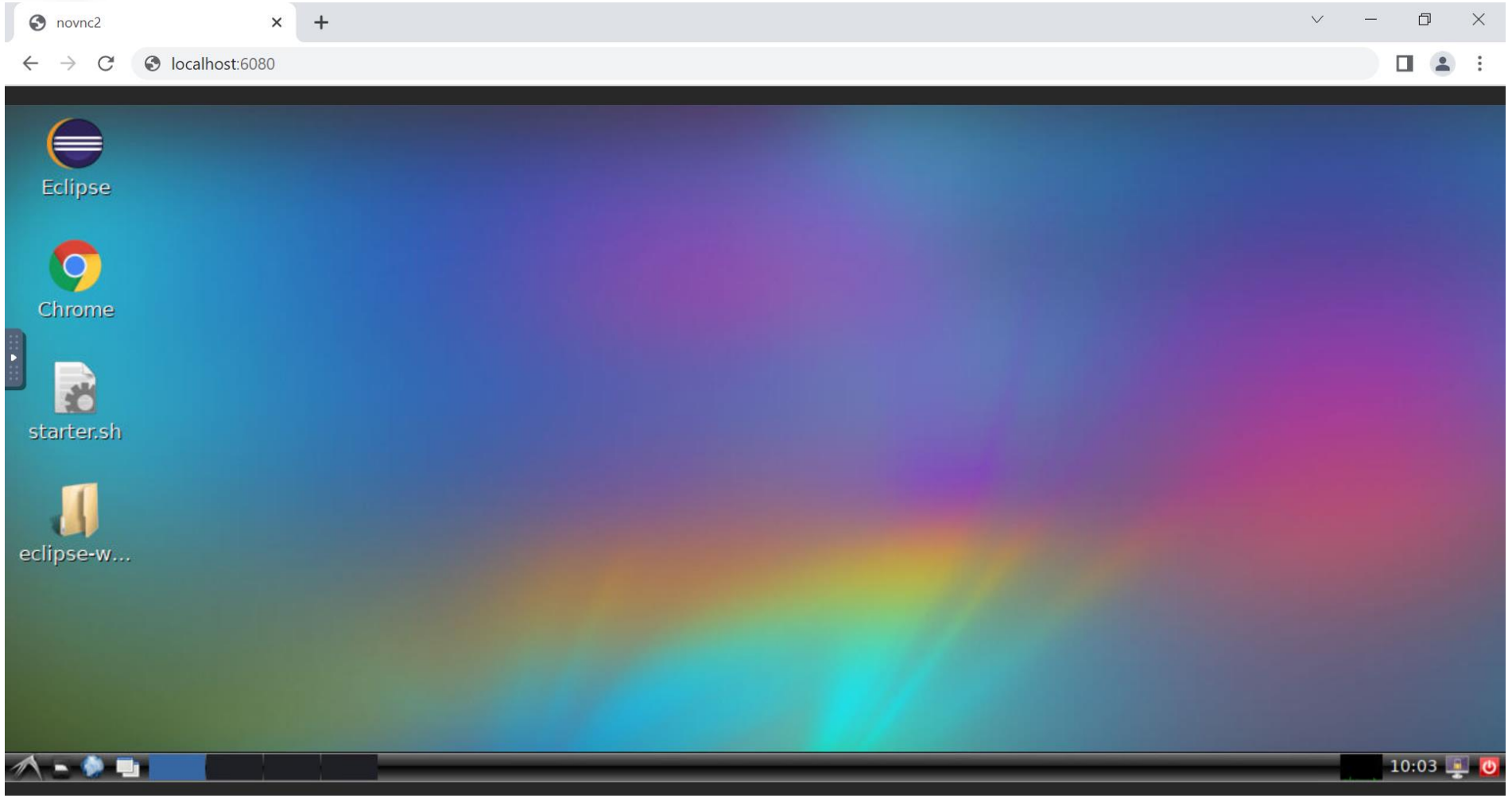
- You have the IDE Eclipse environment installed and ready to use with a workspace (**eclipse-workspace**) that has Impl.model project.

- You have the platform installed and running (the logs are in /root/platform/logs)

- You your screen looks like: (See next slide)

Platform install using pre-defined Docker image

Development Environment



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Full manual Installation of the platform

Required Setup

Notes:

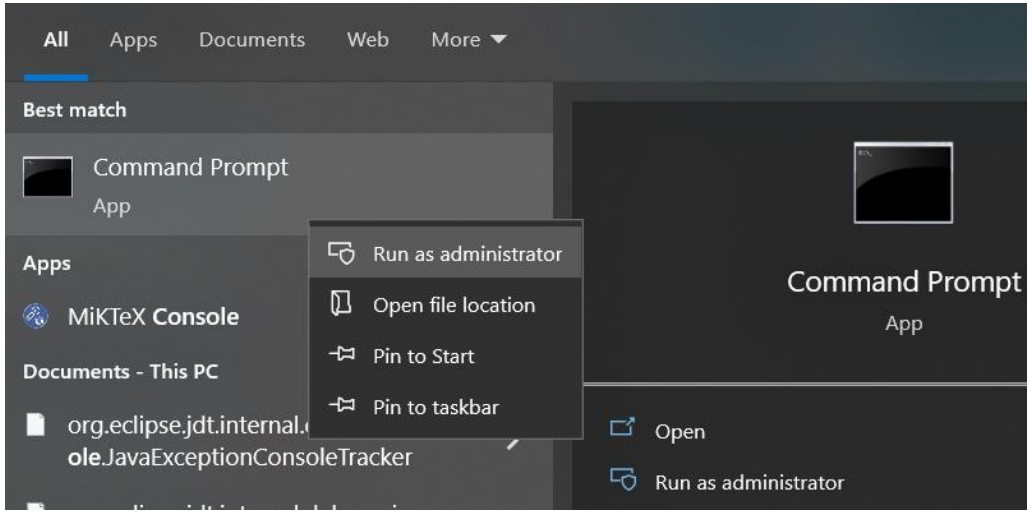
- Please ensure that you use the exact version numbers given for every software in this guide.

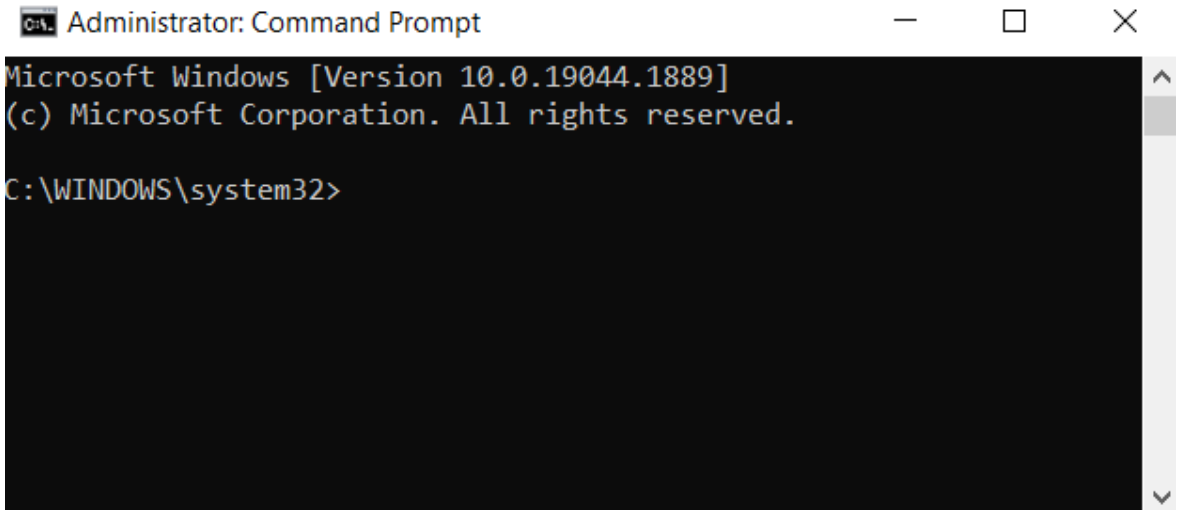
- Please do not use ”the latest” version of a given software, as these later versions may be incompatible with the current IIP-Ecosphere platform build.

Full manual Installation of the platform

Required Setup - step (1)

- For the installation we will use the command line interface (CLI) or console.
- To open the console search for “Console“ in the Start menu.
- Please ensure that you run the console with Administrator rights (right/click and select ”Run as administrator”)





Full manual Installation of the platform

Required Setup - step (2)

- Please note that the current IIP-Ecosphere platform requires Java **JDK 11 or 13**, no other. In this guide we are installing **JDK 13**.
- If Java **JDK 13** is not yet installed, then install Java **JDK 13**, using the following CLI commands (enter the following lines in the console and after each press return):

```
- curl https://download.java.net/openjdk/jdk13/ri/openjdk-13+33_windows-
  x64_bin.zip –O openjdk-13+33_windows-x64_bin.zip
- tar xzpvf openjdk-13+33_windows-x64_bin.zip
- setx /M JAVA_HOME "%cd%\jdk-13"
- SET JAVA_HOME=%cd%\jdk-13
- setx /M Path "%Path%;%JAVA_HOME%\bin"
- SET Path=%Path%;%JAVA_HOME%\bin
```

Full manual Installation of the platform

Required Setup - step (3)

- If **Maven 3.6.3** is not installed, then install Maven **3.6.3** by entering the following commands in your console:
  - `curl https://archive.apache.org/dist/maven/maven-3/3.6.3/binaries/apache-maven-3.6.3-bin.zip -O apache-maven-3.6.3-bin.zip`

  - `tar xzpvf apache-maven-3.6.3-bin.zip`
  - `setx /M MAVEN_HOME "%cd%\apache-maven-3.6.3“`
  - `SET MAVEN_HOME=%cd%\apache-maven-3.6.3`
  - `setx /M Path "%Path%;%MAVEN_HOME%\bin“`
  - `SET Path=%Path%;%MAVEN_HOME%\bin`

Full manual Installation of the platform

Required Setup - step (4)

- If **Python v3.9** is not installed, then Install **Python v3.9** by entering the following commands in your console:

```
- curl https://www.python.org/ftp/python/3.9.6/python-3.9.6-amd64.exe -O python-3.9.6-amd64.exe

- start /w "" "python-3.9.6-amd64.exe" install
```

- If you want to use a UI (User Interface), there are several applications you may need such as Angular, JavaScript… etc. Please check the platform handbook for more information.

Full manual Installation of the platform

Required Setup - step (5)

- If **Python v3.9** is installed add the requirements by running:
  - `python –m pip install scikit-learn==0.23.2`
  - `python –m pip install numpy==1.20.1`
  - `python –m pip install pickle==4.0`
  - `python –m pip install pyflakes`

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Full manual Installation of the platform

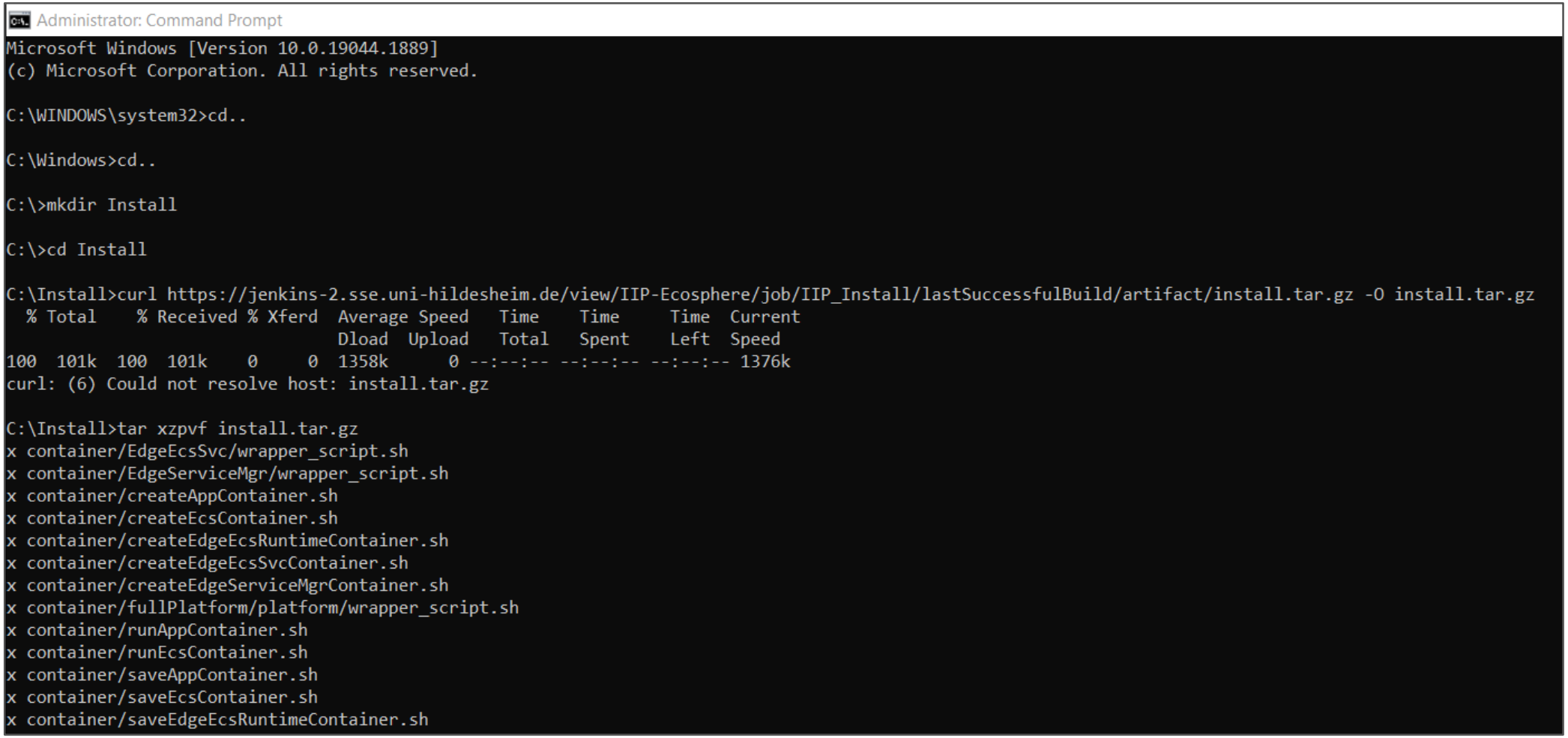
Platform Installation - step (1)

- Create an empty folder and name it (for example) “Install”, as usual via entering the following commands into your console:
  - `mkdir Install`
  - `cd Install`
- Download the Install-Package and unpack it (again, via Console)
  - `curl https://jenkins-2.sse.uni-hildesheim.de/view/IIP-Ecosphere/job/IIP_Install/lastSuccessfulBuild/artifact/install.tar.gz -O install.tar.gz`

  - `tar xzpvf install.tar.gz`

Full manual Installation of the platform

Platform Installation - step (1)



Full manual Installation of the platform

Platform Installation - step (2)

- Modify the IP address for the platform in the configuration file (src/main/easy/TechnicalSetup.ivml) to the IP address of your PC (where you have installed the Platform)

- You can type “ipconfig” in the console to see you PC’s IP address

```
project InstallTest {

    import IIPEcosphere;
    import DataTypes;

    annotate BindingTime bindingTime = BindingTime::compile to .;

    String platformServer = "147.172.177.142";

    // ------------ component setup ------------------

    serializer = Serializer::Json;
    // serviceManager, containerManager are already defined

    aasServer = {
        schema = AasSchema::HTTP,
```

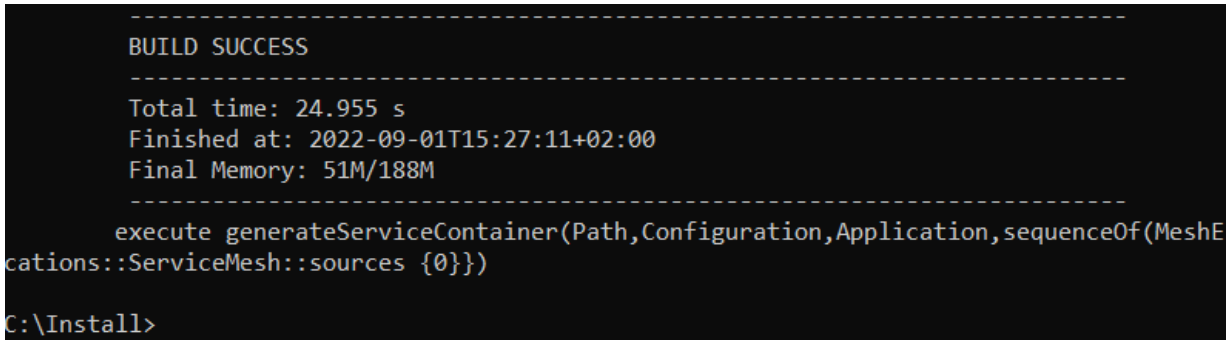
```
C:\Install>ipconfig

Windows IP Configuration


Ethernet adapter Ethernet 2:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Ethernet adapter Ethernet 3:

   Connection-specific DNS Suffix  . : sse.local
   Link-local IPv6 Address . . . . . : fe80::808:886d:366:400c%19
   IPv4 Address. . . . . . . . . . . : 147.172.177.142
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 147.172.177.254
```

Full manual Installation of the platform

Platform Installation - step (3)

- Instantiate the platform: Execute the following command in the “Install” folder (the folder you installed the platform in)
  - `mvn install`

- This will take a while, once finished it looks like this:



- Now the platform is installed, the script files are created and ready to start.

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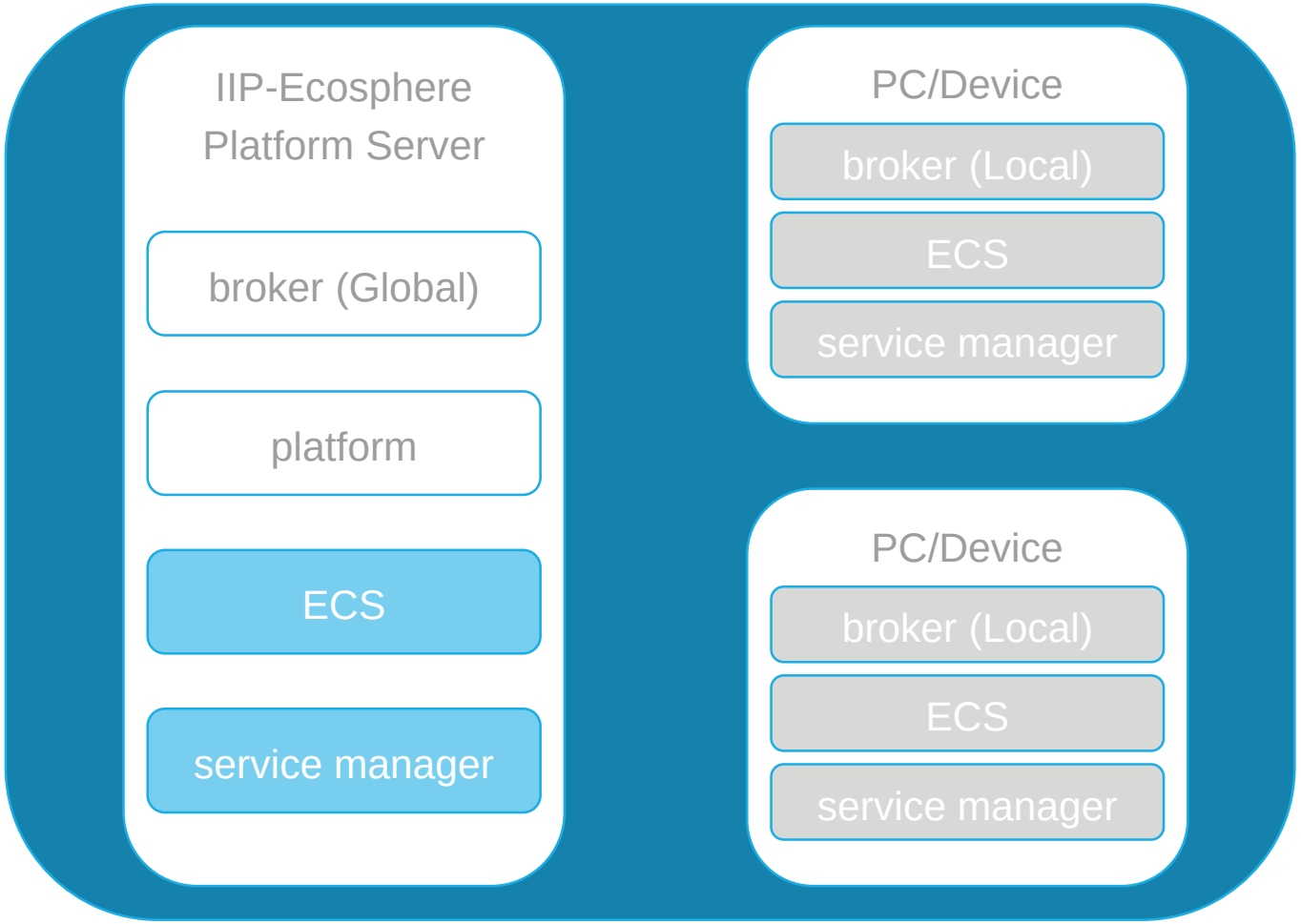
Full manual Installation of the platform

Start the Platform

- There are two possible always to the run the platform:
  - Local: One machine working as platform and device at the same time.
  - Distributed: One machine working as platform, another machine(s) working as device(s)

Full manual Installation of the platform

Platform in Big Picture



- White components are required to start the platform on a machine.
- In the case of Local: light blue components are required on a machine to work as a platform and device.
- In the case of Distributed: grey components are required for each new PC/Device that should be added as a resource in the platform.

Full manual Installation of the platform

Start the Platform local - step (1)

- The broker scripts and files are in “Install/gen/broker” folder, run the following script to start it in separate console:
  - `broker.bat`

- The platform scripts and files are in the “Install/gen/” folder, run the following script to start it in separate console:
  - `platform.bat`

Full manual Installation of the platform

Start the Platform local - step (2)

- To make the platform machine working as resource run the following scripts, each one in separate console:
  - `broker.bat` (“broker” folder)
  - `ecs.bat`
  - `serviceMgr.bat`

- The above scripts are exists in “Install/gen” folder.

Full manual Installation of the platform

Start the Platform distributed - step (1)

- Copy the following files and folders from the platform server (the PC you installed the platform on) to the PC/Device that is to be added to the platform as a resource:
  - gen\ecsJars (folder)
  - gen\broker (folder)
  - gen\svcJars (folder)
  - gen\ecs.bat (file)
  - gen\serviceMgr.bat (file)

Full manual Installation of the platform

Start the Platform distributed - step (2)

- To add the new PC/Device as resource in the platform run the following scripts on the new PC/Device, each one in separate console
  - `broker.bat` (“broker” folder)
  - `ecs.bat`
  - `serviceMgr.bat`

- If everything worked fine your newly added PC/Device should be listed as a platform resource.

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Full manual Installation of the platform

Stop the Platform

- Stopping the platform:

- Type Crtl-C on all the open console to stop them and clean the resources in the reverse order we opened (started) them.

- If asked to quit (Y/N), type Y

Contact

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