Linux Platform Installation Guide Service Workshop

Ahmad Alamoush (UHi)

IIP-Ecosphere Platform Documentation

Introduction

- These slides are used to do the Service Workshop setup in Linux OS.
- The slides are divided into:
  1. Install the required setup (Prerequisites).
  2. Download and install IDE Eclipse development environment.
  3. Install the IIP-Ecosphere platform.
  4. Start the IIP-Ecosphere platform.
  5. Stop the IIP-Ecosphere platform.

Introduction

- For the sake of the Service Workshop you should follow this order:

    1. Install prerequisites that should be use by the IIP-Ecosphere platform and IDE development environment.

    2. Download the IDE Eclipse + Workspace for the Workshop.

    3. Install the IIP-Ecosphere platform to test the App developed in the Workshop.

    4. Start and Stop the IIP-Ecosphere platform to validate the installation, and use it in the Workshop (more details in the Workshop).

Install the required setup
(Prerequisites)

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 maybe incompatible with the current IIP/Ecosphere platform build.

Required Setup - step (1)

- **Please note that you should run the commands in root.**
- Update all of your packages for Linux

  - `sudo apt-get update`

- Install unzip

  `-sudo apt install unzip –y`

- Please note that the current IIP-Ecosphere platform required Java **JDK 8, 11 or 13**, no other. In this guide we are installing **JDK 13**.

- If Java **JDK 13** is not installed, then install Java **JDK 13**

  - `sudo apt install openjdk-13-jdk-headless -y`

- If **Maven 3.6.3** is not installed, then install **Maven 3.6.3**

  - `sudo apt install maven -y`

- If **Python v3.9** is not installed, then Install **Python v3.9**

  ```
  - sudo apt update -y
  - sudo apt install software-properties-common -y
  - sudo echo | add-apt-repository ppa:deadsnakes/ppa
  - sudo apt update -y
  - sudo apt install python3.9 -y
  ```

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

Required Setup - step (3)

- If **Python v3.9** is installed add the requirements by running:
    - `python3 –m pip install scikit-learn==0.23.2`
    - `python3 –m pip install numpy==1.20.1`
    - `python3 –m pip install pickle==4.0`

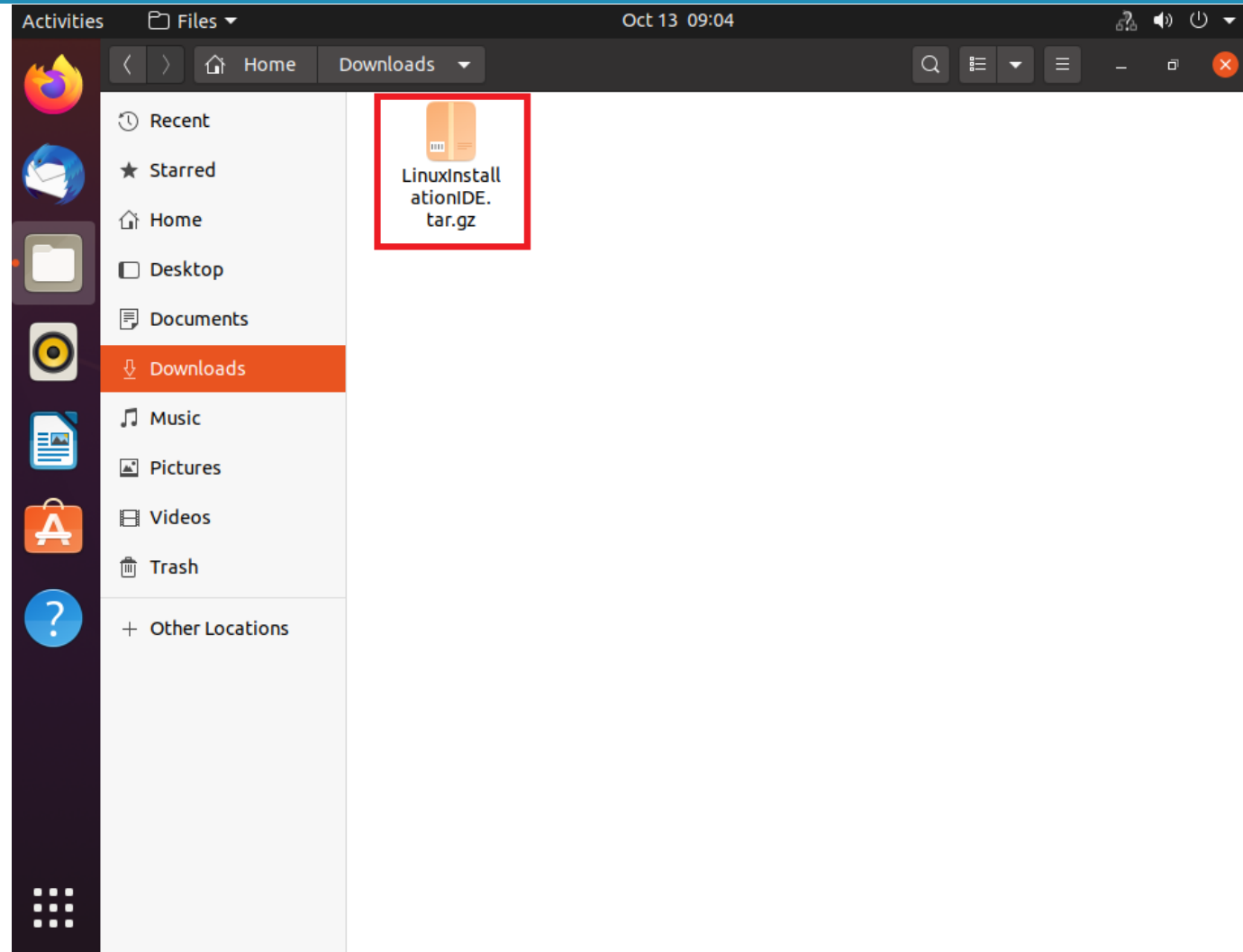# Setup the IDE Eclipse environment

Setup the IDE Eclipse environment

- For the purpose of the Service Workshop, we have prepared the projects and the examples for Eclipse IDE - with exact Eclipse version (**Eclipse 2021-03, version 4.19.0**) provided by the link in next slide.
- Any other Java-enabled IDE like Netbeans may do, but this requires manual work.
- The Eclipse provided by the link in next slide is compiled one with the required plugins (like checkstyle) fitting the required JDK for the platform.

Setup the IDE Eclipse environment

- Click the following link to download a tar file (**LinuxInstallationIDE.tar.gz**) that contains the IDE Eclipse with the workspace to use:
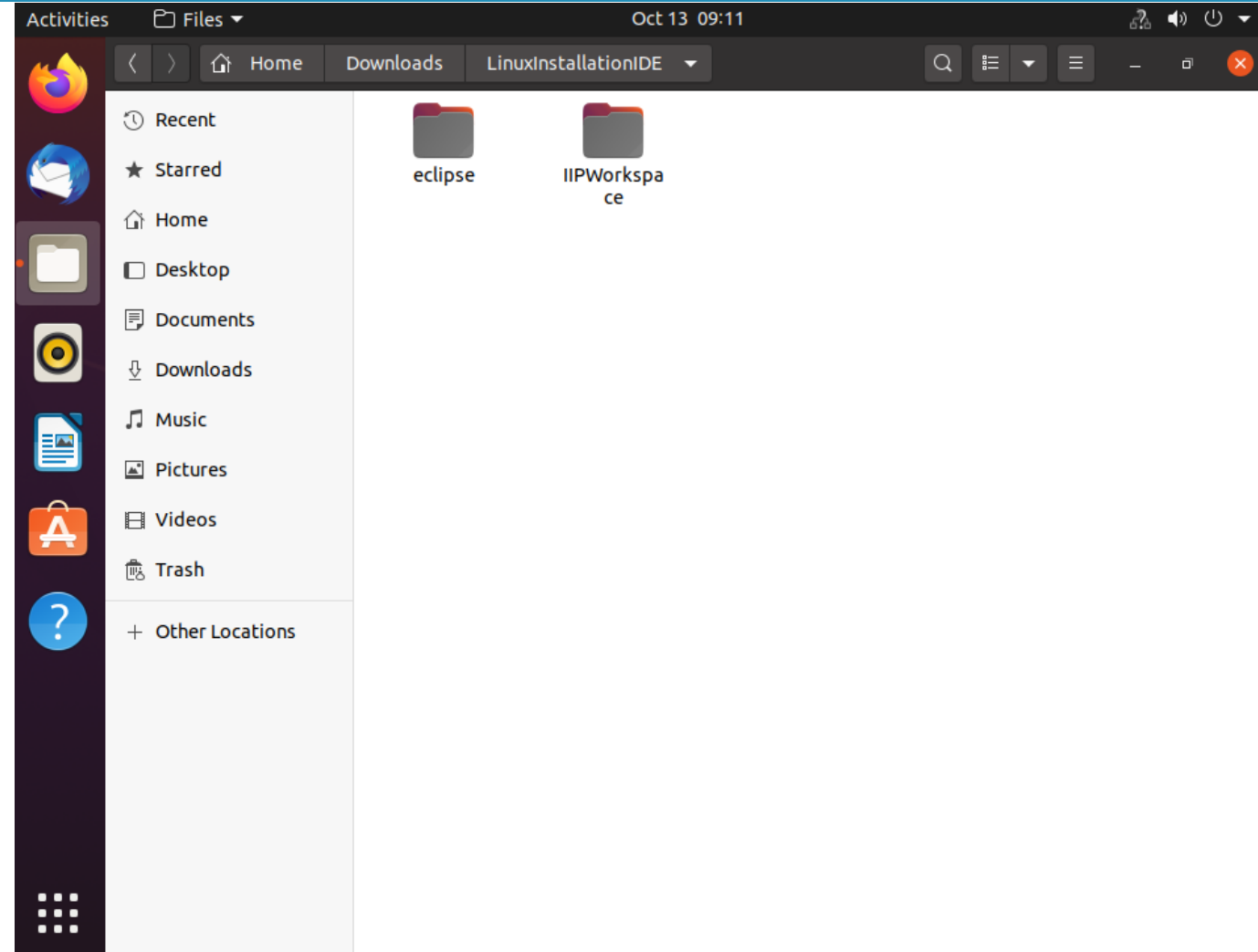- https://sync.academiccloud.de/index.php/s/3lbvVWPVC0qlBzm
- Extract the tar file.

Setup the IDE Eclipse environment

- There are two folders.
  - Eclipse (folder)
  - IIPWorkspace (folder)

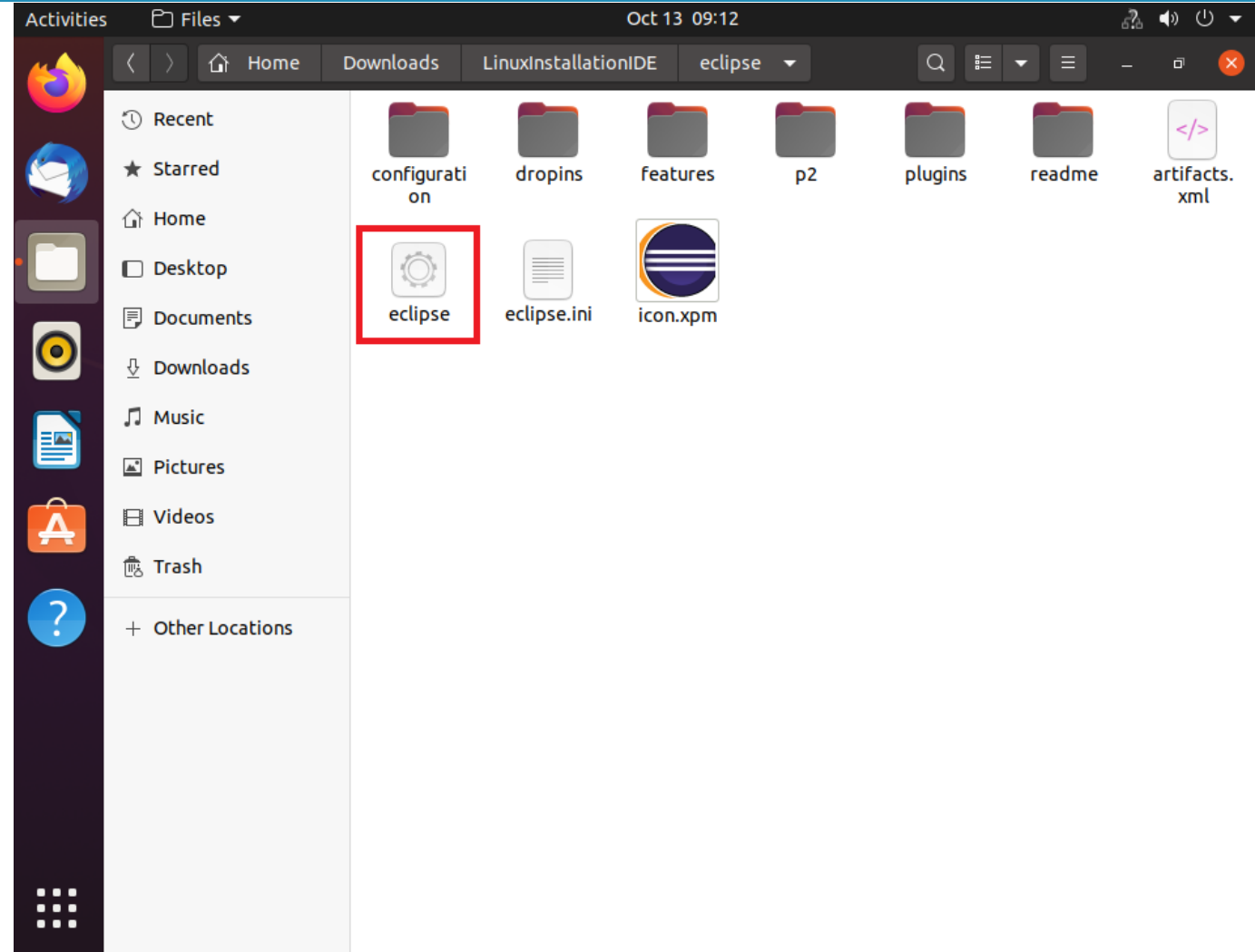# Setup the IDE Eclipse environment
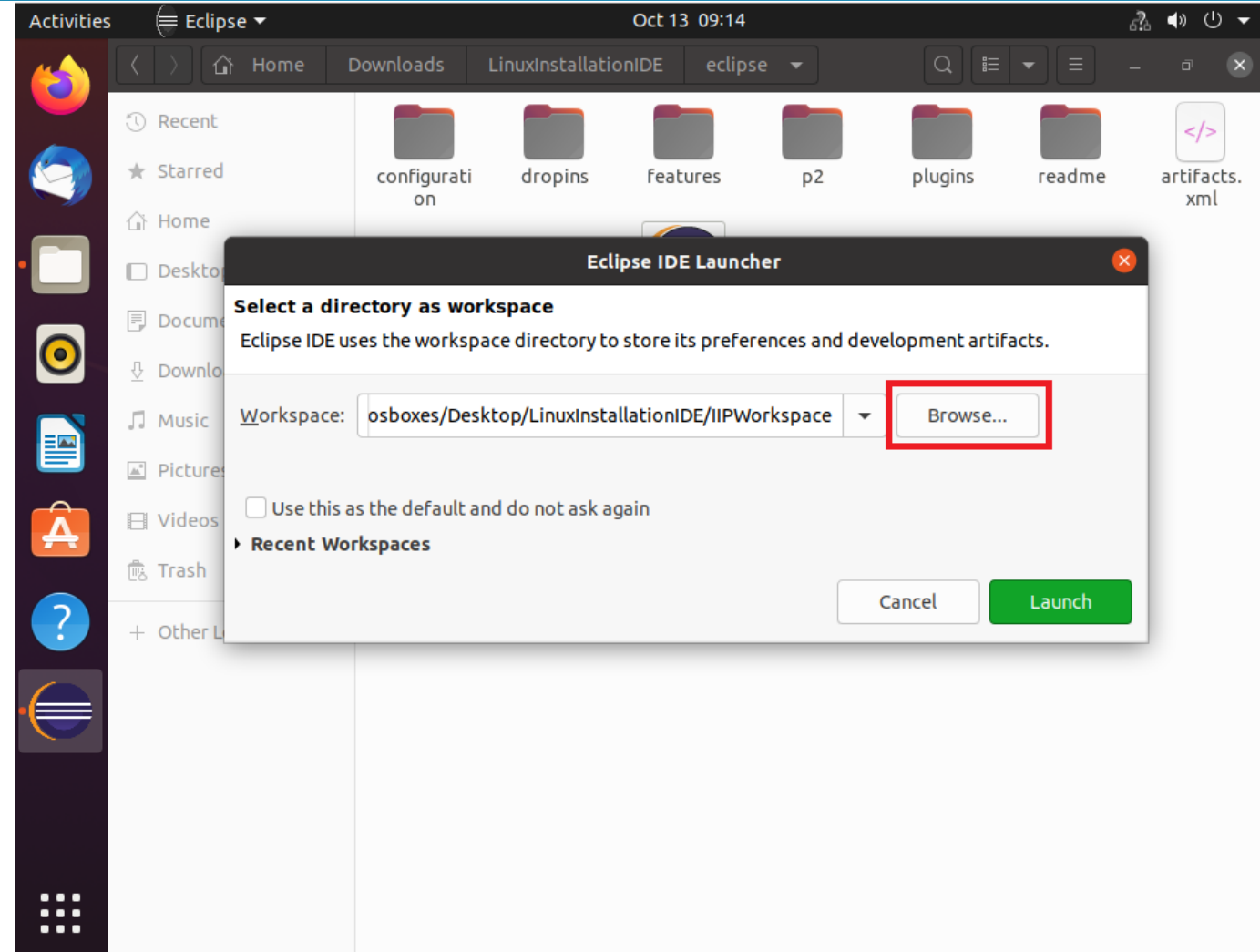
- Inside eclipse folder, open eclipse application.

Setup the IDE Eclipse environment

- Browse to IIPWorkspace in downloaded folder.

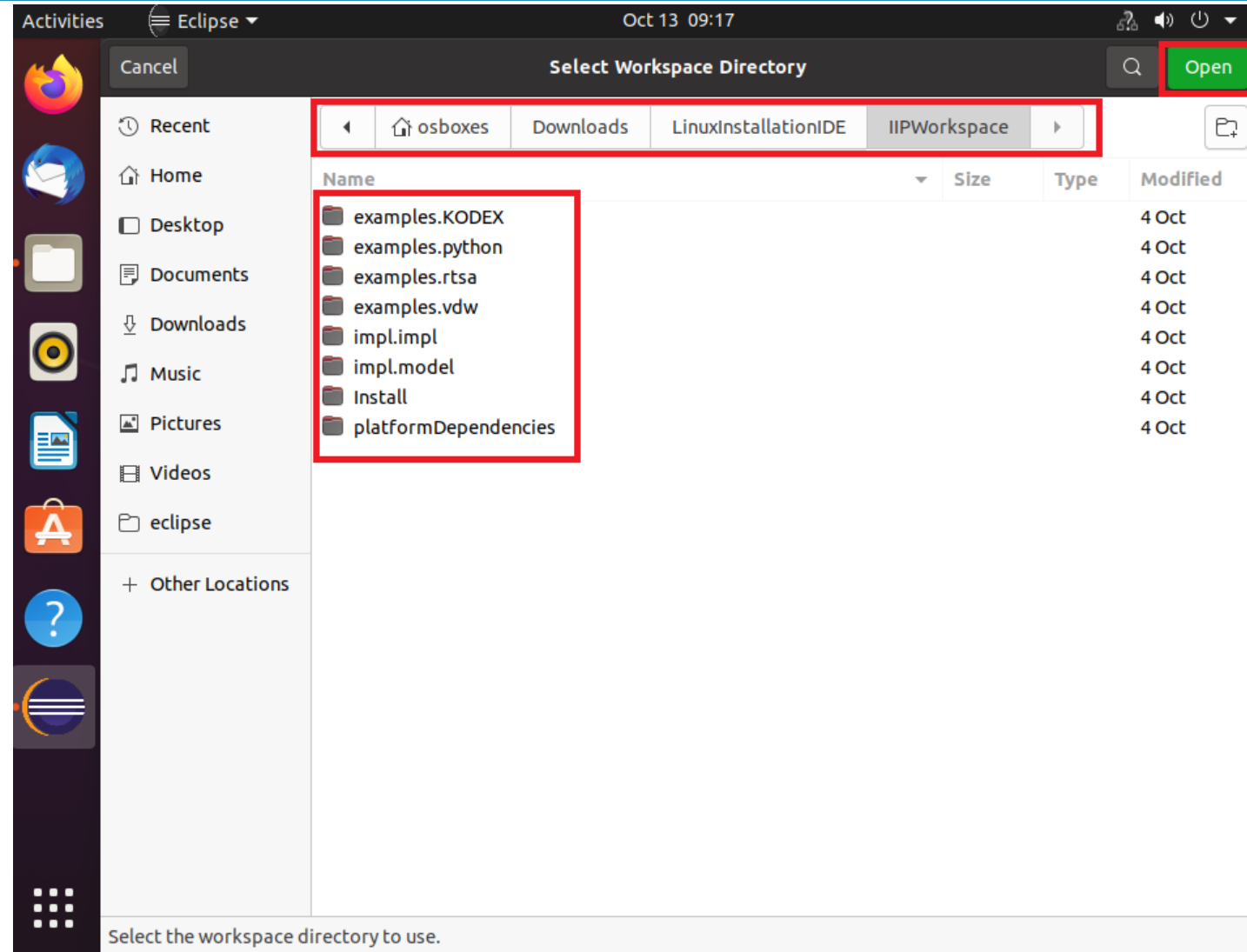# Setup the IDE Eclipse environment

- You should see the following projects in that directory.
- Click open.

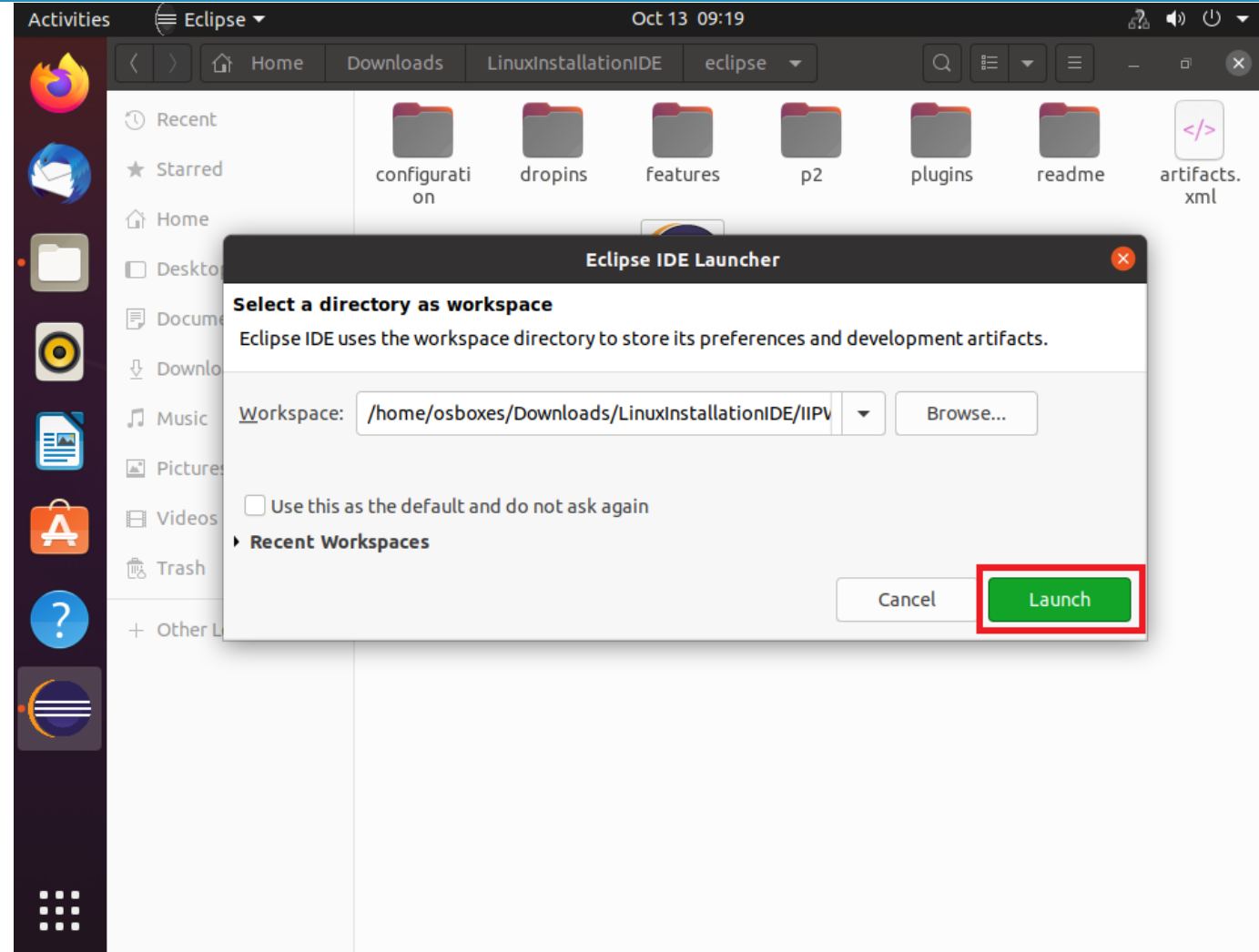# Setup the IDE Eclipse environment

- Click Launch.

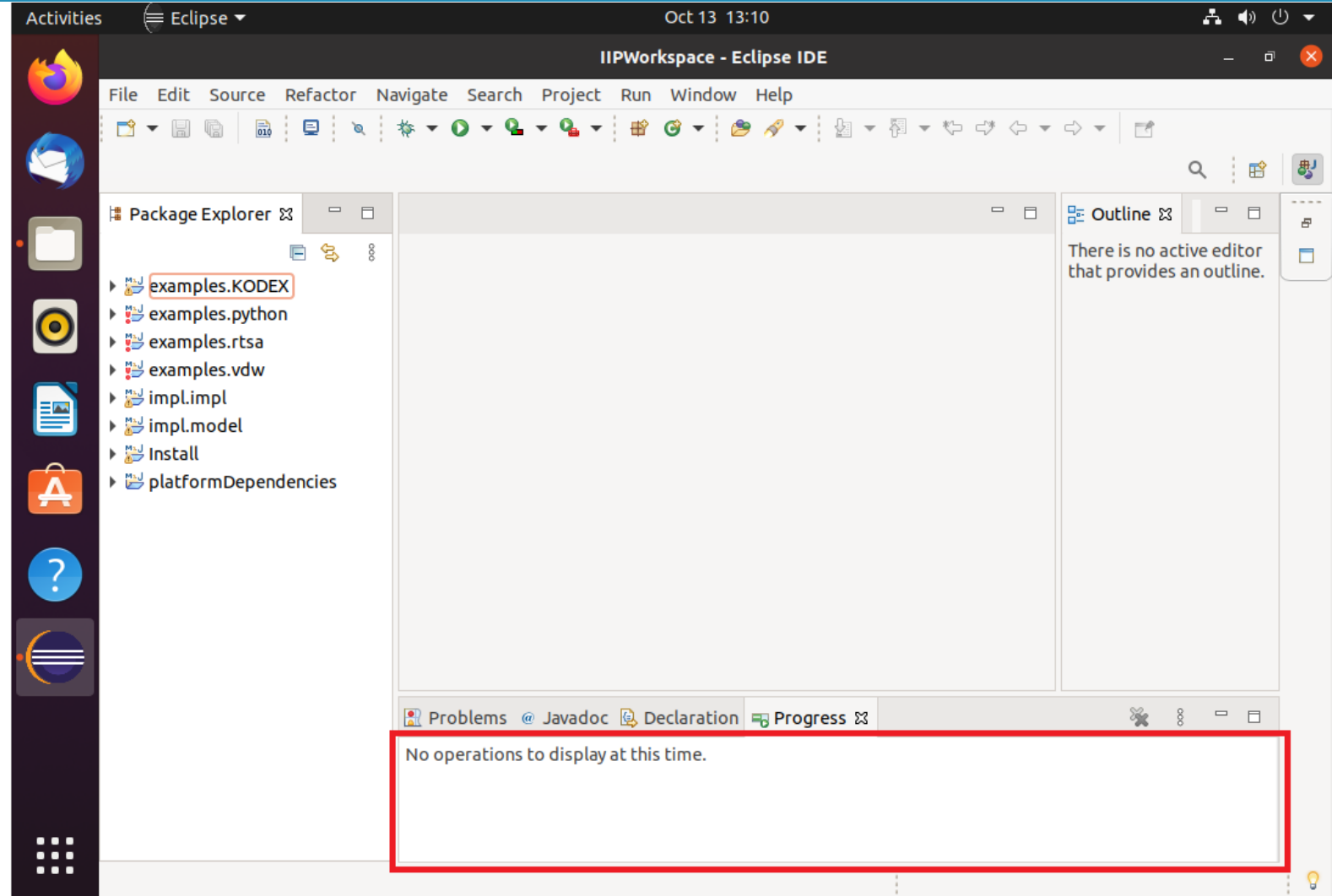# Setup the IDE Eclipse environment

- Wait until all projects are build and ready to use.

Install the platform

Docker Engine Installation - step (1)

- **Please note that you should install Docker Engine in case to want to run container version of the platform, else Skip Docker Installation. Please check the handbook for more information.**

- If **Docker Engine v20.10.7** is not installed, then Install **Docker Engine v20.10.7**, may be needed

```
- sudo apt-get update -y
- sudo apt-get install \
    ca-certificates \
    curl \
    gnupg \
    lsb-release -y
```

- If **Docker Engine v20.10.7** is not installed, then Install **Docker Engine v20.10.7**, may be needed

```
- sudo mkdir -p /etc/apt/keyrings
- curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --
  dearmor -o /etc/apt/keyrings/docker.gpg

- echo \
  "deb [arch=$(dpkg --print-architecture) signed-
by=/etc/apt/keyrings/docker.gpg] https://download.docker.com/linux/ubuntu
\
  $(lsb_release -cs) stable" | sudo tee
/etc/apt/sources.list.d/docker.list > /dev/null
```

- If **Docker Engine v20.10.7** is not installed, then Install **Docker Engine v20.10.7**, may be needed

  ```
  - sudo apt-get update -y

  - sudo apt-get install docker-ce=5:20.10.7~3-0~ubuntu-focal
  docker-ce-cli=5:20.10.7~3-0~ubuntu-focal containerd.io
  docker-compose-plugin -y
  ```

- Create an empty folder and it (for example "Install")

  - `mkdir Install`

  - `cd Install`

- Download Install-Package and unpack it

  - `wget` https://jenkins-2.sse.uni-hildesheim.de/view/IIP-Ecosphere/job/IIP_Install/lastSuccessfulBuild/artifact/install.tar.gz

  - `tar xzpvf install.tar.gz`

- Install platform dependencies
  - `cd platformDependencies`
  - `mvn install`
  - `cd ..`
- Obtain platform bootstrap packages
  - `mvn package -DskipTests`

- Modify the IP address for the platform in the configuration file (src/main/easy/InstallTest.ivml) or use the following two commands to do so

```
- export localIP=$(hostname -I | cut -d ' ' -f1)
- sed -i 's/147.172.178.145/'$localIP'/g'
  src/main/easy/InstallTest.ivml
```

- Instantiate platform: Execute in "install folder"

```
- mvn exec:java
```

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

Start The Platform

Start The Platform

- There are two possible aways to the run the platform:

  - Local: One machine working as platfrom and device at the same time.

  - Distributed: One machine working as platform, another machine(s) working as device(s)

Start The Platform Local - Step (1)

- The broker scripts and files in "Install/gen/broker" folder, run the following script in separate terminal to start it
  - `broker.sh`
- The platform scripts and files in "Install/gen" folder, run the following script separate terminal to start it
  - `platform.sh`

- To make the platform machine working as resources run the following scripts, each one in separate terminal
    - `ecs.sh`
    - `serviceMgr.sh`
- Or just run the following script in separate terminal (share the same memory)
    - `ecsServiceMgr.sh`
- To start the command line interface for the platform run the following script in separate terminal
    - `cli.sh`
- The above scripts are exists in "Install/gen" folder

- **Please note that you should execute all the steps in "Required setup (Prerequisites)" and the first 2 steps in "Platform Installation" on each device.**
- Copy the following files and folders from the platform server (the PC you installed the platform on) to the PC/device that should be added to the platform as a resource:

  - gen\ecsJars (folder)
  - gen\ecsSVCJars(folder)
  - gen\broker (folder)
  - gen\svcJars (folder)

  - gen\ecs.bat (file)
  - gen\serviceMgr.bat (file)
  - gen\ecsServiceMgr.bat (file)

- To join the device as resources in the platform run the following scripts, each one in separate terminal
  - `ecs.sh`
  - `serviceMgr.sh`
- Or just run the following script in separate terminal (share the same memory)
  - `ecsServiceMgr.sh`

- If everything worked fine, then PC/device should be listed as a platform resource.

- The difference between a device and an Edge devices is (in case that Edge device only supports Java 8)
  - Copy the following files (not the files from slide 26) from the platform server to the Edge device and run it.
    - gen\ecs8.sh instead of gen\ecs.sh
    - gen\serviceMgr8.sh instead of gen\serviceMgr.sh
    - gen\ecsServiceMgr8.sh instead of gen\ ecsServiceMgr.sh

Stop The Platform

Stop The Platform

- Stopping the platform:

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

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

Kontakt

Ahmad Alamoush

alamoush@sse.uni-hildesheim.de

https://www.iip-ecosphere.eu

@de_iipecosphere