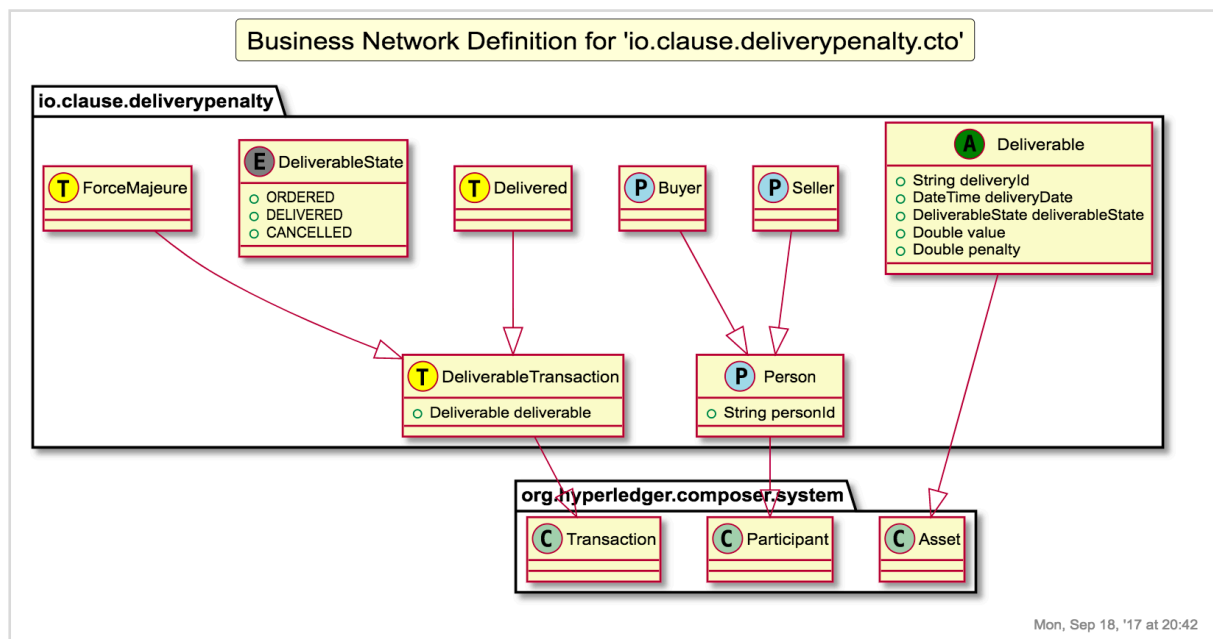


# Visualising Composer Models as UML Class Diagrams

## Introduction

The Hyperledger Composer modelling language is used to describe the structure of the data that is manipulated by your business networks. The Composer data model is expressed in terms of the assets, participants and transactions, and the relationships between them. As your data models become larger and more complex it becomes necessary to visualise them graphically, either to ease comprehension, debugging or development, or to communicate with the other stakeholders in your project.

Hyperledger Composer includes tools that make generating UML-style class diagrams from your Composer model files easy. Colour coding is used to indicate the various roles of the classes in the diagram and inheritance relationships are visualised.



*Sample UML class diagram, generated from a Composer model file*

Hyperledger Composer includes a command line utility and APIs that can convert model files to PlantUML format. PlantUML format files can then be rendered using a variety of tools. The installation instructions for one set toolset is included below.

## Install VSCode

The easiest way to trigger generation of class diagrams is within VSCode itself. This will allow you to edit your Composer model files and get fast visual feedback on your changes.

Install VSCode by visiting the [Visual Studio Code website](#) and following the instructions

for your platform.

## Install the Hyperledger Composer Extension

After the VSCode installation is complete. Install the [Hyperledger Composer extension from the Visual Studio Marketplace](#)

## Install the PlantUML Extension

You next need to install the [PlantUML extension from the Visual Studio Marketplace](#)

## Install Java

For the PlantUML extension to be able to render diagrams you must have a local install of Java and have it on your `PATH`. Follow the install instructions for Java on your platform. For example, by visiting the Oracle website to [Download Free Java Software](#)

On macOS you may need to add Java to your `PATH`. You can do so by editing (creating the file if you do not have it) the file `.bash_profile` in your user home directory.

If you have used the Oracle installer for Java you can add the following line to the `.bash_profile`:

```
export JAVA_HOME="/Library/Internet Plug-Ins/JavaAppletPlugin.plugin/Contents/Home"
```

Verify that Java is now on your path by restarting the `terminal` application and typing `java -version`.

## Install Graphviz

You then need to install `graphviz` for your platform, which does the actual work of generating the diagrams.

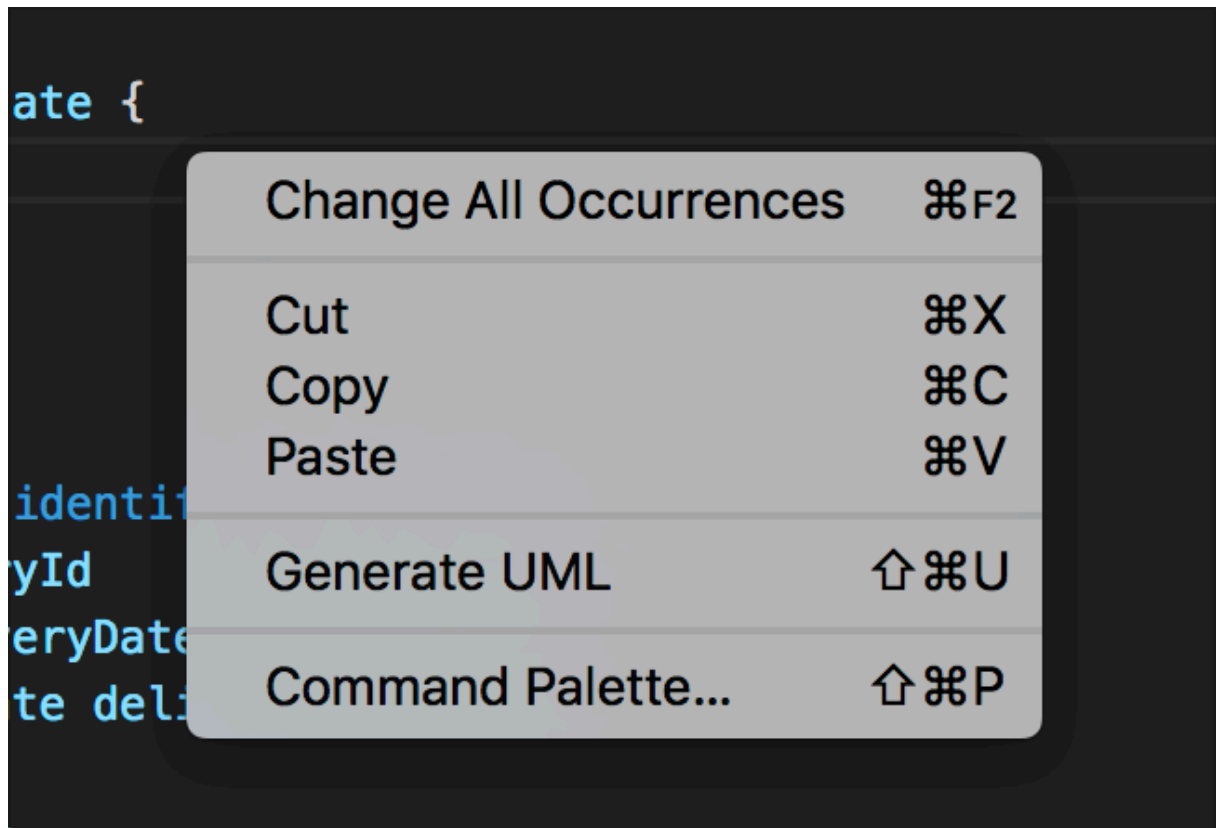
On the Mac the easiest way to install `graphviz` is to first install [Homebrew](#) and then at the terminal type:

```
brew install graphviz
```

You can verify that `graphviz` is correctly installed by typing `dot -help` at the terminal.

## Generating Diagrams

To generate a UML class diagram open a Composer model (CTO) file in VSCode. Right-click (Control-Click on macOS) within the file and a context menu will appear with the `Generate UML` option .



Select the menu item and the PlantUML preview window should open with your diagram in it.

Happy modelling! 😊