

## Experiment No.6

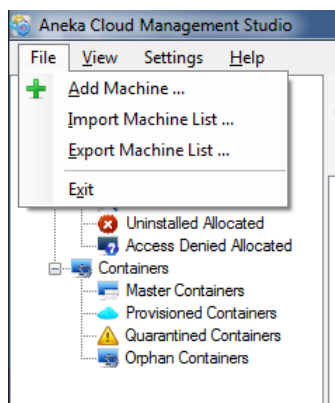
**Aim:** Make and perform scenario to pause and resume the simulation in Aneka and create simulation entities dynamically.

### Theory:

#### Infrastructure Management

Infrastructure is composed of the physical and virtual machines in your Local Area Network or Data Centre. Before creating an Aneka Cloud you must define your infrastructure for hosting the Cloud. The Aneka Cloud Management Studio provides facilities for defining and managing your infrastructure.

#### Adding a new Machine

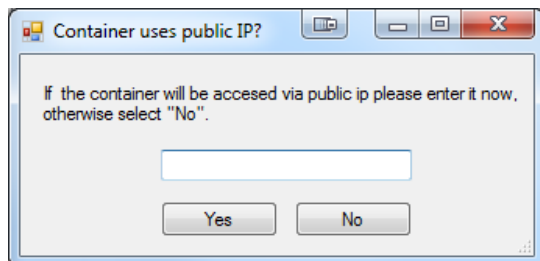


The simplest way to represent your infrastructure in Management Studio is to add each machine individually. You do this by selecting the Add Machine option in the File menu. This approach is simple enough if you have a few machines but can be cumbersome when dealing with a large network or Data Centre. You may alternatively create and import a machine list file as described below.

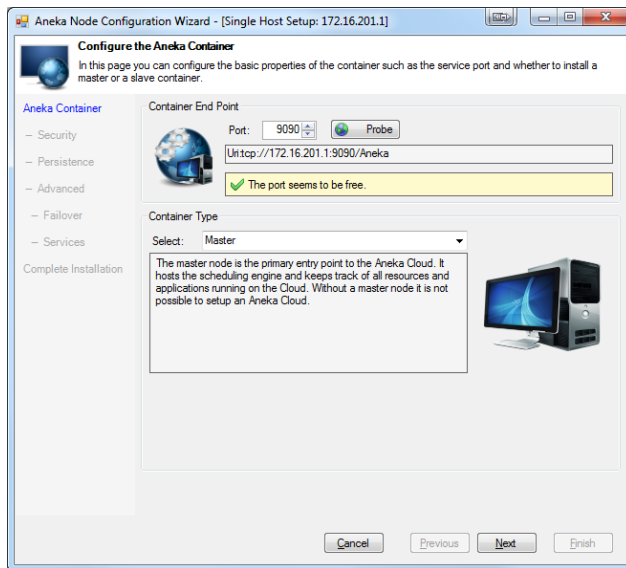
#### Installing the Master Container

##### Step 1 – Container Type and Port Configuration

The Wizard will automatically probe the default Container port, 9090, on start up in order to verify that it is free. If the port is not free, as a result of being used by another program, you must either ensure that it becomes free, or assign a new port number for the Container. If you wish to verify whether your new port is free, press the Probe button again. Make sure that the selected Container Type is Master and click Next to proceed.

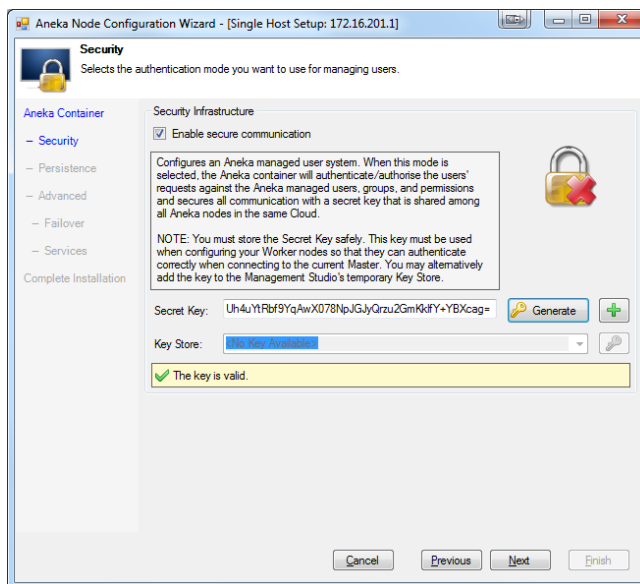


If machine has Public IP



## Step 2 – Security Configuration

This step helps you setup security for your cloud. It is highly recommended that you enable security in a production environment. For testing or evaluation purposes however, you may choose to disable security. Enabling secure communication ensures that all users are required to supply a valid user name and password to use the Aneka Cloud. It also ensures that the Master and Workers authenticate each other and all traffic exchanged between them is encrypted. In order to create Aneka user accounts see section below on creating Aneka users.



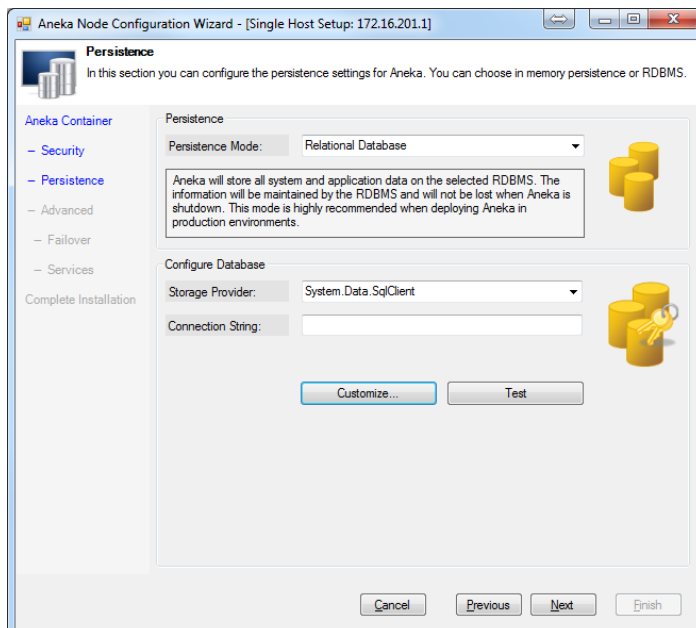
Configuring security for your cloud

The Secret Key is a shared security key between the Master and Worker Containers for authentication and encryption. It is mandatory that you generate a key if you enable secure communication. It is also recommended that you add this key to the Key Store with a friendly name, as you will need it later when configuring a Worker Container. Click Next to proceed.

## Step 3 – Persistence Configuration

An Aneka Cloud maintains data for different purposes including user management, application and job management, resource management, accounting, billing and monitoring to name a few. This step lets you setup the persistence requirements for your cloud.

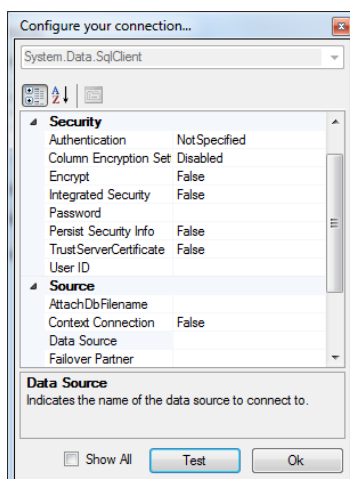
There are two Persistence Modes available to choose from, Relational Database and Memory. It is highly recommended that you choose Relational Database for production environments. Memory persistence is typically useful for testing or evaluation purposes, and will store all data in volatile memory which will be lost when the Container restarts or crashes.



#### Setting up persistence for the Aneka Cloud

Selecting Memory persistence requires no further configuration. Selecting Relational Database requires that you select one of the two supported Storage Providers. Aneka currently supports SQL Server 2005/2008 and MySQL 5.1 or greater. You must next configure the Connection String. Pressing Customize brings up the Connection String configuration dialog as shown in the figure below.

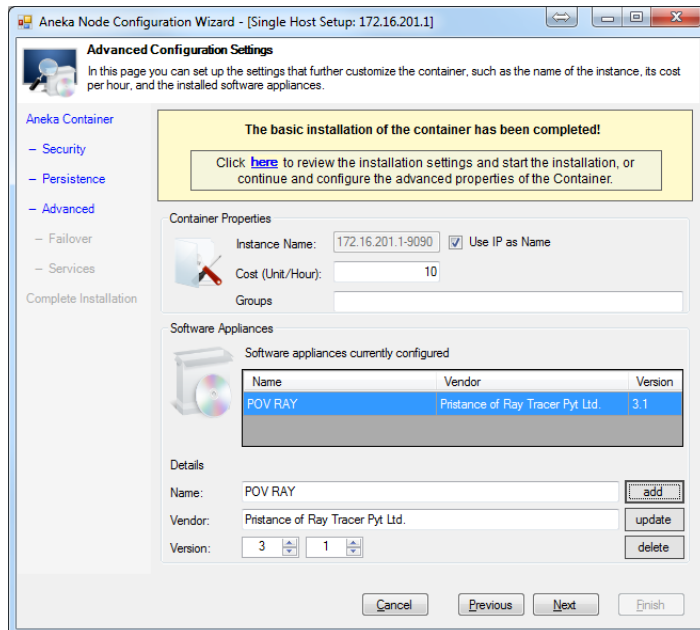
This configuration dialog differs depending on whether you select System.Data.SqlClient or MySql.Data.MySqlClient as your data provider. If you select System.Data.SqlClient provider for SQL Server 2005/2008 database, you are required to provide, at the least, the User ID, Password, Data Source, and Initial Catalog. If you select MySql.Data.MySqlClient provider for MySQL databases you are required to provide, at the least, the User Id, Password, Database and Server. Once you have setup the connection string, you can test it by clicking the Test button. If a successful connection can be made to the database server you can proceed by clicking Ok.



Connection String configuration dialog

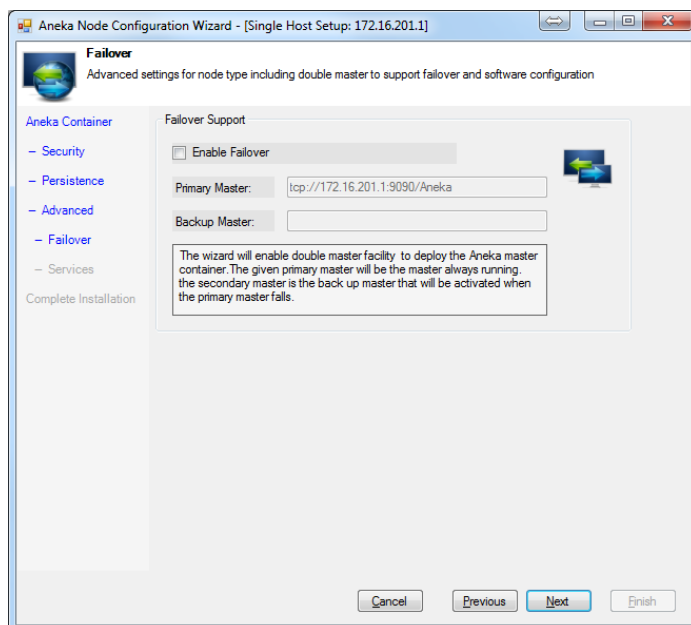
## Step 4 – Cost and Software Appliances

You have now completed the basic settings for installing the Container.



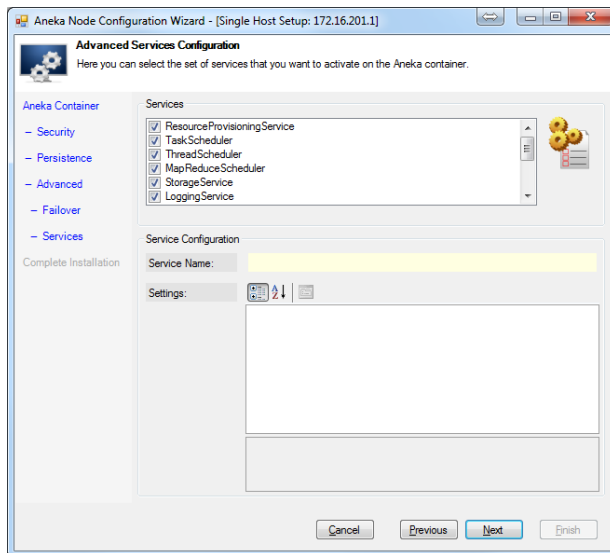
This step lets you configure additional container properties such as the Instance Name and Cost. The Instance Name refers to the name of the Container. You make choose to leave the Use IP as Name option checked by default if you would like to use the IP address and port number of the Container as its name, or uncheck to specify a different name.

## Failover Configuration



A failover system increases the availability of your Aneka Cloud. This step lets you configure your cloud for failover by specifying a Primary and Backup Master. In the event the Primary Master Container should fail, the Backup Master will take control of the cloud so that it could continue to function.

## Service Configuration

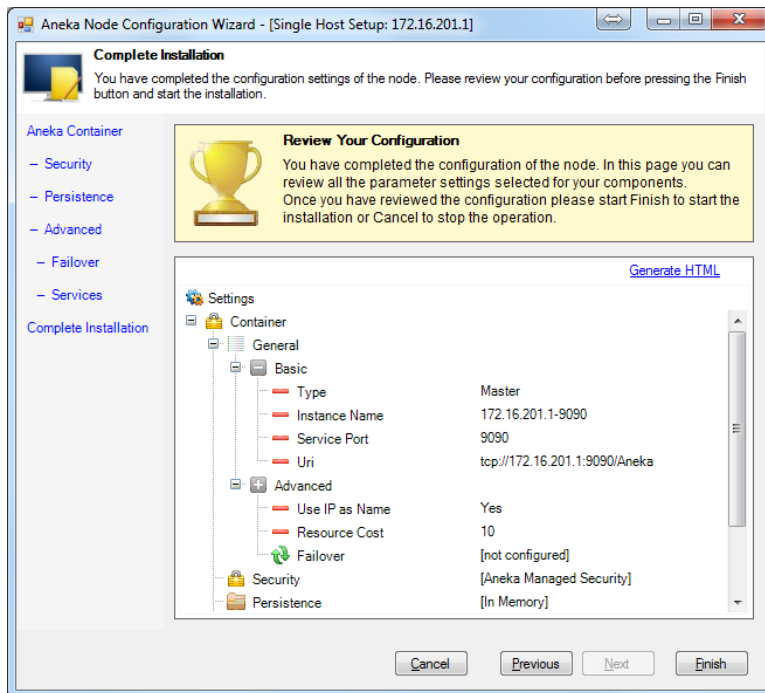


This step allows you to select the list of services you wish to host on the Master Container. You may leave the default selection intact for the most common service configuration for the Master Container.

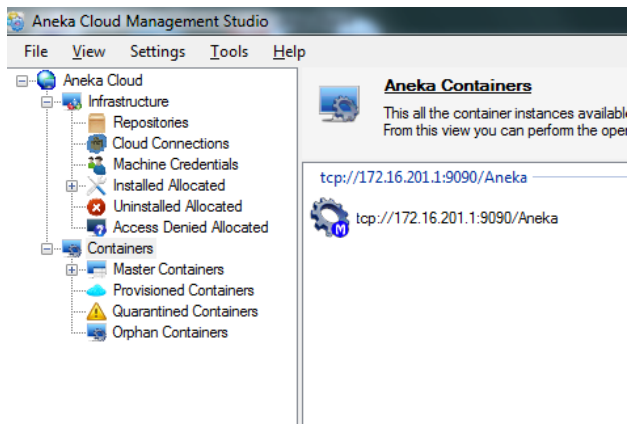
This includes the following list of services:

- ResourceProvisioningService
- TaskScheduler
- ThreadScheduler
- MapReduceScheduler
- StorageService
- LoggingService
- ReportingService

### Step 7 – Summary



The final step of the Wizard presents a summary of the installation settings. Browse through the settings to ensure that everything is correct. In order to change any of the settings click Previous until you reach the corresponding step of the Wizard. To start installing the Container click Finish.



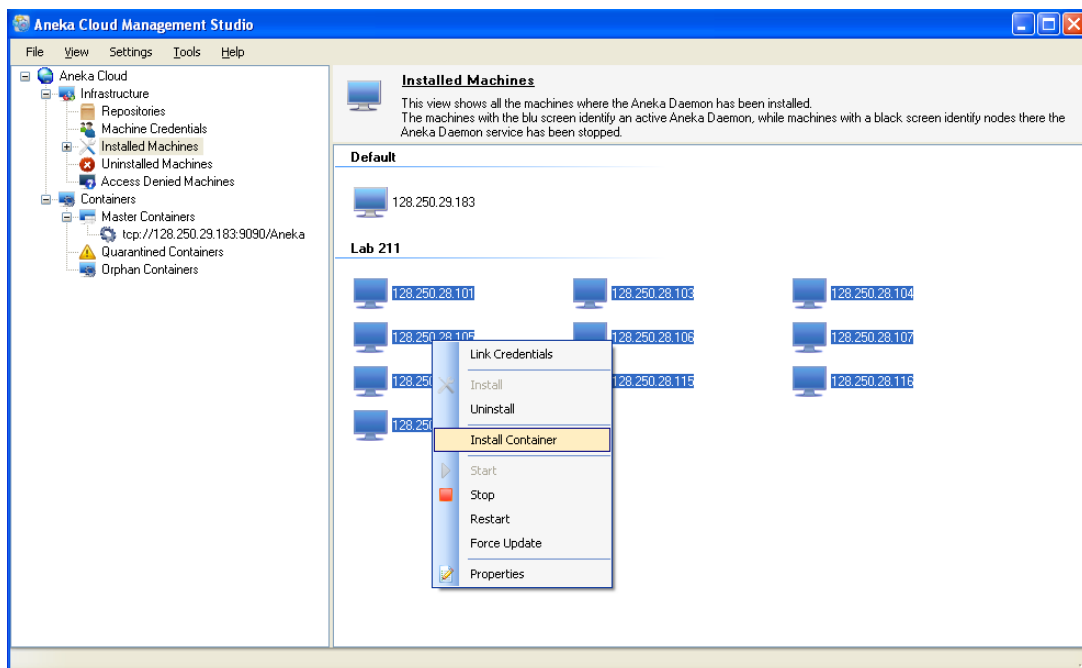
To view the installed Master Container, click on Master Containers in the Cloud Explorer. The figure above shows the installed Master Container up and running. Now that you have the Master Container ready, you can proceed to setting up your Workers.

## Installing Worker Containers

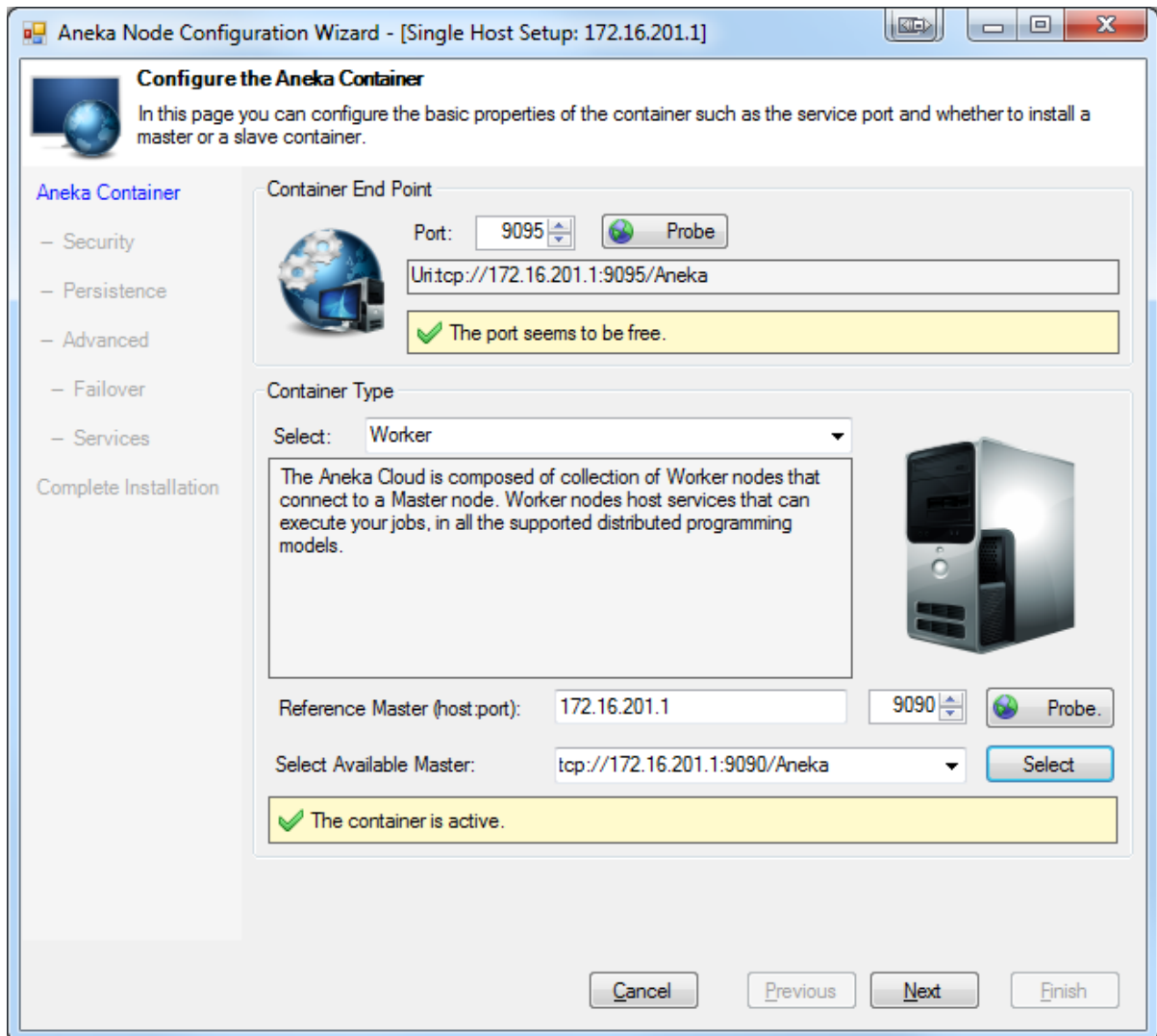
The process of installing Worker Containers is similar to that of installing the Master. Select the list of machines that you wish to install Workers on, and then select Install Container from the context menu as shown in the figure below.

### Step 1 – Container Type and Port

Selecting Install Container on the chosen machines brings up the Container Installation Wizard. This Wizard will begin by automatically probing the default Container port, 9090, on all the selected hosts in order to verify that the port is free. If the port is not free, as a result of being used by another program, you must either ensure that it becomes free, or assign a new port number for the Containers. If you wish to verify whether your new port is free, press the Probe button again.



Installing Worker Containers



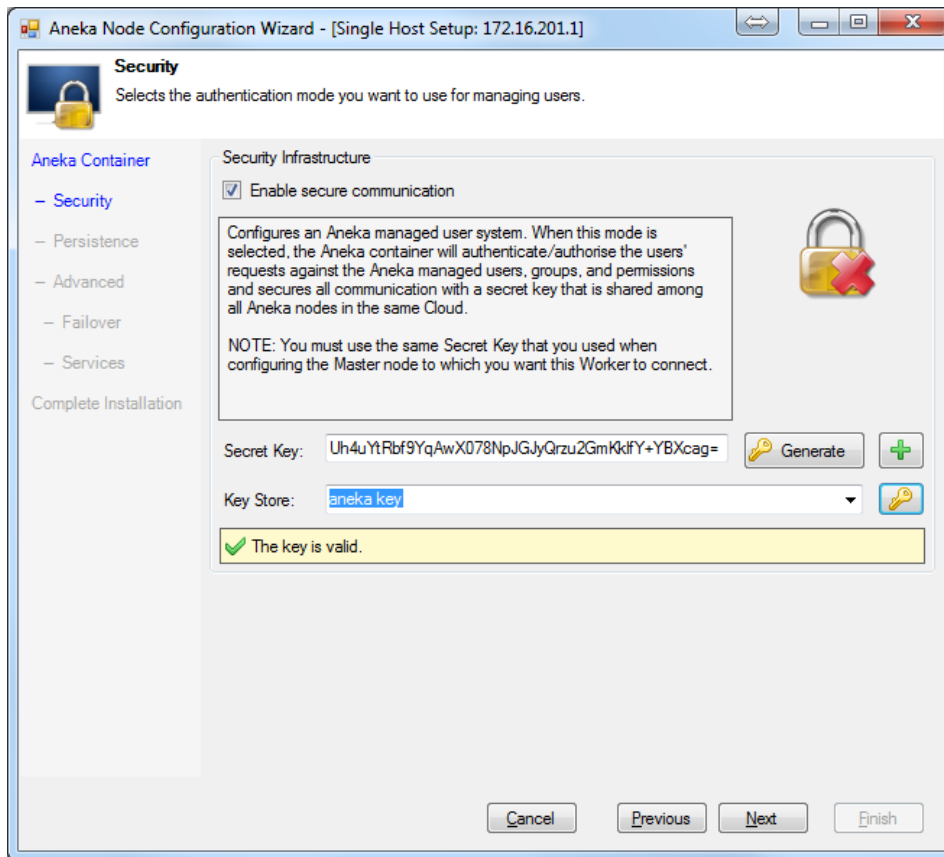
The Container Installation Wizard for installing Workers

**Ensure that the selected Container Type is Worker. Next select from one of the available Masters, or manually enter the host IP and port number of the Master. Probe the Reference Master you just entered in order to verify that it is up and running. Click Next to proceed.**

### Step 2 – Security Configuration

If you chose to disable security when configuring the Master Container, you must also disable security for your Workers. However, it is highly recommended that you enable security in a production environment. This ensures that the Master and Workers authenticate each other and all traffic exchanged between them is encrypted.

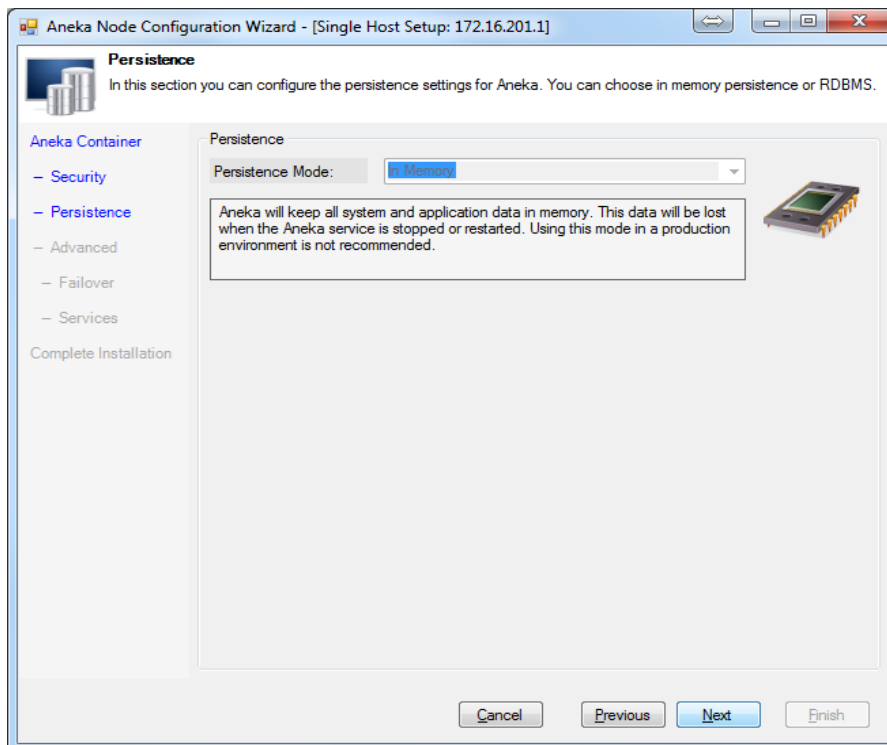
To setup security for your Workers, you must either type in the same Secret Key that you used for your Master or select the same key from the Key Store. Click Next to proceed.



Configuring security for your cloud

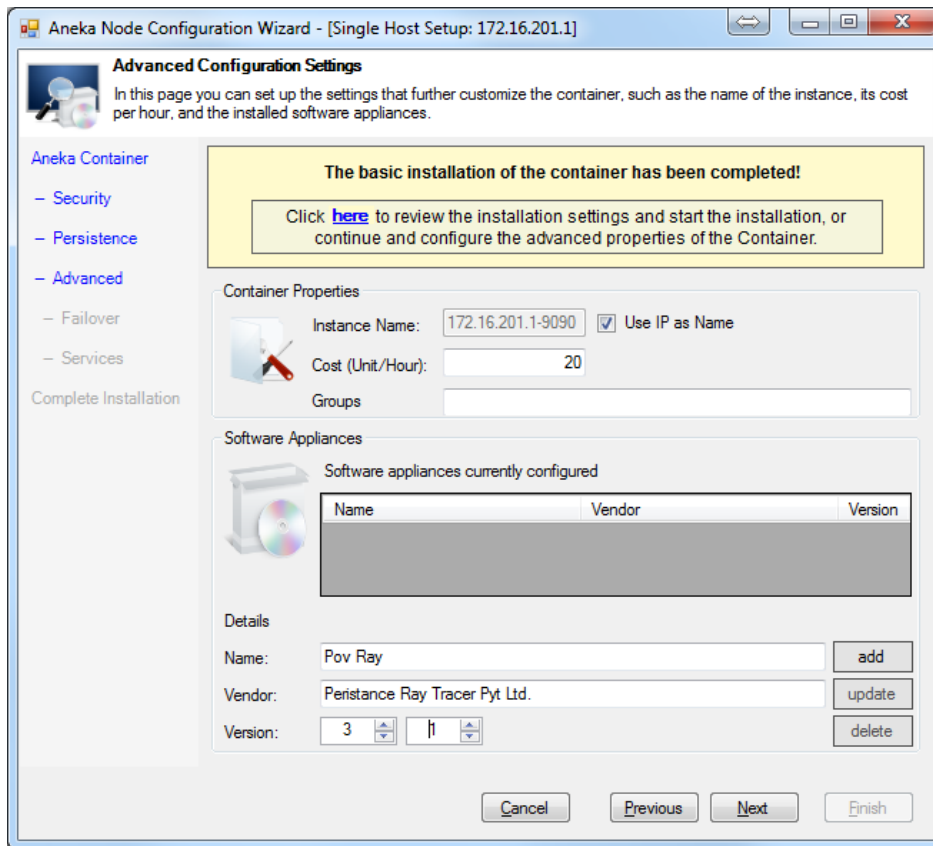
### Step 3 – Persistence Configuration

No special persistence configuration is required for Workers. Click Next to proceed.



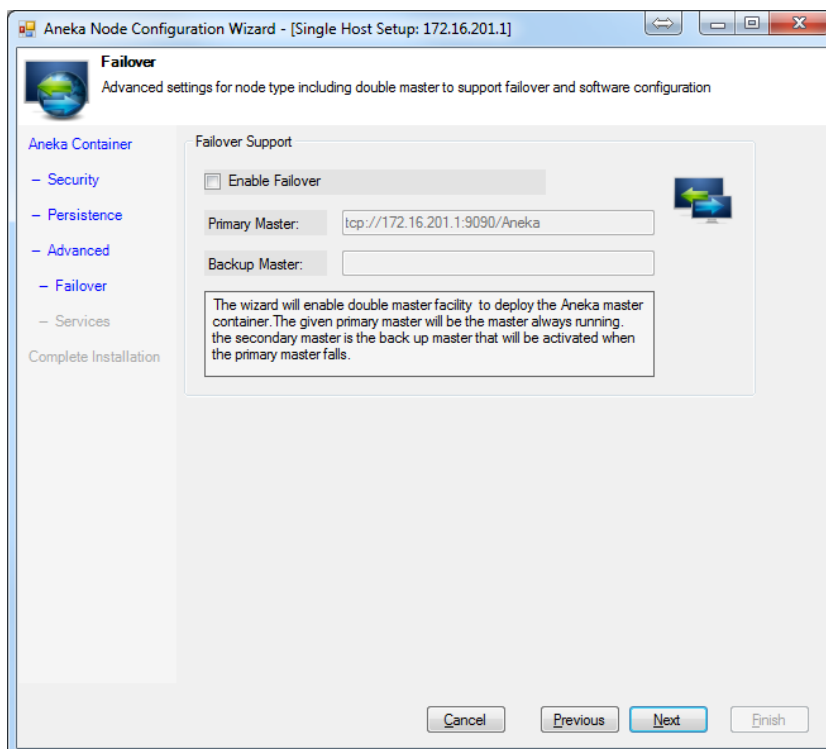
No persistence configuration is required for Workers





Cost and Software Appliances

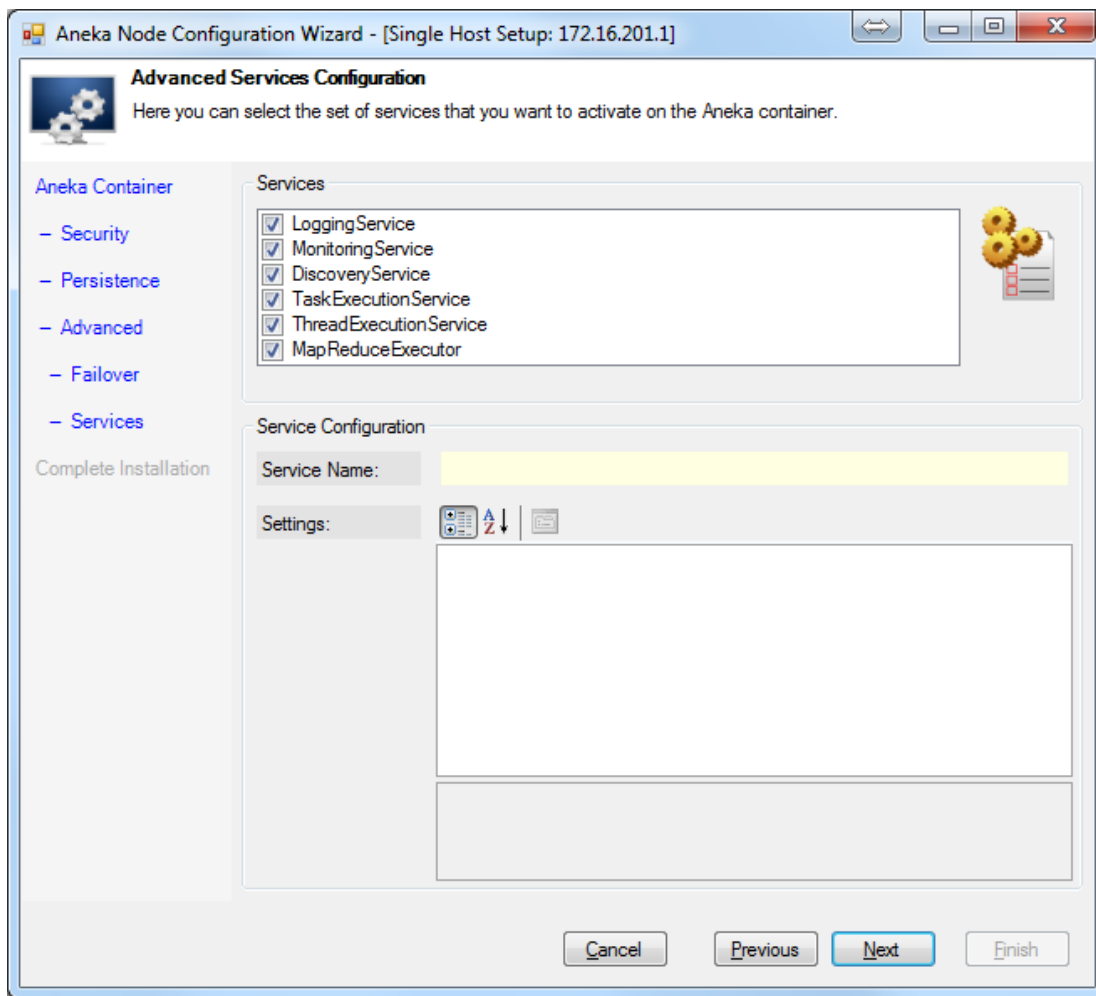
## Step 5 – Failover



No failover configuration required for Workers

No failover configuration is required for Workers. Click Next to proceed.

## Step 6 – Service Configuration

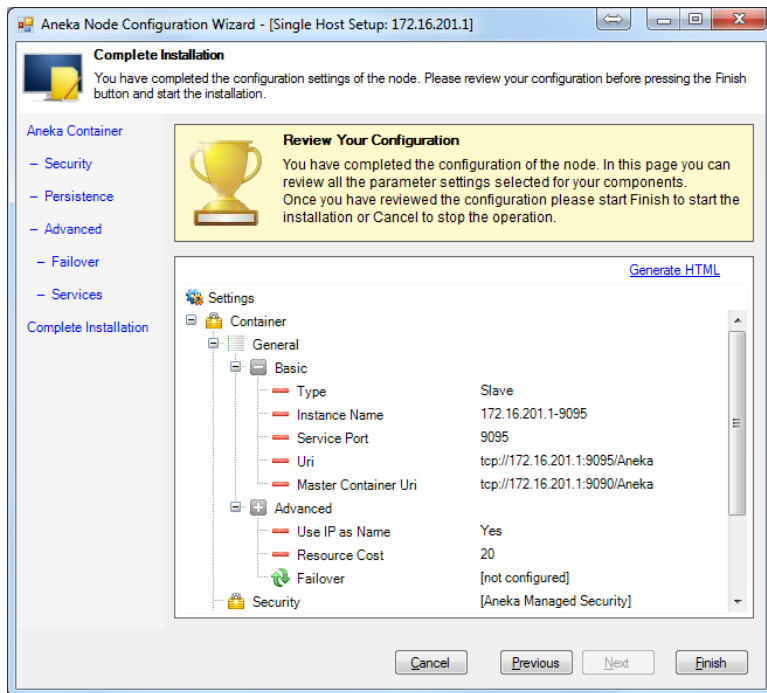


This step allows you to select the list of services you wish to host on the Worker Container. You may leave the default selection intact for the most common service configuration for Worker Containers. This includes the following list of services:

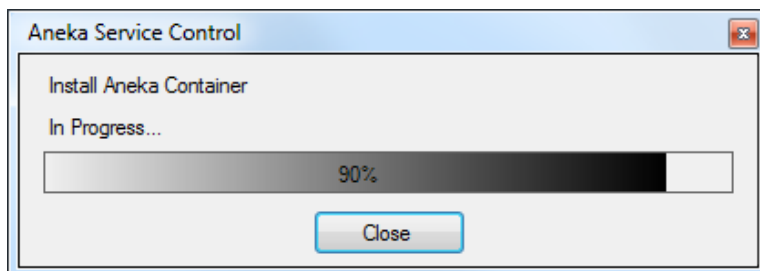
- LoggingService
- MonitoringService
- TaskExecutionService
- ThreadExecutionService
- MapReduceExecutor

To configure the properties of each to the listed services, select the service and then edit the properties in the property box below. For a more detailed description of each of these services and properties, see Appendix A on Service Configuration. Click Next to proceed.

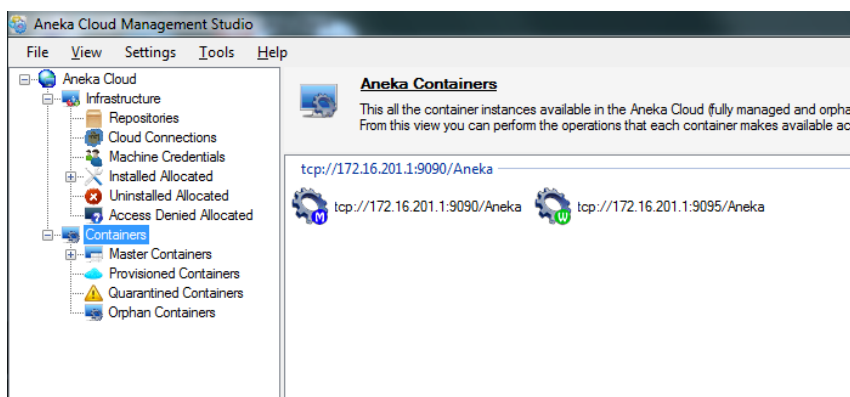
## Step 7 – Summary



The final step of the Wizard presents a summary of the installation settings. Browse through the settings to ensure that everything is correct. In order to change any of the settings click Previous until you reach the corresponding step of the Wizard. To start installing the Container click Finish.



## Installation of Worker Containers



## Installed Worker Containers

**Conclusion:** Hence, I have Installed Master & Worker Container in Aneka.