Developer Edition Installation Guide

Version 1.0

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Document Revision History

Revision Date	Version	Description of Change
October 28, 2015	1.0	Original publication
December 15, 2015	2.0	Edits for TWX demo version

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System Requirements & Software Compatibility

This guide has been tested for compatibility with the DEVICE and the following ThingWorx platform and operating system:

Virtualization Platform	Oracle VirtualBox, v5.0.4 or higher VMWare Workstation, v12 or higher
RAM	6GB
CPU Cores	2
Disk Space	80GB
API Platform	No specific platform required

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Introduction

The ThingWorx Machine Learning Developer Edition download allows developers to begin using machine learning quickly and simply through the use of REST APIs. This download includes the following files:

- ThingWorx Machine Learning API Guide
- ThingWorx Machine Learning.ova (or folder with vmware files)
- Sample Datasets

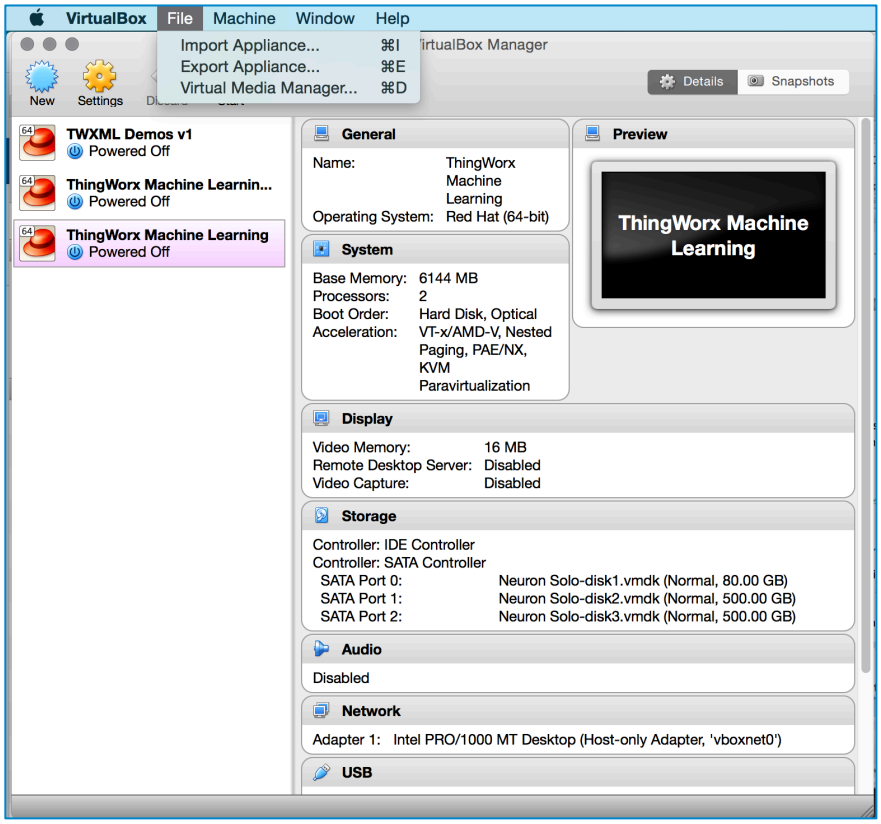
Deploying ThingWorx Machine Learning On-Premise

Currently, ThingWorx Machine Learning supports multiple virtualization platforms, and each image is customized to the specific platform. Images use bridged networks as a default, but can be updated at any time after the import to the virtualization platform is completed. As all images are configured to be self-contained, once images are imported, ThingWorx Machine Learning can be run immediately.

At this time, the default database is PostGres and data is able to be uploaded as json or csv.gz files.

Importing ThingWorx Machine Learning VM

Open the virtualization box previously installed and click File > Import Appliance.



Select the folder icon at the right to navigate to where the VM was downloaded. Select *ThingWorx Machine Learning.ova* and click *Next*, then *Import* on the following screens.

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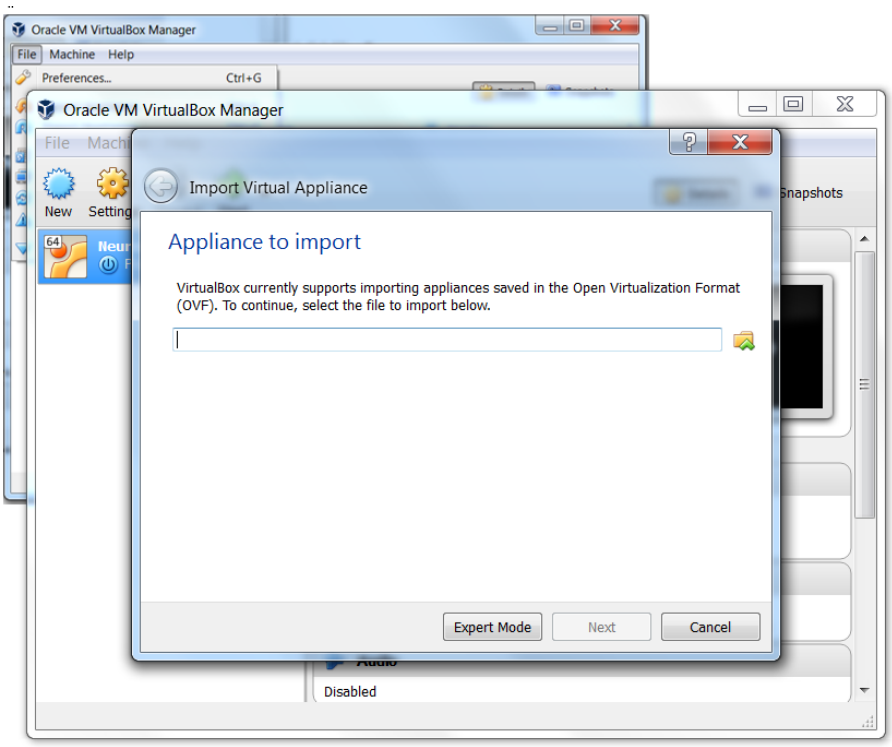
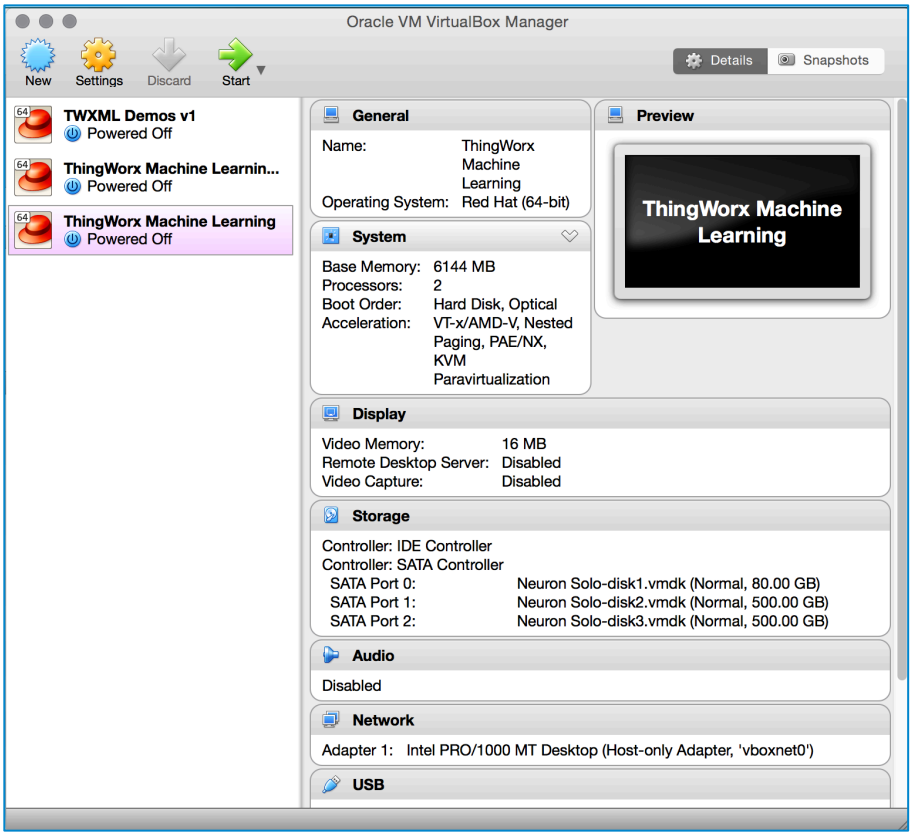


The ThingWorx Machine Learning VM will be imported into the VirtualBox Manager and available on the left side. Once selected, click Start.



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If the error message below appears, please consult your hardware user manual to enable virtualization for your specific machine.

> *Failed to open a session for the virtual machine Ubuntu. VT-x is disabled in the BIOS for both all CPU modes > (VERR_VMX_MSR_ALL_VMX_DISABLED). Result Code: E_FAIL (0x80004005) Component: ConsoleWrap Interface: IConsole {872da645-4a9b-1727-bee2-5585105b9eed}*

If the error massage below appears, please right-click on the ThingWorx Machine Learning VM in the VirtualBox Manager and click Settings. Click on Network and click OK. This will resolve any issues and allow the virtual machine to start normally.

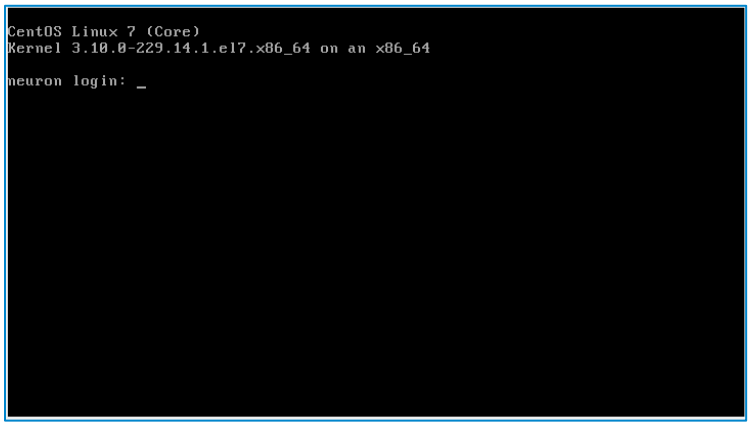
> *Failed to open a session for the virtual machine ThingWorx Machine Learning (Details: Nonexistent host network interface, name "(VERR_INTERNAL_ERROR).").*

Starting ThingWorx Machine Learning

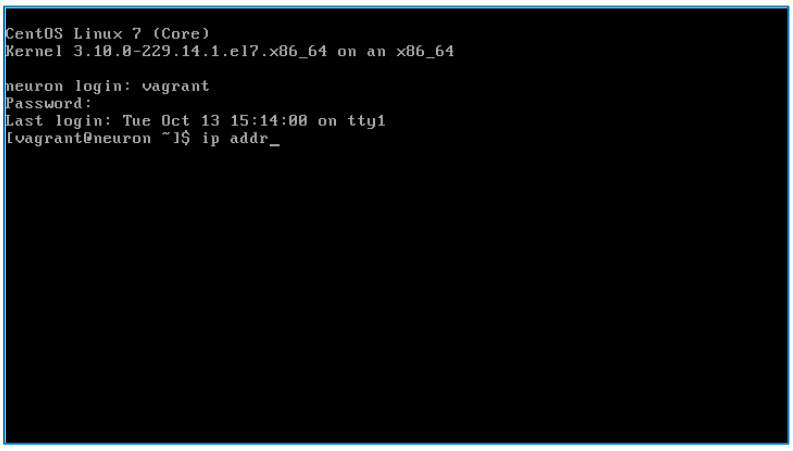
Once the console has started, log into ThingWorx Machine Learning using the credentials below.

Neuron login: vagrant

Password: vagrant



Once logged in, type *ip addr* (ip space addr) and hit enter to obtain the IP Address needed to begin using Neuron.



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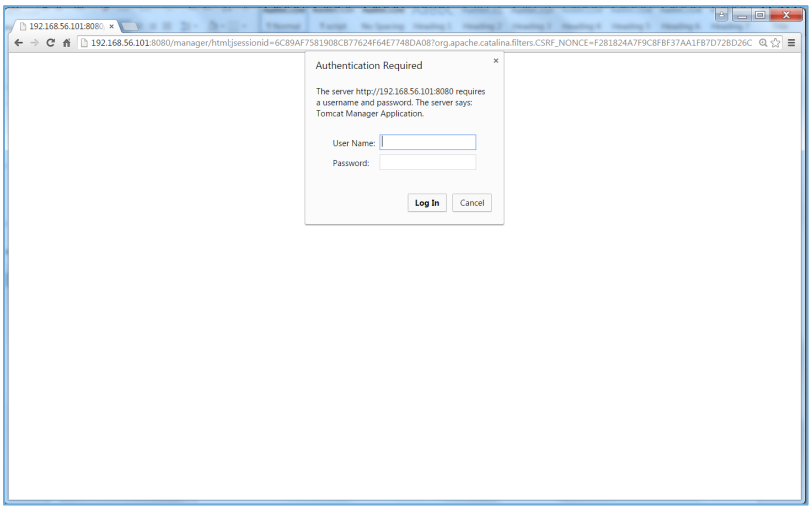
Note: The default for ThingWorx Machine Learning is set to detect the first adapter for a bridged connection. If a user is not connected, they will not receive an IP Address. To change the default, please consult your specific virtualization platform documentation.

Tomcat Manager

Ensure that TomCat is running by entering the path below in your internet browser. Replace (VM IP ADDR) with the ip address obtained above.

http://(VM IP ADDR):8080/manager



Using ThingWorx Machine Learning

The ThingWorx Machine Learning Developer Edition download includes example datasets that can be uploaded into ThingWorx Machine Learning. The Examples folder contains the BeanProEspresso and ParkingKiosk datasets and all files needed to create respective metadata and upload datasets.

All API requests should be sent to http://(VM IP ADDR):8080/1.0/ where (VM IP ADDR) is the IP address of the VM configured previously. The following examples are for adding the Parking Kiosk dataset to ThingWorx Machine Learning and can be followed for the Bean Pro Espresso dataset.

All information related to the APIs can be found in the ThingWorx Machine Learning API Guide.

Initial Set Up

Open your API Development Platform tool and set up the standard headers listed below.

Content-Type: application/json
Accept: application/json
Neuron-application-id: neuronuser
Neuron-application-key: (this can be any value)

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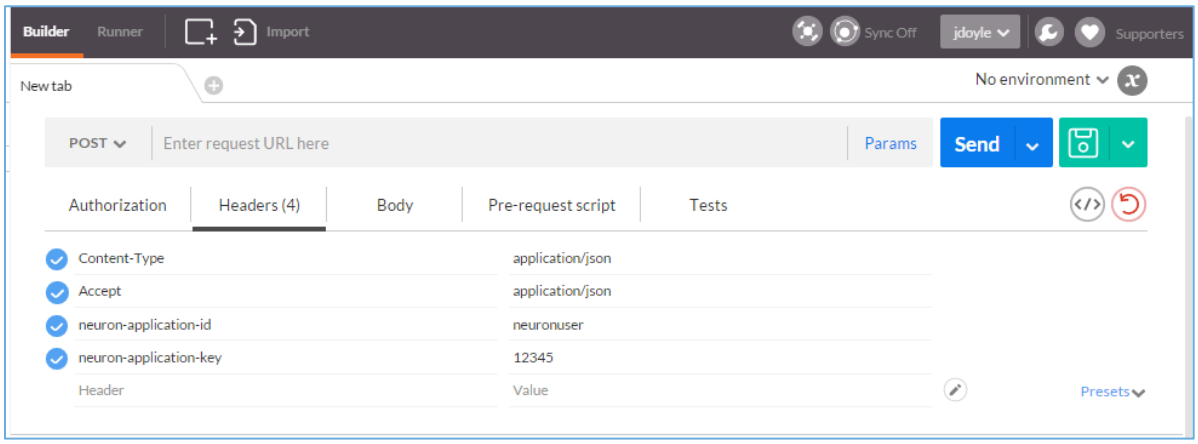
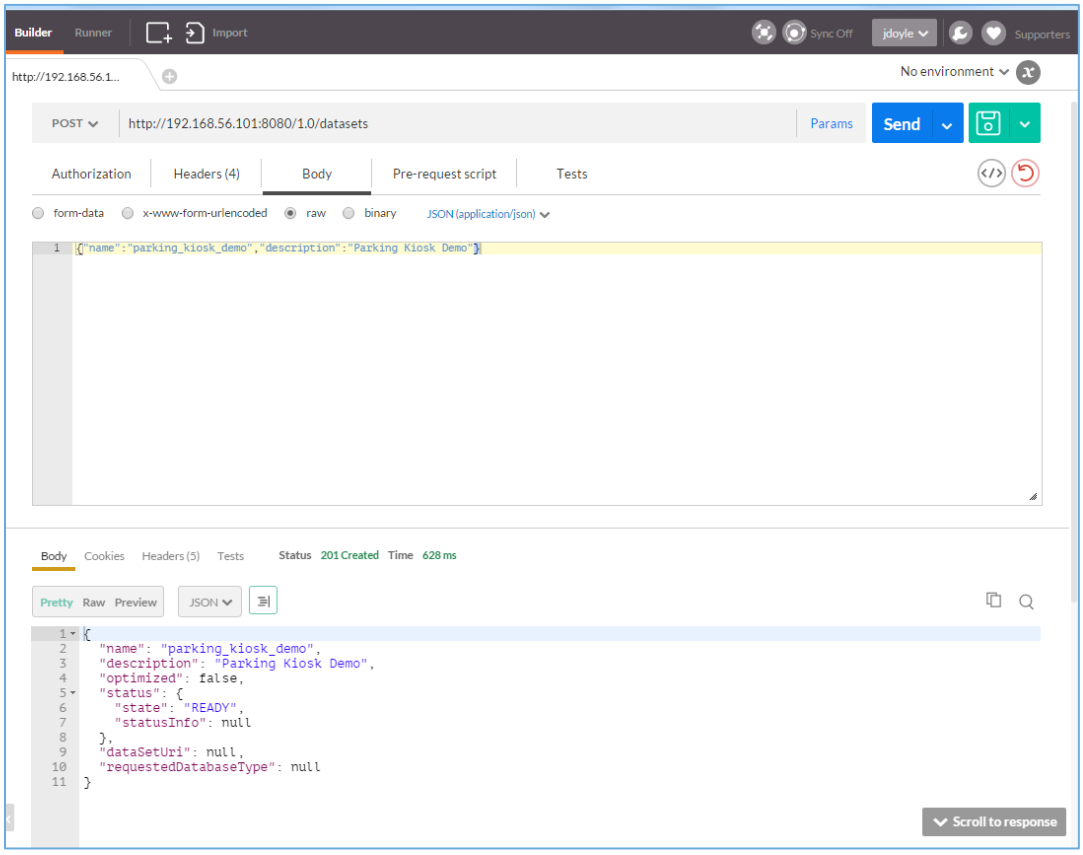


Creating Datasets

The first step is to create a dataset in ThingWorx Machine Learning. Select the POST method, enter the URI: /datasets and copy the content from parkingkiosk_createdataset.



Configure Dataset

After a dataset is created in ThingWorx Machine Learning, the metadata related to the dataset must be configured. Select POST method, enter the URI: /datasets/parking_kiosk_demo/configure, and copy the content from parkingkiosk_configuredataset.

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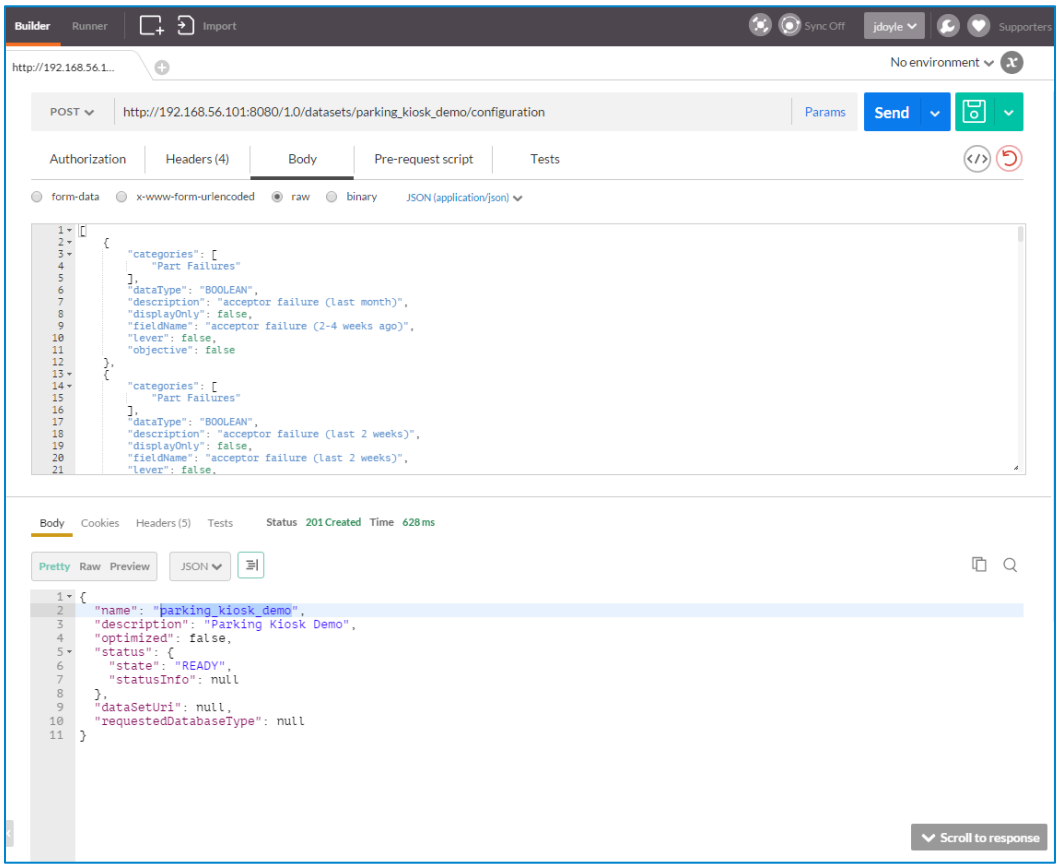
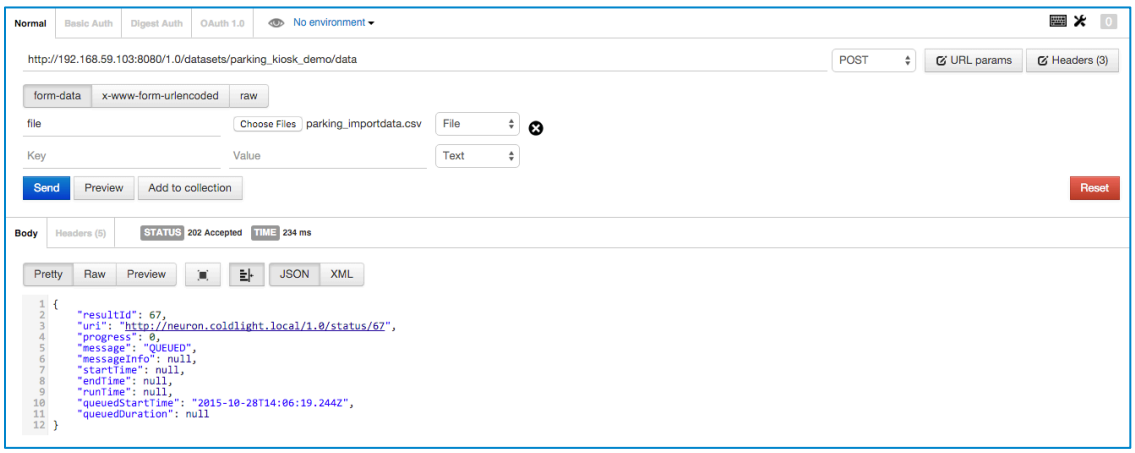


Upload Dataset

After configuring the metadata for the dataset, select POST method, enter the URI: /datasets/parking_kiosk_demo/data. Select form-data, enter the Key as “file,” and select File from the drop-down box at the right as shown below. Click Choose File and select parkingkiosk_importdata. Because you are importing a csv file instead of supplying a json body, you will need to remove the Content-Type Header completely, leaving Accept, neuron-application-id and neuron-application-key in place.



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The sample data has been loaded into ThingWorx ML and can now have analytic jobs run against. For more information on the different analytic insights that can be gained, please reference the *ThingWorx Machine Learning API Guide.*

Troubleshooting

The default VM user has full sudo access. The log and configuration files can be found in the /root folder. To become root, ssh into the ThingWorx Machine Learning image by typing "*sudo su –".*

More information can be found in the Developer Edition VM Advanced Settings document.

Log File	Description
/root/neuronconf/grid.eye	Flat file that contains errors from the eye service (process monitor that watches the ThingWorx Machine Learning Worker processes)
/root/neuronconf/pg_hba.conf	Postgres configuration file for access and security
/root/neuronconf/tomcat	Flat file containing all the Java system properties (CATALINA_OPTS) used by ThingWorx Machine Learning
/root/neuronconf/tomcatconf	Folder that containing the Tomcat configuration files
/root/neuronconf/webapps	Tomcat folder where all the application WAR files are deployed
/root/neuronlog/neurongrid	Folder that exposes several of the log files associated with grid workers
/root/neuronlog/neuron-loggin.log	File that will contain most of the ThingWorx Machine Learning application errors
/root/neuronlog/pg_log	Folder containing the Postgres logs
/root/neuronlog/tomcatlogs	Folder containing the Tomcat container logs
/root/neuronlog/zookeeper	Folder containing the zookeeper logs
/root/neuronfiles	Contains all the files that were created or consumed by ThingWorx Machine Learning

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> *Failed to open a session for the virtual machine Ubuntu. VT-x is disabled in the BIOS for both all CPU modes > (VERR_VMX_MSR_ALL_VMX_DISABLED). Result Code: E_FAIL (0x80004005) Component: ConsoleWrap Interface: IConsole {872da645-4a9b-1727-bee2-5585105b9eed}*

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