Install Aspen & Aspen HYSYS – Python interface

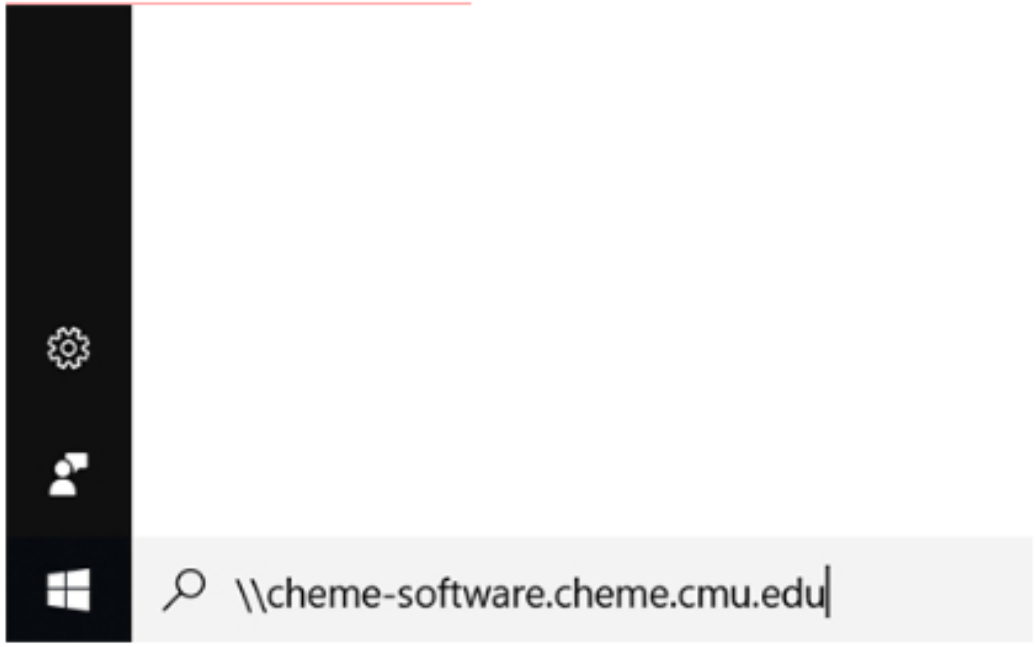
10/23/2019

Jonggeol Na

Install Aspen

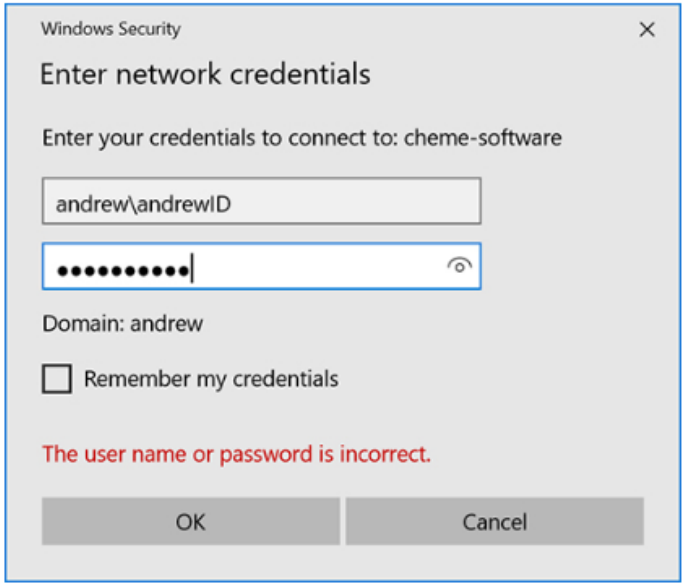
Accessing Software Share in CMU ChmE

1. Click Start and then type \\cheme-software.cheme.cmu.edu and press



Accessing Software Share in CMU ChmE

2. You will be prompted with a box titled Enter Network Password as shown below:



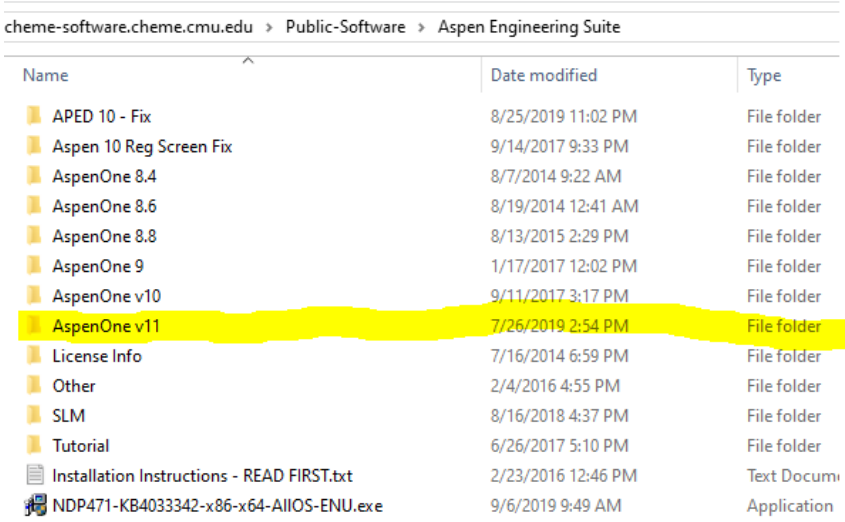
In the **Username** field, type andrew**\AndrewId**, where *AndrewId* is your given Andrew ID from the university. In the **Password** field, type in your Andrew password.

Copy AspenOne V11 folder

3. If you have done this correctly, a window titled **cheme-software** will open, and you have successfully connected to the server.

4. Double-click on the **Public-Software** folder.

5. Copy AspenOne v11 (~11 Gb) in your local Computer



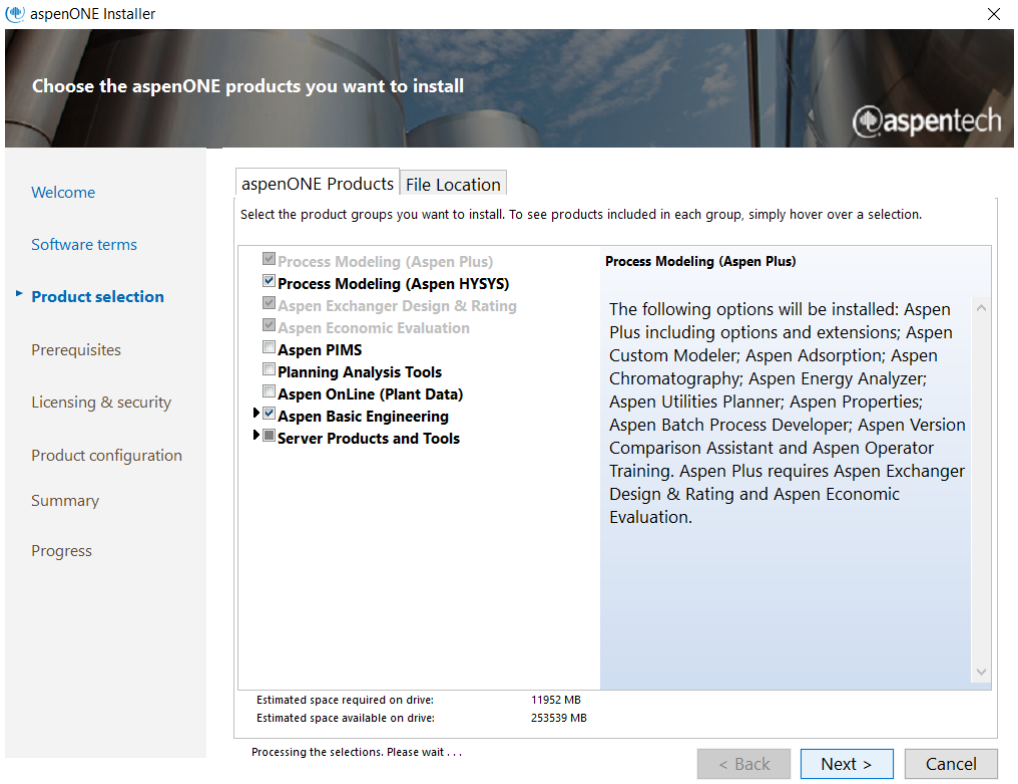
Installation Instructions

- Deatiled Installation Instructions are located here:

https://www.cmu.edu/cheme/computing/software/licensed-software-list/aspen-engineering-suite.html

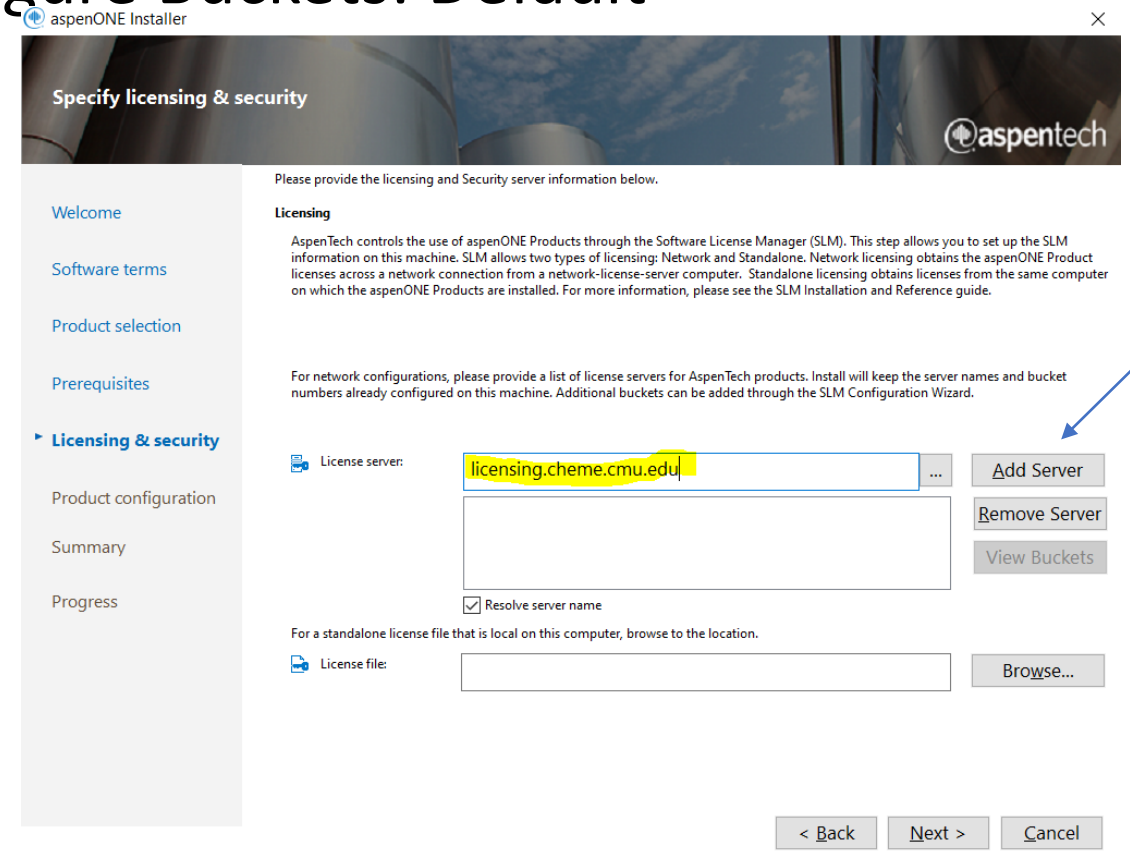
Installation Instructions

- Run Setup.exe in ../aspenONE_V11_ENG
- Please add Process Modeling (Aspen HYSYS)



Installation Instructions

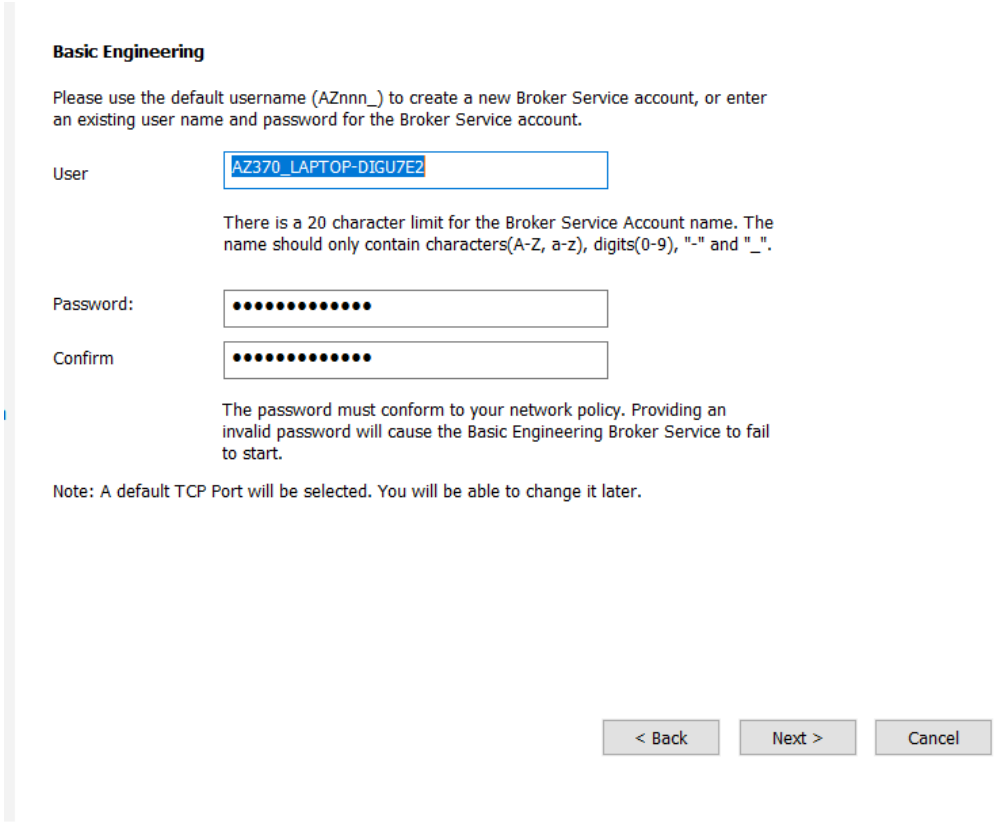
- License Server: licensing.cheme.cmu.edu
- Confgure Buckets: Default



Click add Server before click Next

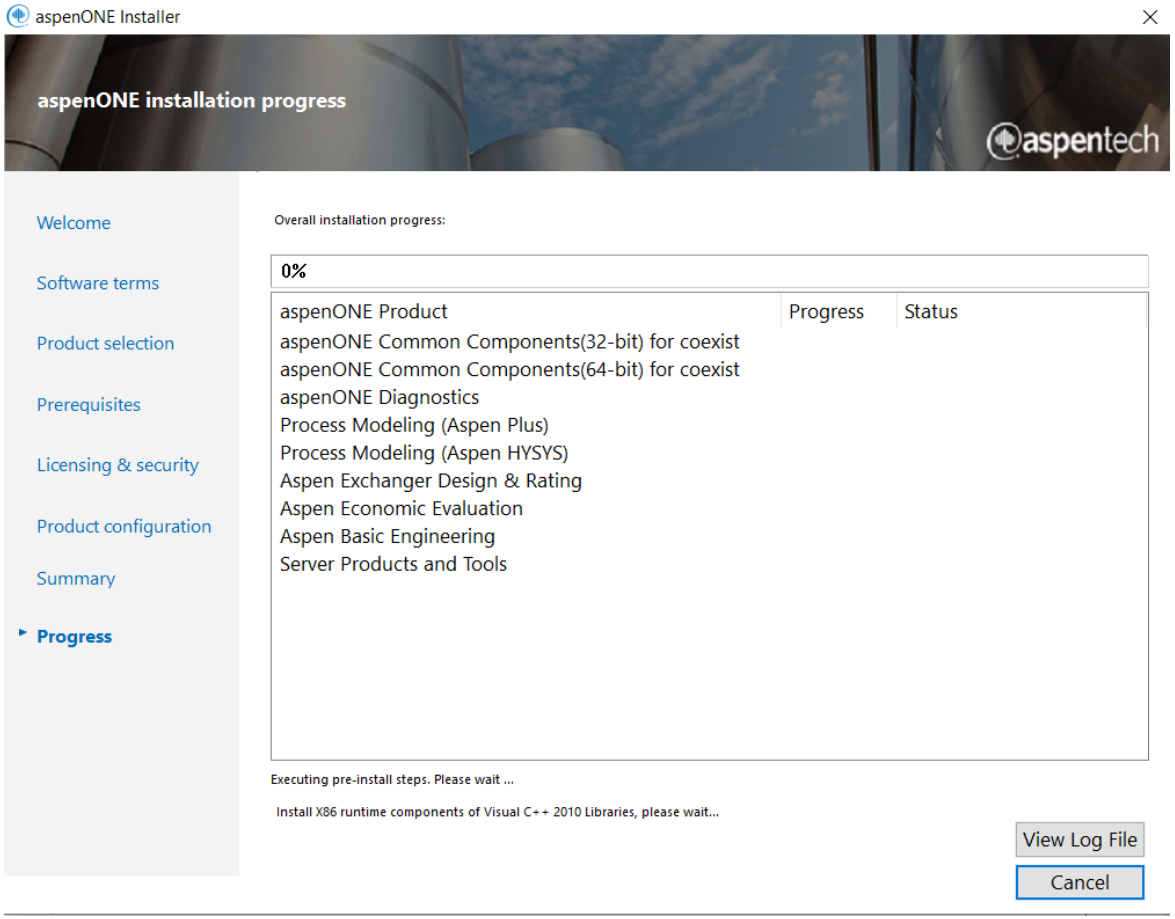
Installation Instructions

- Type password you like



Installation Instructions

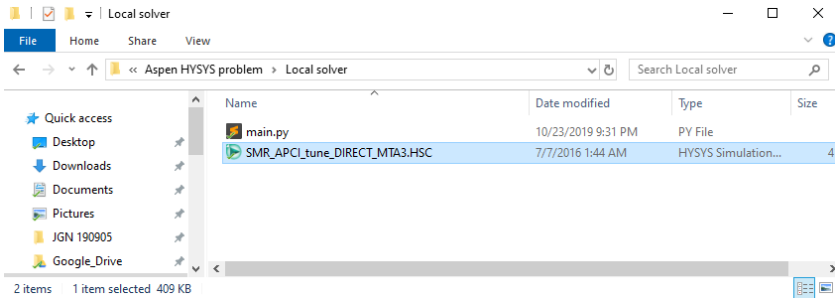
- Wait for installation

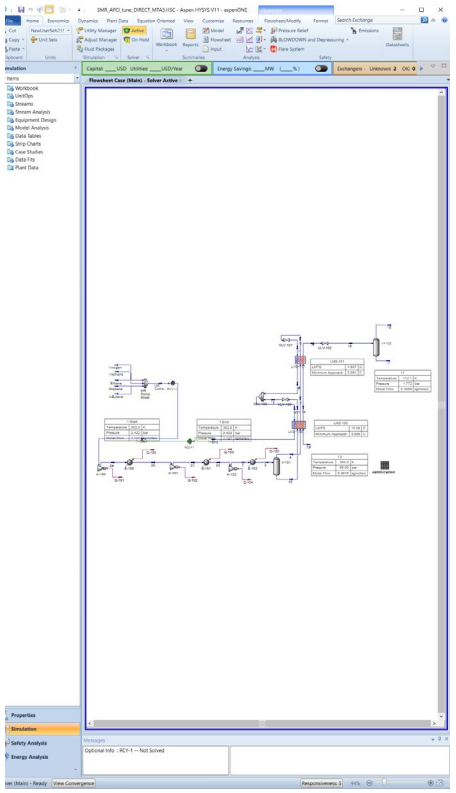


Aspen HYSYS – Python interface

Aspen HYSYS

- Run Hysys file “SMR_APCI.HSC”





- To understand the process, please refer to

Na, J., Lim, Y., & Han, C. (2017). A modified DIRECT algorithm for hidden constraints in an LNG process optimization. *Energy*, *126*, 488-500.

Run main.py

- Just run main.py then you can get:

$$y = f_{HYSYS}(x)$$

where y is objective function to be minimized (Total Energy Consumption / LNG Production(Ton per day)) and $x \in \mathbb{R}^{1\times 8}$ is input vector.

Table 3
The lower and upper bounds of design variables.

Property	Lower bounds	Upper bounds
Pressure variables (bar)		
LP	0.300	5.700
MP1	0.750	14.250
MP2	1.875	35.625
HP	4.675	88.825
Composition variables (%)		
Nitrogen	0.859	16.321
Methane	2.597	49.343
Ethane	2.541	48.279
Propane	3.911	74.309
n-Butane	dependent	

main.py

main.py

```python
import os
import win32com.client as win32
import numpy as np
import time

''' Connecting to the Aspen Hysys App just one time during optimization'''
print(' # Connecting to the Aspen Hysys App ... ')
hyapp    = win32.Dispatch('HYSYS.Application')            # Connecting to the Application
hyCase   = hyapp.ActiveDocument                           # Access to active document
hysolver = hyCase.Solver

LB=np.array([0.3000,0.7500,1.8750,4.6750,0.8590,2.5970,2.5410,3.9110])
UB=np.array([5.7000,14.2500,35.6250,88.8250,16.3210,49.3430,48.2790,74.3090])
x0 = (LB+UB)/2

def hy_distinguish(hysolver):···

def hy_Object(hyCase, hysolver, variable):···

# test run for center point
'''once you connect Aspen Hysys, just use hy_Object function for optimization'''
f_x0 = hy_Object(hyCase, hysolver, x0)
print('function output of x0 is: ',f_x0)
```

Just change x0 to your variable