Install Jupyter notebook on IBM i

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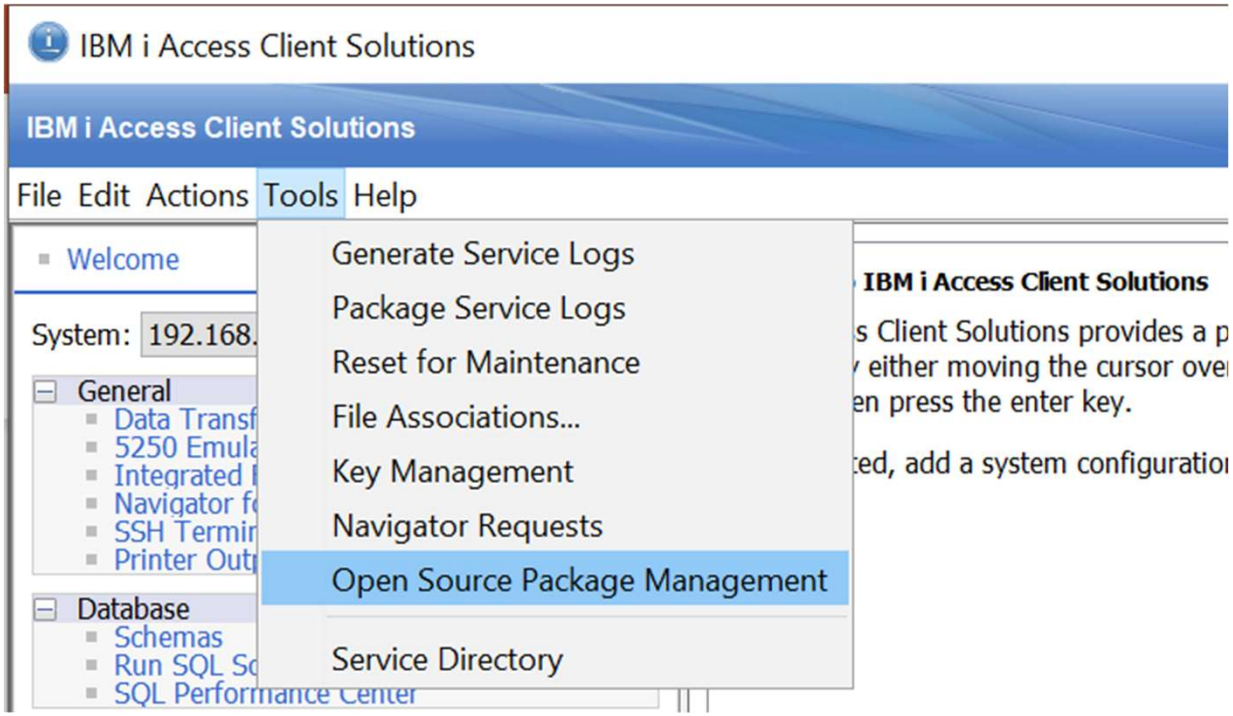
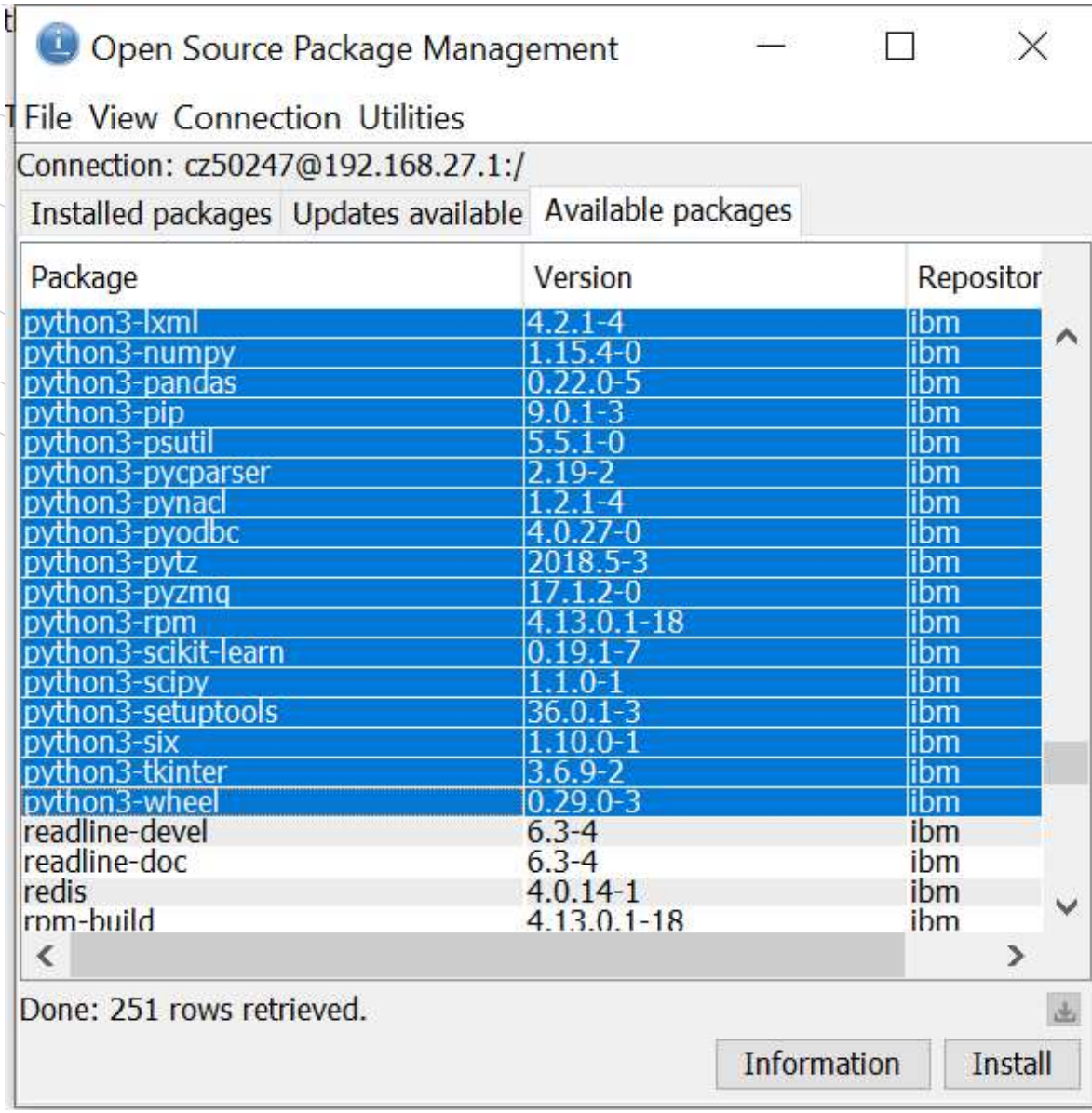
Prerequisites



- Install Open Source Package Management from IBM i Access Client Solution
- Install cumulative and group PTF with minimum level from SF99730 19116 and SF99729 86.

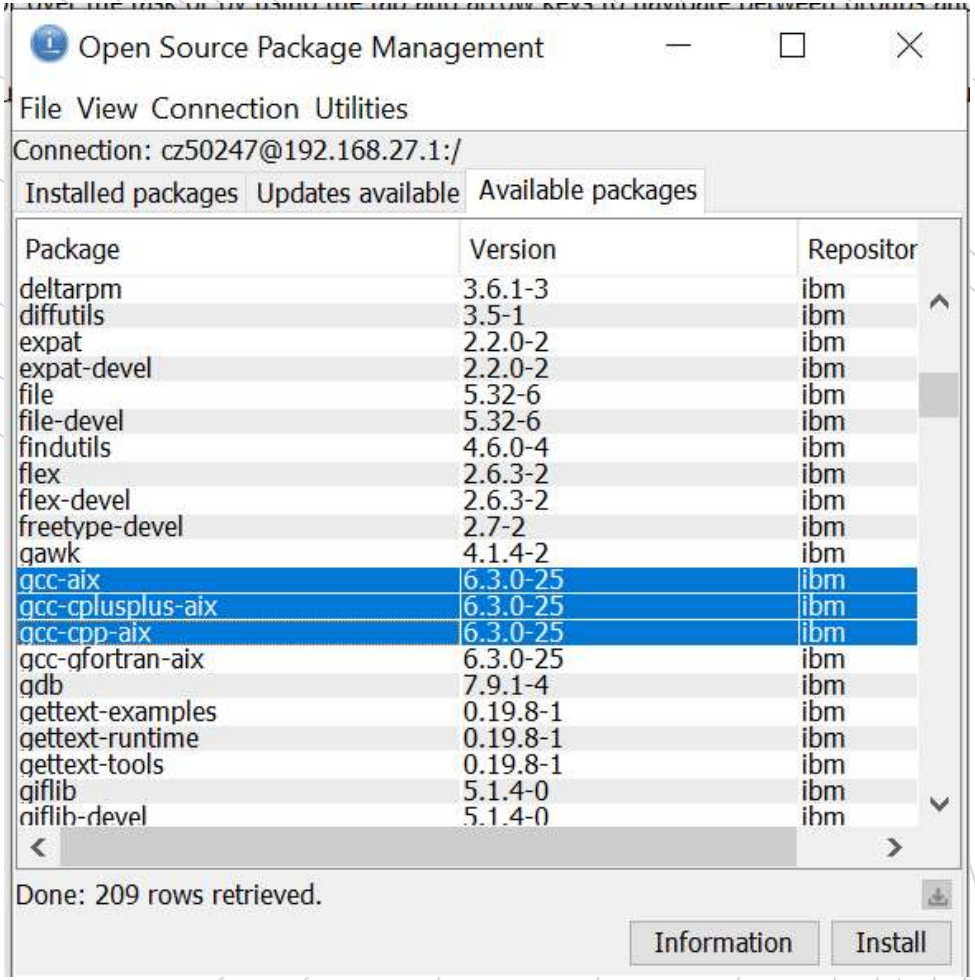
Install Python3 packages

Install all Python3 packages from Available packages



Install gcc gcc++ and libzmq-devel packages

Install all Python3 packages from Available packages



Add link to Open Sorce packages to PATH

- Go to your home directory
- Open file to edit
  - **`vi .profile`**
- Add following code to file
  - **`PATH=/QOpenSys/pkgs/bin:$PATH`**
  - **`export PATH`**
- Save file and restart session

Install Jupyter notebook

- **bash**
- **pip3 install notebook**

```
846fa4c1e1b65dbc1919f20157d9e66c20
  Running setup.py bdist_wheel for pyrsistent ... done
  Stored in directory: /home/CZ50247/.cache/pip/wheels/b5/78/ac/f26a78a989cd97f9
0981d96a560d7e1da5e1307284301d94e8
  Running setup.py bdist_wheel for backcall ... done
  Stored in directory: /home/CZ50247/.cache/pip/wheels/98/b0/dd/29e28ff615af3dda
4c67cab719dd51357597eabff926976b45
Successfully built prometheus-client tornado MarkupSafe pandocfilters pyrsistent
 backcall
Installing collected packages: ipython-genutils, decorator, traitlets, jupyter-c
ore, prometheus-client, tornado, jupyter-client, MarkupSafe, jinja2, mistune, at
trs, zipp, importlib-metadata, pyrsistent, jsonschema, nbformat, webencodings, b
leach, defusedxml, pandocfilters, testpath, entrypoints, pygments, nbconvert, Se
nd2Trash, ptyprocess, terminado, wcwidth, prompt-toolkit, backcall, pexpect, pic
kleshare, parso, jedi, ipython, ipykernel, notebook
Successfully installed MarkupSafe-1.1.1 Send2Trash-1.5.0 attrs-19.3.0 backcall-0
.1.0 bleach-3.1.0 decorator-4.4.1 defusedxml-0.6.0 entrypoints-0.3 importlib-met
adata-1.4.0 ipykernel-5.1.4 ipython-7.11.1 ipython-genutils-0.2.0 jedi-0.16.0 ji
nja2-2.11.0 jsonschema-3.2.0 jupyter-client-5.3.4 jupyter-core-4.6.1 mistune-0.8
.4 nbconvert-5.6.1 nbformat-5.0.4 notebook-6.0.3 pandocfilters-1.4.2 parso-0.6.0
 pexpect-4.8.0 pickleshare-0.7.5 prometheus-client-0.7.1 prompt-toolkit-3.0.3 pt
yprocess-0.6.0 pygments-2.5.2 pyrsistent-0.15.7 terminado-0.8.3 testpath-0.4.4 t
ornado-6.0.3 traitlets-4.3.3 wcwidth-0.1.8 webencodings-0.5.1 zipp-2.1.0
```

Jupyter notebook configuration for IBM i

- **`jupyter notebook –generate-config`**

```
bash-4.4$ jupyter notebook --generate-config
/QOpenSys/pkgs/lib/python3.6/site-packages/notebook/services/kernels/kernelmanag
er.py:19: VisibleDeprecationWarning: zmq.eventloop.minitornado is deprecated in
pyzmq 14.0 and will be removed.
    Install tornado itself to use zmq with the tornado IOLoop.

  from jupyter_client.session import Session
Writing default config to: /home/CZ50247/.jupyter/jupyter_notebook_config.py
```

Jupyter notebook configuration for IBM i

- **openssl req -x509 -nodes -days 3650 -newkey rsa:2048 -keyout mykey.key -out mycert.pem**

```
bash-4.4$ openssl req -x509 -nodes -days 3650 -newkey rsa:2048 -keyout mykey.key
 -out mycert.pem
Generating a 2048 bit RSA private key
.....................................+++++
.....................+++++
writing new private key to 'mykey.key'
-----
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [AU]:CZ
State or Province Name (full name) [Some-State]:
Locality Name (eg, city) []:Prague
Organization Name (eg, company) [Internet Widgits Pty Ltd]:IBM
Organizational Unit Name (eg, section) []:LBS
Common Name (eg, YOUR name) []:VM
Email Address []:vaclmat@email.cz
```

Jupyter notebook configuration for IBM i

- Change following text in .jupyter/jupyter_notebook_config.py
  - #c.NotebookApp.allow_remote_access = False

  to
  - **c.NotebookApp.allow_remote_access = True**

  - ## The full path to an SSL/TLS certificate file.
  - #c.NotebookApp.certfile = ,‘

  to
  - ## The full path to an SSL/TLS certificate file.
  - c.NotebookApp.certfile = '/home/CZ50247/mycert.pem'
  - c.NotebookApp.keyfile = '/home/CZ50247/mykey.key'

Jupyter notebook configuration for IBM i

- Change following text in .jupyter/jupyter_notebook_config.py
  - ## The IP address the notebook server will listen on.
  - #c.NotebookApp.ip = 'localhost'

  to
  - **## The IP address the notebook server will listen on.**
  - **c.NotebookApp.ip = '*'**

Jupyter notebook configuration for IBM i

- Change following text in .jupyter/jupyter_notebook_config.py
  - ## The IP address the notebook server will listen on.
  - ## Whether to open in a browser after starting. The specific browser used is
  - # platform dependent and determined by the python standard library `webbrowser`
  - # module, unless it is overridden using the --browser (NotebookApp.browser)
  - # configuration option.
  - #c.NotebookApp.open_browser = True

  to
  - ## Whether to open in a browser after starting. The specific browser used is
  - # platform dependent and determined by the python standard library `webbrowser`
  - # module, unless it is overridden using the --browser (NotebookApp.browser)
  - # configuration option.
  - c.NotebookApp.open_browser = False

Jupyter notebook configuration for IBM i

- **jupyter notebook password**

```
bash-4.4$ jupyter notebook password
/QOpenSys/pkgs/lib/python3.6/site-packages/notebook/services/kernels/kernelmanag
er.py:19: VisibleDeprecationWarning: zmq.eventloop.minitornado is deprecated in
pyzmq 14.0 and will be removed.
    Install tornado itself to use zmq with the tornado IOLoop.

  from jupyter_client.session import Session
Enter password:
Verify password:
[NotebookPasswordApp] Wrote hashed password to /home/CZ50247/.jupyter/jupyter_no
tebook_config.json
```

Jupyter notebook configuration for IBM i

- **pip3 install pyzmq tornado zmq jupyter_client --upgrade**

```
  Using cached https://files.pythonhosted.org/packages/65/eb/1f97cb97bfc2390a276
969c6fae16075da282f5058082d4cb10c6c5c1dba/six-1.14.0-py2.py3-none-any.whl
Requirement already up-to-date: ipython-genutils in /QOpenSys/pkgs/lib/python3.6
/site-packages (from traitlets->jupyter_client)
Requirement already up-to-date: decorator in /QOpenSys/pkgs/lib/python3.6/site-p
ackages (from traitlets->jupyter_client)
Building wheels for collected packages: pyzmq
  Running setup.py bdist_wheel for pyzmq ... done
  Stored in directory: /home/CZ50247/.cache/pip/wheels/aa/7e/8d/64152f46b7b86657
aec119679e80c0054b972067d9ceba64f8
Successfully built pyzmq
Installing collected packages: pyzmq, zmq, six, python-dateutil
  Found existing installation: pyzmq 17.1.2
    Uninstalling pyzmq-17.1.2:
      Successfully uninstalled pyzmq-17.1.2
  Found existing installation: six 1.10.0
    Uninstalling six-1.10.0:
      Successfully uninstalled six-1.10.0
  Found existing installation: python-dateutil 2.7.5
    Uninstalling python-dateutil-2.7.5:
      Successfully uninstalled python-dateutil-2.7.5
Successfully installed python-dateutil-2.8.1 pyzmq-18.1.1 six-1.14.0 zmq-0.0.0
```

Jupyter notebook start

- **jupyter notebook**

```
bash-4.4$ jupyter notebook
[I 10:39:10.931 NotebookApp] Serving notebooks from local directory: /home/CZ502
47
[I 10:39:10.931 NotebookApp] The Jupyter Notebook is running at:
[I 10:39:10.931 NotebookApp] https://STG-IBM-I-730-00.TEC.CZ.IBM.COM:8888/
[I 10:39:10.932 NotebookApp] Use Control-C to stop this server and shut down all
 kernels (twice to skip confirmation).
```