

User Module

Azure IoT SDK Python

APPLICATION NOTE



ADVANTECH

Used Symbols



Danger – Information regarding user safety or potential damage to the router.



Attention – Problems that may arise in specific situations.



Information or notice – Useful tips or information of special interest.



Example – example of function, command or script.



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1. User Module Description



This user module is compatible with *Advantech* routers of v3 platform only.

1.1 Azure IoT

Azure IoT is Microsoft's end-to-end IoT platform. Microsoft offers products like Azure IoT Hub to easily and securely connect your IoT devices to Microsoft Azure.

1.2 SDK for Python

It is possible to connect the devices to Azure IoT using open source device SDKs offered by Microsoft. These SDKs support multiple operating systems, and multiple programming languages, including Python. One of them – *Azure IoT Hub Device SDK for Python* – was implemented as a standalone user module for *Advantech* routers called *Azure IoT SDK Python*.

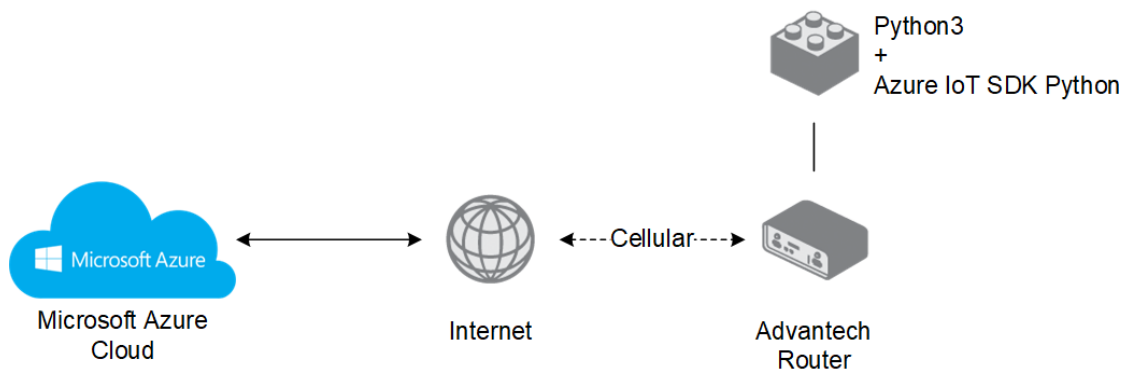


Figure 1: Router with *Python3* and *Azure IoT SDK Python* installed to connect Azure Cloud



Please note that there are two versions of this user module available, *Azure IoT SDK Python* and *Azure IoT SDK Python3 API Version 2*. The original version is still available due to the compatibility reasons and still can be used for existing implementation. *Azure IoT SDK Python version 2* was completely reworked to Python. The original version and version 2 are not compatible.

For more information, including features of the device SDK, see:
<https://github.com/Azure/azure-iot-sdk-python/tree/master/device>
Note that only "device SDK" part of the Python SDK was implemented.



More complex README file for Python SDK is available here:
<https://github.com/Azure/azure-iot-sdk-python>

SDK for deprecated version 1 is still available here:
<https://github.com/Azure/azure-iot-sdk-python/tree/v1-deprecated>



The *Azure IoT SDK Python* user module is not installed on *Advantech* routers by default. It can be downloaded from <https://ep.advantech-bb.cz/user-modules>. There is dependency for *Azure IoT SDK Python* user module to be installed in the router – follow the instructions in Chapter 1.3. See the *Configuration Manual*, chapter *Customization* → *User Modules*, for the description of how to upload a user module to the router.

1.3 Azure IoT SDK Python Dependency



It is necessary to install the *Python3* user module along with the *Azure IoT SDK Python* user module. *Python3* is required for *Azure IoT SDK Python* to work – it is the separated module and it can be used as a standalone *Python3* for other purposes.

User Modules			
Azure IoT SDK Python	2017-10-09 (2017-10-24)	Delete	
Python3	3.5.4 (2017-08-08)	Delete	
New Module	Vybrat soubor	Soubor nevybrán	Add or Update

Figure 2: Python3 and Azure IoT SDK Python user modules installed

2. Available Python Modules

Installing *Python3* and *Azure IoT SDK Python* offers a set of standard and common Python modules, including these:

- os
- sys
- logging
- time
- datetime
- multiprocessing
- threading
- json
- uuid
- sqlite3
- textutils
- importlib
- shell
- compression
- subprocess
- tblib
- uuid

The full list of available Python modules can be obtained by typing the following command in the router's command line interface (available via SSH):



```
python3
```

The prompt will go to Python mode starting with ">>>". Go to Python help mode by typing:



```
help()
```

Now you are in the Python help mode starting with "help>" and you can type the following command for the full list of installed Python modules:



```
modules
```

See the example of output in the next Figure:

```

help> modules

Please wait a moment while I gather a list of all available modules...

CDROM          weakrefset    heapq          shelve
DLFCN          abc            hmac           shlex
IN             aifc          html           shutil
TYPES         antigravity    http           signal
__future__    argparse      imaplib        site
ast           array         imghdr         smtpd
bisect        ast           imp            smtplib
bootlocale    asynchat      importlib      sndhdr
codecs        asyncio      inspect        socket
codecs_cn     asyncore     io             socketserver
codecs_hk     atexit       ipaddress      spwd
codecs_iso2022 audioop       itertools      sqlite3
codecs_jp     base64       json           sre_compile
codecs_kr     bdb          keyword        sre_constants
codecs_tw     binascii     linecache      sre_parse
collections   binhex       locale         ssl
collections_abc bisect        logging        stat
compat_pickle builtins      lzma           statistics
compression   bz2          macpath        string
crypt         cProfile     macurl2path    stringprep
csv           calendar     mailbox         struct
ctypes        cgi          mailcap        subprocess
ctypes_test   cgitb        marshal        sunau
datetime      chunk        math           symbol
decimal       cmath        mimetypes      symtable
dummy_thread  cmd          mmap           sys
elementtree   code         modulefinder   sysconfig
functools     codecs       multiprocessing syslog
hashlib       codeop       pickle         tabnanny

```

Figure 3: Example of listed available modules

2.1 Getting Started with Azure IoT SDK Python

To get started with writing your own application for Azure IoT Hub, read the Python SDK documentation available on links above or in the Chapter 3. You can also study the Microsoft's tutorials: <https://docs.microsoft.com/en-us/azure/iot-hub/iot-hub-get-started>

Or you can find an inspiration from Azure Code Samples here:
<https://azure.microsoft.com/en-us/resources/samples/?sort=0&service=iot-hub&platform=python>

3. Related Documents

- [1] Advantech Czech: **SmartFlex Configuration Manual** (MAN-0023-EN)
- [2] Advantech Czech: **SmartMotion Configuration Manual** (MAN-0024-EN)
- [3] Advantech Czech: **SmartStart Configuration Manual** (MAN-0022-EN)
- [4] Advantech Czech: **ICR-3200 Configuration Manual** (MAN-0042-EN)
- [5] Engineering Portal: <https://ep.advantech-bb.cz/user-modules>
- [6] Microsoft Azure: Azure IoT Developer Center
<https://azure.microsoft.com/en-us/develop/iot/>
- [7] GitHub: **Microsoft Azure IoT SDKs for Python**



Product related documents can be obtained on *Engineering Portal* at <https://ep.advantech-bb.cz/> address.