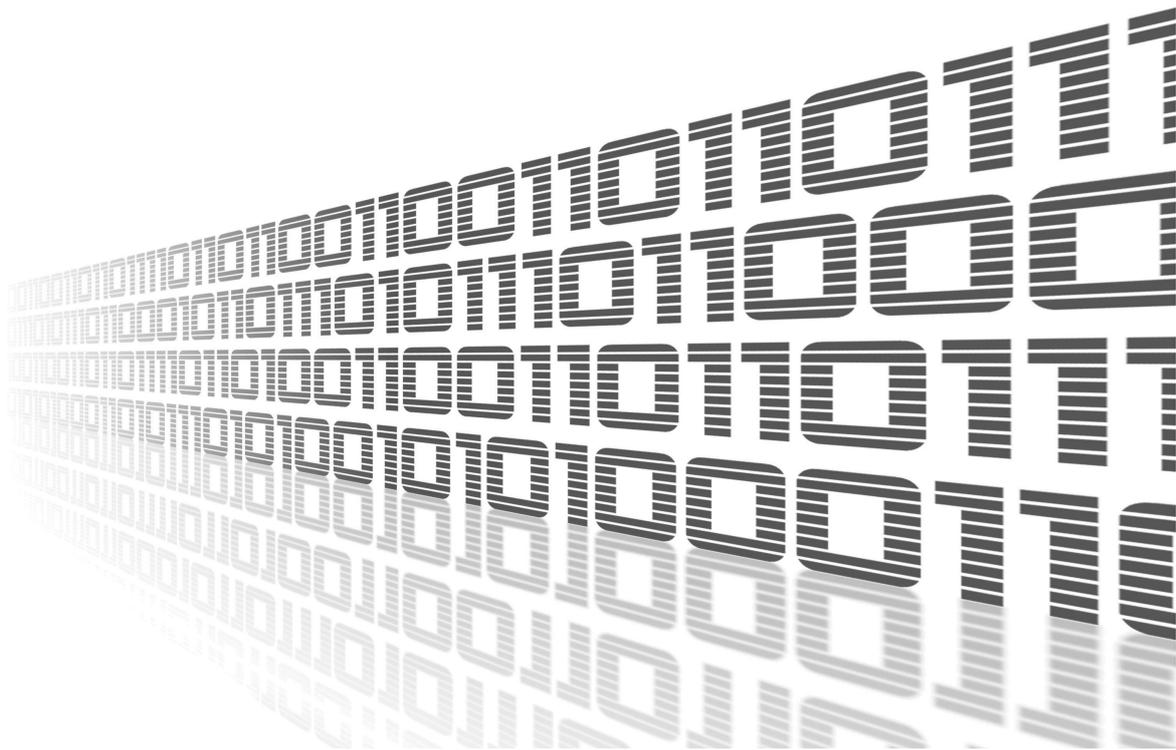




User Module

Azure IoT SDK Python

APPLICATION NOTE



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*.

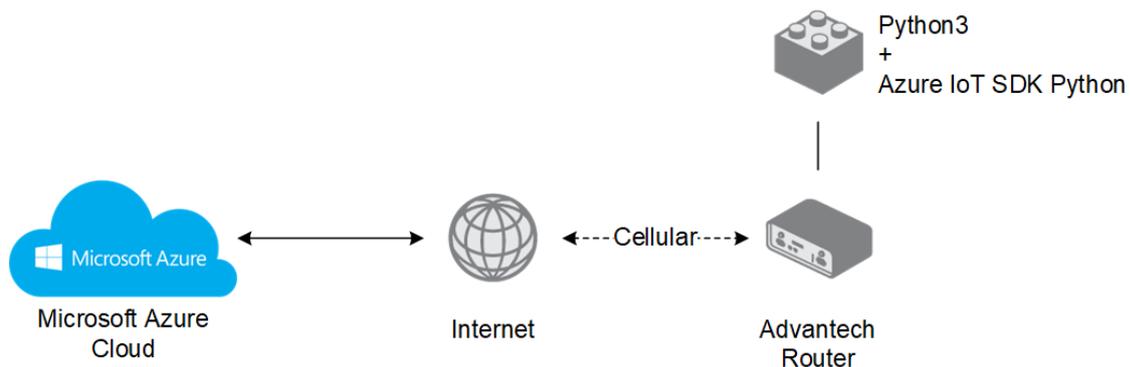


Figure 1: Router with *Python3* and *Azure IoT SDK Python* installed to connect Azure Cloud



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         imgchr       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] User Modules: <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 www.ep.advantech-bb.cz address.