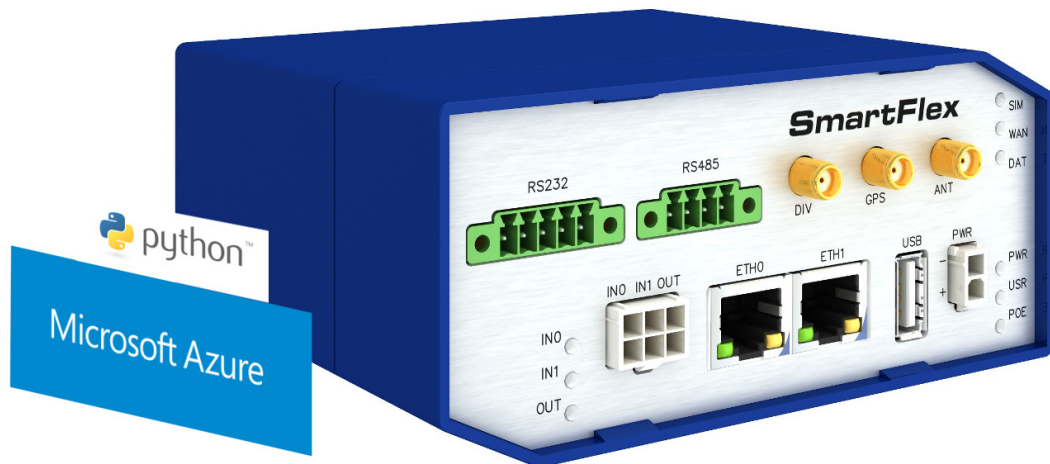


User Module

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*.

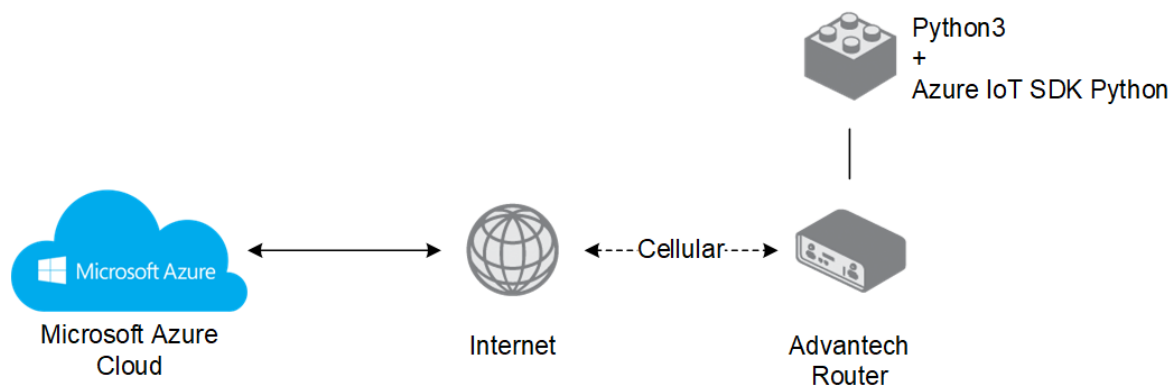


Figure 1: Router with *Python3* and *Azure IoT SDK Python* installed to connect Azure Cloud



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
              argparse     imaplib      site
              array      imghdr       smtpd
              ast        imp          smtplib
              asynchat  importlib    sndhdr
              asyncio  inspect     socket
              codecs  io          socketserver
              codecs_cn atexit      spwd
              codecs_hk audioop     itertools     sqlite3
              codecs_iso2022 base64      json          sre_compile
              codecs_jp bdb         keyword       sre_constants
              codecs_kr binascii    linecache     sre_parse
              codecs_tw binhex     locale        ssl
              collections binhex     logging       stat
              collections_abc bisect     lzma          statistics
              compat_pickle builtins   macpath       string
              compression bz2       macurl2path   stringprep
              crypt   cProfile  mailbox       struct
              csv     calendar  mailcap      subprocess
              ctypes  cgi       marshal      sunau
              ctypes_test cgib      math         symbol
              datetime chunk     mimetypes    symtable
              decimal cmath    mmap         sys
              dummy_thread cmd      modulefinder sysconfig
              elementtree code     multiprocessing syslog
              functools codecs   netrc       tabnanny
              hashlib
  
```

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.