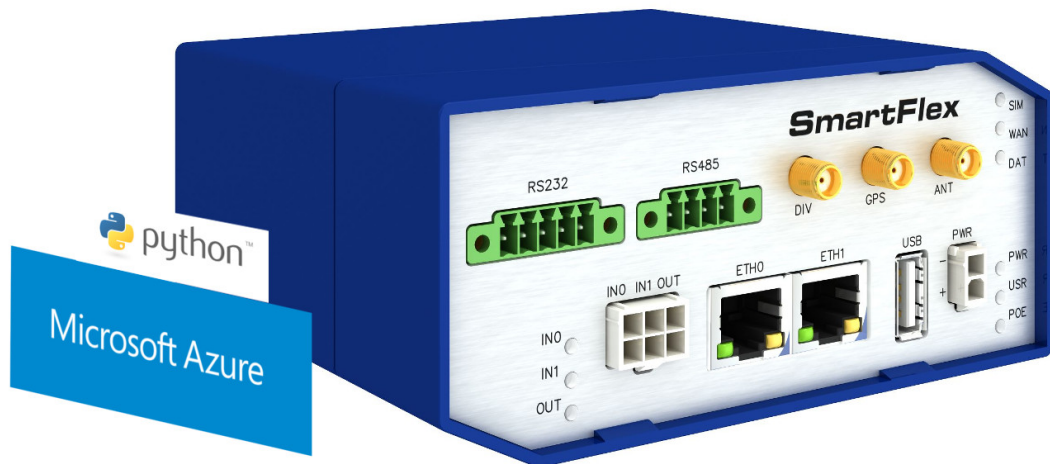


User Module

Azure IoT SDK Python

APPLICATION NOTE



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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

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: *Azure IoT SDK Python*.

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>

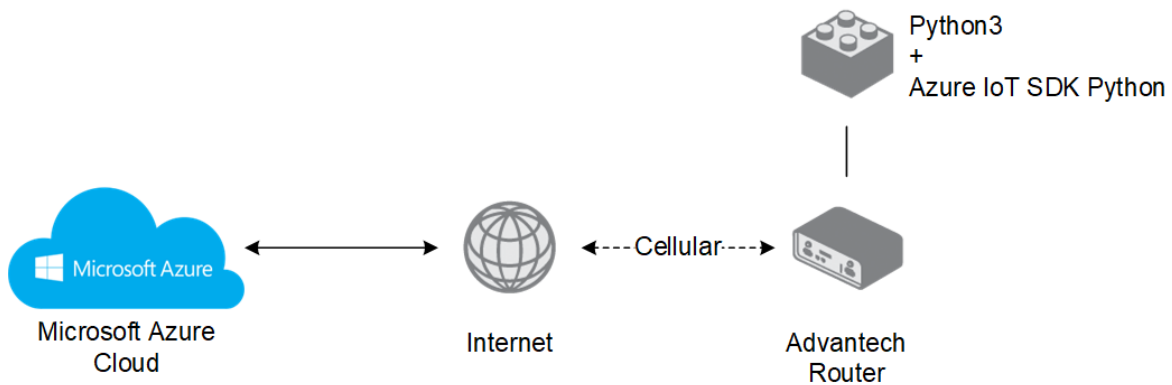


Figure 1: Router with *Python3* and *Azure IoT SDK Python* installed to connect Azure Cloud



The *Azure IoT SDK Python* user module is not part of the router’s firmware. 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. The installation process for the user modules is described in the Configuration Manual (see [1]). **This user module is only compatible with v3 platform routers!**

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	<input type="button" value="Vybrat soubor"/> Soubor nevybrán	<input type="button" value="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        imgchr        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  bisect        logging       stat
              collections_abc  builtins      lzma          statistics
              compat_pickle  bz2           macpath       string
              compression  cProfile     macurl2path   stringprep
              crypt        calendar     mailbox        struct
              csv          cgi           mailcap       subprocess
              ctypes        gitb         marshal       sunau
              ctypes_test  chunk        math          symbol
              datetime    cmath        mimetypes     symtable
              decimal     dummy_thread cmd           sys
              elementtree  code         modulefinder  sysconfig
              functools    codecs       multiprocessing  syslog
              hashlib     codeop       netrc         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. Recommended Literature

- [1] Advantech B+B SmartWorx: **SmartStart Configuration Manual** (MAN-0022-EN), available from: <https://ep.advantech-bb.cz>
- [2] Advantech B+B SmartWorx: **SmartFlex Configuration Manual** (MAN-0023-EN), available from: <https://ep.advantech-bb.cz>
- [3] Advantech B+B SmartWorx: **SmartMotion Configuration Manual** (MAN-0024-EN), available from: <https://ep.advantech-bb.cz>
- [4] User Modules – Engineering Portal: <https://ep.advantech-bb.cz/user-modules>
- [5] Microsoft Azure: Azure IoT Developer Center
<https://azure.microsoft.com/en-us/develop/iot/>
- [6] GitHub: [Microsoft Azure IoT SDKs for Python](#)