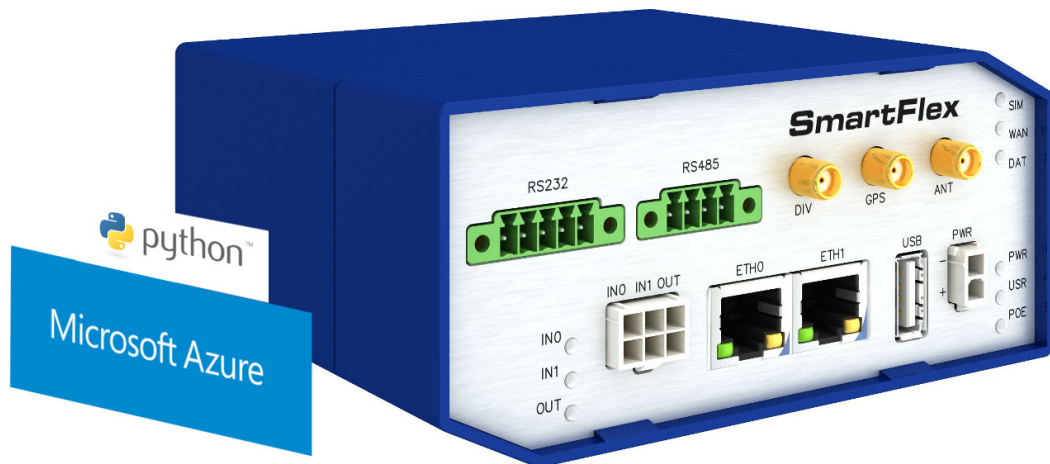


User Module

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

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>

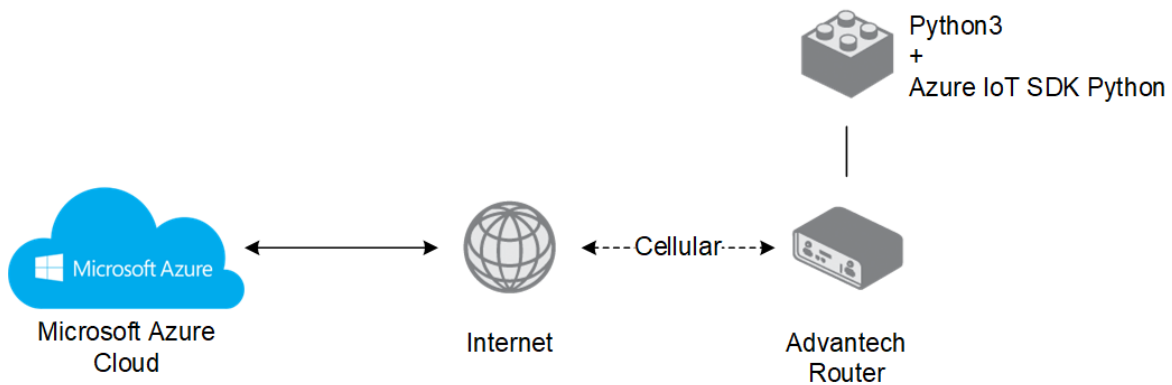


Figure 1: Router with *Python3* and *Azure IoT SDK Python* installed to connect Azure Cloud



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"/> <input type="button" value="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
             asyncio   importlib   sndhdr
             asynchat inspect     socket
             asyncore io          socketserver
             atexit  ipaddress  spwd
             audioop itertools  sqlite3
             base64  json      sre_compile
             bdb    keyword   sre_constants
             binascii linecache  sre_parse
             binhex locale    ssl
             bisect logging    stat
             builtins lzma     statistics
             bz2    macpath  string
             cProfile macurl2path stringprep
             calendar mailbox   struct
             cgi    mailcap  subprocess
             cgitb  marshal  sunau
             chunk  math     symbol
             cmath  mimetypes symtable
             cmd    mmap     sys
             code   modulefinder sysconfig
             codecs multiprocessing syslog
             codecs 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: **SmartFlex Configuration Manual** (MAN-0023-EN)
- [2] Advantech B+B SmartWorx: **SmartMotion Configuration Manual** (MAN-0024-EN)
- [3] Advantech B+B SmartWorx: **SmartStart Configuration Manual** (MAN-0022-EN)
- [4] Advantech B+B SmartWorx: **ICR-3200 Configuration Manual** (MAN-0042-EN)
- [5] User Modules – 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.