



Milesight Industrial Router UR3x

Python SDK API Specification

Contents

1. Overview	2
2. Revision History	2
3. Modules & Packages	2
4. Attention	3
5. Interface List	3
5.1 URDBAPI Module	3
5.2 URRouterInfo Module	4
5.3 URInterface Module	6

1. Overview

Milesight Python SDK provides a comprehensive set of native programming interfaces for UR3x series industrial cellular router, enabling data storage, status query and network configuration via Python. Before use, please ensure that the router firmware is upgraded to a version compatible with the SDK, and correctly import the corresponding SDK module in the development environment to avoid runtime errors caused by version mismatch.

This introduction is intended for users who need to conduct secondary development with Milesight Industrial Cellular Router. You can refer to this guide for further development of some main functions. For more details, please contact your Milesight technical engineer.

2. Revision History

Version	Date	Firmware Version	SDK Version	Description
v1.14	Dec. 4, 2018	x.2.0.1 and later	v1.2.0	/
v1.15	Jan. 21, 2019	x.2.0.39 and later	v2.1.2-SW	Add get_do_output_info function, add setOutput method
V2.0	Jan. 23, 2026	3x.3.0.11 and later	v5.0.3	Add and remove some function.

3. Modules & Packages

Standard Modules	Extension Modules	Third-party Packages
json	zlib	certifi
logging	_ssl	future
os	_sqlite3	meld3
time	readline	nanomsg
datetime	_ctypes	setuptools
subprocess	pyexpat	pkg_resources
shutil	select	paho.mqtt.client
math		pymodbus
re		pyserial
copy		six
inspect		strict_rfc3339
struct		supervisor
codecs		

4. Attention

As SDK will be installed on external memory card, please make sure that the memory card is not corrupted before installation starts. Errors like `ServiceError`, `InsideError`, or `RuntimeError` may occur if system-related services are not running correctly or the SDK version is too old.

5. Interface List

Name	Description
URDBAPI	The function interface of user data cache.
URRouterInfo	The function interface for obtaining the router's information.
URInterface	The function interface for configuring router's physical interface.

5.1 URDBAPI Module

URDBAPI module provides a `DBHandle` class for data cache. You can refer to the detailed description as below.

Class Method	<code>_init_(dbPath)</code>
Parameter	<i>dbPath</i> : database file path.
Description	Without file path, a new file path will be created
Return Value	Database objects
Example	<code>db = DBHandle(db_path)</code>
Class Method	<code>addValue(key, value)</code>
Parameter	<i>Key</i> : the index node of data cache. <i>Value</i> : the content of data cache.
Description	Add a data cache.
Return Value	None
Example	<code>name = "ip"</code> <code>value = {'ipv4': '192.168.2.166', 'mac': '76:34:55:96:69:11', 'BoardCast': '192.168.2.255'}</code> <code>db.addValue(name, value)</code>
Class Method	<code>delValue(key)</code>
Parameter	<i>key</i> : the index node of data to be viewed.
Description	Delete a piece of data.
Return Value	None
Example	<code>db.delValue(name)</code>
Class Method	<code>showValue(key)</code>
Parameter	<i>key</i> : the index node of data to be viewed.
Description	View a piece of data.
Return Value	<code>[{'mac': '76:34:55:96:69:11', 'BoardCast': '192.168.2.255', 'ipv4': '192.168.2.166'}]</code>

Example	db.showValue(name)
Class Method	getList()
Parameter	None.
Description	Obtain the index nodes of all data.
Return Value	eg: ['ip', 'power']
Example	db.getList()
Class Method	updateValue(key, value)
Parameter	<i>Key</i> : the index node of data to be updated. <i>value</i> : the content of new data.
Description	Update the content of the specific data.
Return Value	None
Example	value2={'ipv4':'192.168.2.167','mac':'76:34:55:96:69:12','BoardCast':'192.168.2.255' } Db.updateValue(name, value2)
Class Method	rmDBFile()
Parameter	None.
Description	Delete the database file.
Return Value	None
Example	db.rmDBFile()

5.2 URRouterInfo Module

URRouterInfo module provides a series of functions for obtaining router's information, including firmware information, cellular status, and so on. You can refer to the detailed descriptions as below.

Class Method	_init_()
Parameter	None.
Description	Create a router object.
Return Value	Router object.
Example	rt = URRouterInfo()
Class Method	get_eth_portList()
Parameter	None.
Description	Obtain the information of the router's Ethernet ports.
Return Value	[{'port': 'WAN', 'status': 1, 'connect_state': 1, 'cur_speed': '100Mbps', 'cur_duplex': 'full'}, {'port': 'LAN1', 'status': 1, 'connect_state': 0, 'cur_speed': '-', 'cur_duplex': '-'}, {'port': 'LAN2', 'status': 1, 'connect_state': 1, 'cur_speed': '100Mbps', 'cur_duplex': 'full'}, {'port': 'LAN3', 'status': 1, 'connect_state': 0, 'cur_speed': '-', 'cur_duplex': '-'}, {'port': 'LAN4', 'status': 1, 'connect_state': 0, 'cur_speed': '-', 'cur_duplex': '-'}]
Example	rt.get_eth_portList()
Class Method	get_firmware_info()
Parameter	None.

Description	Obtain the firmware information.
Return Value	{'model': 'UR35-L01CE-W', 'sn': '6219C4822453', 'firmware_ver': '35.3.0.11.1', 'hardware_ver': 'V2.0', 'uptime': 5689, 'local_time': '2025-11-26 11:02:38 Wednesday', 'cpu_load': '5%', 'memory_free': 59, 'memory_total': 128, 'flash_free': 81, 'flash_total': 128}
Example	rt.get_firmware_info()
Class Method	get_cullular_status()
Parameter	None.
Description	Obtain the status info of cellular.
Return Value	{'model': {'modem_status': 'No SIM Card', 'model': 'EC20F', 'version': 'EC20CEHCLGR06A05M1G', 'cur_sim': 'SIM2', 'signal': '11asu (-91dBm)', 'band': '-', 'rsrp': '-93dbm', 'rsrq': '0db', 'sinr': '0db', 'register': 'Not registered', 'imsi': '', 'iccid': '', 'net_provider': '', 'net_type': '', 'plmnid': '', 'lac': '0', 'cellid': '0', 'imei': '868922058918133'}, 'apn1': {'status': 'Disconnected', 'ip': '0.0.0.0', 'netmask': '0.0.0.0', 'gate': '0.0.0.0', 'dns': '0.0.0.0', 'sec_dns': '0.0.0.0', 'dnsv6': '::', 'sec_dnsv6': '::', 'ipv6': '::', 'gatev6': '::', 'time': '0 days, 00:00:00'}, 'apn2': {'status': 'Disconnected', 'ip': '0.0.0.0', 'netmask': '0.0.0.0', 'gate': '0.0.0.0', 'dns': '0.0.0.0', 'sec_dns': '0.0.0.0', 'dnsv6': '::', 'sec_dnsv6': '::', 'ipv6': '::', 'gatev6': '::', 'time': '0 days, 00:00:00'}, 'apn3': {'status': 'Disconnected', 'ip': '0.0.0.0', 'netmask': '0.0.0.0', 'gate': '0.0.0.0', 'dns': '0.0.0.0', 'sec_dns': '0.0.0.0', 'dnsv6': '::', 'sec_dnsv6': '::', 'ipv6': '::', 'gatev6': '::', 'time': '0 days, 00:00:00'}}
Example	rt.get_cullular_status()
Class Method	get_wan_status()
Parameter	None.
Description	Obtain the status info of WAN.
Return Value	{'grey': 0, 'enable_wan': 1, 'port': 'WAN', 'protocol': 0, 'mtu': 1500, 'enable_nat': 1, 'pri_dns': '8.8.8.8', 'sec_dns': '223.5.5.5', 'pri_dns6': '', 'sec_dns6': '', 'static': {'ip_address': '192.168.50.99', 'netmask': '255.255.255.0', 'gateway': '192.168.50.1', 'ip6addr': 'fe80::26e1:24ff:fef6:7f87', 'ip6prefixlen': 64, 'ip6gw': '', 'multi_ip': []}, 'dhcp': {'mtu': 1500, 'use_peer_dns': 0}, 'pppoe': {'mtu': 1500, 'use_peer_dns': 0}, 'pppoev6': {'mtu': 1500, 'use_peer_dns': 0}}
Example	rt.get_wan_status()
Class Method	get_bridge_status()
Parameter	None
Description	Obtain the status info of LAN bridge.
Return Value	{'stp': 0, 'name': 'Bridge0', 'mtu': 1500, 'ip_address': '192.168.1.1', 'netmask': '255.255.255.0', 'ipv6_address': '', 'multi_ip': [], 'deletable': [1, 1], 'members': ['vlan 1', 'WLAN'], 'list': ['WLAN'], 'ip_passthrough_enable': False}
Example	rt.get_bridge_status()
Class Method	get_serial_info()
Parameter	None

Description	Obtain the status info of serial port.
Return Value	{"serial1": "RS232", "serial2": "RS485"}
Example	rt.get_serial_info()
Class Method	get_di_status()
Parameter	None
Description	Obtain the status info of DI.
Return Value	{'di': 1}
Example	rt.get_di_statusz()

5.3 URInterface Module

URInterface module provides a series of functions for configuring router's physical interfaces.

Class Method	_init_()
Parameter	None
Description	Obtain an interface object.
Return Value	interface object.
Example	if = URInterface()
Class Method	up(<i>ifname</i>)
Parameter	<i>ifname</i> : Network interface name.
Description	Enable a network interface.
Return Value	TRUE/FLASE
Example	if.up(eth0)
Class Method	down(<i>ifname</i>)
Parameter	<i>ifname</i> : Network interface name.
Description	Disable a network interface.
Return Value	TRUE/FALSE
Example	if.down(eth0)
Class Method	set_ipv4(<i>ifname ipaddr, netmask</i>)
Parameter	<i>ifname</i> : Network interface name. <i>ipaddr</i> : IPv4 address in dotted decimal notation. <i>netmask</i> : IPv4 subnet mask in dotted decimal notation.
Description	Set IPv4 address information for the network interface
Return Value	TRUE/FALSE
Example	if.set_ipv4(eth0, 192.168.1.1, 255.255.255.0)
Class Method	set_mtu(<i>ifname, mtu</i>)
Parameter	<i>ifname</i> : Network interface name. <i>mtu</i> : Network interface MTU value.
Description	Set the network interface MTU value.
Return Value	if.set_mtu(eth0, 1450)
Example	if.set_mtu(eth0, 1450)
Class Method	set_mac(<i>ifname, mac</i>)

Parameter	<i>ifname</i> : Network interface name. <i>mac</i> : MAC address of the network interface.
Description	Set the MAC address of the network interface.
Return Value	TRUE/FALSE
Example	if.set_mac(eth0, 00:11:22:33:44:55)
Class Method	add_static_route(<i>ifname</i>, <i>ipaddr</i>)
Parameter	<i>ifname</i> : Network interface name. <i>ipaddr</i> : IPv4 address in dotted decimal notation.
Description	Add static route.
Return Value	TRUE/FALSE
Example	if.add_static_route(eth0, 198.51.100.0/24)
Class Method	add_default_route(<i>ifname</i>, <i>via</i>)
Parameter	<i>ifname</i> : Network interface name. <i>via</i> : Default gateway address.
Description	Add default route.
Return Value	TRUE/FALSE
Example	if.add_default_route(eth0, 172.17.144.1)
Class Method	del_static_route(<i>ifname</i>, <i>ipaddr</i>)
Parameter	<i>ifname</i> : Network interface name. <i>ipaddr</i> : IPv4 address in dotted decimal notation.
Description	Delete static route.
Return Value	TRUE/FALSE
Example	if.del_static_route(eth0, 198.51.100.0/24)
Class Method	del_default_route(<i>ifname</i>, <i>via</i>)
Parameter	<i>ifname</i> : Network interface name. <i>via</i> : Default gateway address.
Description	Delete the default route.
Return Value	TRUE/FLASE
Example	if.del_default_route(eth0, 172.17.144.1)
Class Method	send_at_cmd(<i>cmd</i>)
Parameter	<i>cmd</i> : AT debugging command.
Description	Send AT debugging commands.
Return Value	2026-01-19 15:38:24: [SEQ0, ID0]<<< OK
Example	if.send_at_cmd(ATI)

[END]