DIGI INTERNATIONAL
9350 Excelsior Blvd, Suite 700
Hopkins, MN 55343, USA
+1 (952) 912-3444 | +1 (877) 912-3444
www.digi.com

Digi XBee 3 Cellular LTE Cat 1 Verizon Release Notes

Digi XBee 3 Cellular LTE Cat 1 Verizon

Version 151A (September, 2022)

INTRODUCTION

These are the release notes for Digi XBee 3 Cellular LTE Cat 1 Verizon.

SUPPORTED PRODUCTS

- Digi XBee 3 Cellular LTE Cat 1 Verizon

KNOWN ISSUES

1. By-pass mode is now deprecated and is not recommended for new designs. XBee 3 Cellular products support direct USB to access the cellular modem directly. See the user manual for details on how to configure your XBee to use direct USB.
2. Module with SPI mode enabled and pending Status frames to send to the SPI Master will not go to sleep.
3. Closing a TLS session and then immediately opening a new one may result in failure. To workaround, insert a small delay (~5s). [XBCELL-3732]
4. Intermittent failure to go to sleep or wake up when using pin sleep with the SPI_nSSEL line while in SPI mode. [XBCELL-3100]
5. The “Update” button does not work when using XCTU version 6.4.3. To work around, use the latest version of XCTU.
6. It may not be possible to interrupt MicroPython autostart if the application performs a soft reset very quickly. Workaround: delay the soft reset by a second using time.sleep(1). [XBPY-796]
7. Connections to the BLE API Service within five seconds of waking from sleep can sometimes fail to perform the unlock sequence.
8. Instances where the desired BLE connection type is “Display YesNo” with legacy pairing being used the XBee will request LE Secure Connections instead of using “Just Works”. This will cause the XBee to fail to pair as LESC will be disabled on the other device. [XBPY-862]
9. DNS resolution of host names containing only numerals fail, host names like 411.org and 0.time.devicecloud.com will fail to resolve.
10. For UDP sockets, it is required to either connect or bind the socket before being able to use send or

sendto.

UPDATE BEST PRACTICES

Digi recommends the following best practices:

1. Test the new release in a controlled environment with your application before you update production devices.
2. Unless otherwise noted, apply updates in the following order:
    1. Device firmware
    2. Modem/Module firmware
    3. Configuration
    4. Application

Digi recommends Digi Remote Manager for automated device updates. For more information, go to https://www.digi.com/products/iot-platform/digi-remote-manager.

If you prefer manually updating one device at a time, follow these steps: 1. Update to latest firmware from XCTU

TECHNICAL SUPPORT

Get the help you need via our Technical Support team and online resources. Digi offers multiple support levels and professional services to meet your needs. All Digi customers have access to product documentation, firmware, drivers, knowledge base and peer-to-peer support forums.

Visit us at https://www.digi.com/support to find out more.

CHANGE LOG

151A (September, 2022)

This is a recommended release.

NEW FEATURES

1. ATRJ added to report the network reject code if supplied.
2. The **ATFC** command has been added to read the EARFCN of the current cellular connection.
3. **D0** can now be set to 6, which enables mirroring of the cellular component power status. When **D0** is 6, DIO0 will read high (3.3V) when the cellular component is powered and active, and will read low (0V) when the cellular component is inactive. See the documentation for additional details.
4. When entering command mode from the MicroPython REPL (ATAP=4), MicroPython will hold output until leaving command mode.
5. MicroPython adds digi.cloud.Console() class to communicate with the Digi Remote Manager's Console tab. [XBCELL-4486]
6. MicroPython adds uos.dupterm() method to redirect MicroPython terminal to another stream-like interface (e.g., machine.UART(1), digi.cloud.Console()). [XBPY-909]
7. A new Remote Manager data services device request with the target of 'format' has been added. Upon receipt of this request the XBee will format its filesystem. [XBCELL-6141]
8. The built-in function enumerate is now available in MicroPython. [XBPY-77]
9. **ATOT** command has been added to read the active technology for the current network connection.
10. Added support for reporting more detailed socket close reasons.
11. For performance reasons, filesystem writes are no longer synced to the device on each write

operation. To avoid data loss when writing files, be sure to close the file before shutting down or resetting the XBee. If writing to a file using MicroPython, you may also call the flush() method of the file object, or use os.sync(), without closing the file. This change does not impact applications which are not writing data to the XBee's filesystem.

12. The Digi Remote Manager default keepalive intervals have been increased to reduce data usage and align with network provider guidance.
13. Added support for Active Scan in MicroPython. [XBCELL-6307]
14. Added support for reporting Timezone when using ATDT1. [XBCELL-7785]
15. Updated MicroPython to version 1.18.
16. The AI value 0x30 (update in progress) is now applied for the XBee firmware as well. [XBCELL-5629]
17. Added support for reporting Timezone offset using time.tz_offset() as seconds west from UTC. [XBCELL-7784]
18. Allow MicroPython floats as values in Remote Manager data points.
19. Added AT command for performing a MicroPython Soft Reset: ATPYR [XBPY-431]
20. Added support for MicroPython boot.py, for consistency with other MicroPython platforms. [XBPY-167]
21. Added support for sending Python control commands through Remote Manager. [XBCELL-6885]
22. Additional fields added to ATAS cell scan results. Exact fields vary based on variant and cell technology but include ARFCN, PCID, RSRQ, and Timing Advance.
23. Added option for reporting serving cell info to Digi Remote Manager as a health metric. [XBCELL-8977]

BUG FIXES

1. DNS results are now cached for up to 24 hours, and cached results are now retained when the XBee goes to sleep (pin sleep, cyclic sleep, or xbee.sleep_now(...) in MicroPython). Note that this refers to the XBee's DNS cache for the ATLA command, socket.getaddrinfo(...) in MicroPython, configured hostnames such as the ATDL and ATEQ commands, and other connections or transmissions to hostnames. Previously, DNS results would be cached for less than an hour and would be lost during sleep, causing extra DNS lookup activity and some additional data usage. (DNS results are cached for one day or the TTL value specified by the nameserver, whichever is shorter.) [XBCELL-6545]

2. A Filesystem Request API frame with Get Path ID command and a pathname which resolves to the root directory (/) now correctly releases the Path ID. Updating a path ID with an absolute pathname now functions properly. [XBHAWK-578, XBPY-905]

3. Fixed an issue with API mode and ATIP 0 (UDP) where a TX IPv4 UDP frame with source port matching ATC0 would generate a TX status 0x81 ("Connection lost") after disassociating from the network and reassociating. [XBCELL-6852]

4. Fixed an issue where certain AT commands would fail to generate a response in command mode. [XBCELL-6884]

5. Fixed an issue where using ATPG with a nonexistent hostname would delay or cause temporary errors in subsequent activities.

6. Fixed an issue with the filesystem giving "ENODEV hardware failure" errors if the XBee was reset while asleep. [XBCELL-4378]

7. Attempting to rename a secure file now errors out with EPERM. [XBCELL-7071]

8. Fixed an issue where select.select() on a UDP socket could indicate readable without any received data available. [XBCELL-7295]

9. Fixed an issue where the AI command could return 0x2D (shutdown) before or after XBee sleep when no modem shutdown has taken place. [XBCELL-7361]

10. Return an error on UDP sockets if send/sendto is called before connect/bind. Previously, send/sendto would fail to actually send the message. [XBCELL-7177]

11. The network.Cellular() object in MicroPython will now block and attempt to perform the shutdown() operation while an update of the cellular component or XBee itself is in progress. The operation will fail by raising an OSError with value EAGAIN. [XBCELL-7122]

12. In MicroPython, maximum UDP TX datagram sizes are now enforced. OSError EMSGSIZE will be returned if a datagram is too large to send. [XBCELL-7783]

13. Improve reliability of receiving SMS messages. [XBCELL-8356]

14. When creating a TLS socket in Micropython, the minimum TLS version that should be allowed is now pulled from the ATTL value. [XBCELL-8444]

15. Improve retrieving the IMSI value from the SIM on certain providers that can change the IMSI while running. [XBCELL-6463]

16. Fixed an issue where under some circumstances, FTP_OTA device requests sent through Digi Remote Manager could result in attempting to download an incorrect filename. [XBCELL-8835]

17. Fixed an issue where a modem status would be sent prematurely when a FOTA, initiated through DRM, is successful. [XBCELL-8836]

1516 (September 18, 2020)

This is a recommended release.

NEW FEATURES

1. Added support in MicroPython for doing nonblocking socket connect() calls.
2. The **BP** command has been added to allow adjustment of the BLE advertisement power level.
3. Added xbee_connect method to the digi.ble module. This method wraps a gap_connection object and will authenticate and allow API frame access to another XBee3 over BLE.
4. Added support for 4 digit short code SMS targets (P#, 0x1F frames and sms_send() in MicroPython)
5. Added BLE pairing and bonding support for MicroPython GATT client connections. See the MicroPython Programmers Guide for API documentation and the xbee-micropython repository for samples.
6. Updated MicroPython to version 1.12. This does change the bytecode format requiring recomplication of program code.
7. The ER (for TCP) and ES (for UDP) AT commands have been added to allow override of the IP ports used for Remote Manager.
8. A command to specify Remote Manager idle timeout (ATMT) has been added. Remote Manager connections will be closed when there is no activity for this time. MT does not apply when persistent connections have been configured (ATMO bit zero is set).
9. Added new Digi Remote Manager health metrics, which can be enabled with the ATHM command, see documentation for details:
    - Cellular Reference Signal Received Power (RSRP)
    - Cellular Reference Signal Received Quality (RSRQ)
    - Module temperature
    - TCP and UDP application data counters
    - Internet link deactivations
    - Sleep count
10. The ATPG (Ping) command has been added to assist in network diagnostics.
11. Digi's version of MicroPython now allows for step sizes other than one in slicing bytes and string

objects.
12. TLS connections now use SNI (Server Name Indication).
13. API frames have been added to provide filesystem access. See the documentation for further details.

BUG FIXES

1. Fixed an issue in MicroPython where a select() call against a listen socket would always return return as 'writable'. Listen sockets are never writable. [XBCELL-5793, XBCELL-5796]
2. Socket Status 0xCF API frames are now correctly generated if SPI mode was forced by holding DOUT low during boot. [XBCELL-6084]
3. PWM output will now properly resume after coming out of sleep. [XBCELL-6140]
4. Improved reliability of shutdown command and airplane mode. [XBCELL-5648, XBCELL-5676]
5. SMS send in MicroPython properly returns an error if an update is in progress. [XBPY-542]
6. ATAS response frames in API mode did not always contain the user-specified Frame ID. [XBCELL-6549]

1515 (February 19, 2020)

This is a recommended release.

NEW FEATURES

1. Retrieving the RSRP and RSRQ LTE signal quality indicators is now possible in MicroPython and with the SQ and SW AT commands.

2. The Reboot command in Digi Remote Manager will now cleanly shut down the cellular radio before rebooting device.

3. Added Cellular.shutdown command in MicroPython.

4. To improve the over the air update experience:

    - The FI AT command has been added which will report the status of the last update attempt.
    - The AI command will now report the value 0x30 when an update is in progress.
    - During an update, socket or SMS creation/transmits will return an error indicating an update is in progress.

5. Bluetooth Low Energy (BLE) MicroPython APIs:

    - The digi.ble module is now available in MicroPython.
        - GAP scan (advertisement discovery).
        - GAP advertise (custom advertisements including beaconing).
        - GAP connect.
        - GATT client operations.
        - See the documentation for additional details.

6. Added Clean Shutdown button (ATSD command) to XCTU firmware definition file.

7. Added username (ATCU) and password (ATCW) settings that are needed by some cellular carriers to authenticate and connect to the network.

8. Added PIN (ATPN) and PUK (ATPK) settings that are needed when using a locked SIM.

9. The ATSD (Shutdown) command now takes an optional parameter to reboot the XBee after shutting down.

10. The ATP1 command has now added PWM functionality.
11. The ATDB command now can take an optional parameter to get an uncached RSSI signal value.
12. In MicroPython, slice-assignment to arrays and bytearrays is now supported.
13. The **BI** command has been added, which determines the name that appears in the XBee device's BLE advertisement data. If **BI** is set to the default value (0x20; ASCII space character), the default name of "XBee3 Cellular Cat 1 VZW" will be used.
14. MicroPython has had the 'uselect' module added. This will allow cleaner asynchronous socket operations.
15. The **FO** command has been added, which is used to initiate a cellular component FTP OTA. See the documentation for usage details.
16. Increased RAM available to the MicroPython interpreter to allow for more complex applications.
17. The ucryptolib MicroPython module has been added allowing for hardware accelerated AES encryption/decryption in user applications.
18. Updated the XCTU firmware definition file to support cellular component firmware update over USB Direct using XCTU 6.5.0+ on Windows.
19. MicroPython now supports registering callbacks for various functions, including the following:
    - Cellular SMS
    - User Data Relay Frames
    - micropython.schedule()
20. The WDT class has been added to the machine MicroPython module. This allows for the system to detect a hung or poorly behaved application in certain scenarios and recover. The Digi implementation differs from upstream in that it has modified defaults and allows a selection of recovery strategies.

BUG FIXES

1. The MicroPython REPL no longer continuously prints "soft reboot" if autostart is disabled after the script starts and the script performs a soft reset. [XBPY-795]

1514 (October 15, 2019)

This is a recommended release.

NEW FEATURES

1. Initial release
2. Key Features:
    - Digital I/O support.
    - Analog Input support.
    - API & Transparent mode
    - AT command mode
    - SMS
    - TCP/UDP
    - TLS/TCP
    - Incoming connections
    - MicroPython

        - On-device programmability to add local intelligence.
        - Many examples in the Digi MicroPython Programmer Guide.
    - Digi Remote Manager
    - Bluetooth Low Energy (BLE)
        - Send a subset of API frames to the XBee through the encrypted BLE API Service
        - Configure the XBee 3 Cellular using the Digi XBee Mobile app for Android and iOS.
    - Low power modes
        - Deep sleep mode.
        - Pin sleep support.
        - Cyclic sleep support.
        - Airplane mode sleep support.
    - Direct USB
    - SMS UTF-16/UCS-2 encoding support.

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