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

Digi XBee Cellular 3G Global Release Notes

Digi XBee Cellular 3G Global

Version 1131A (September, 2022)

INTRODUCTION

These are the release notes for Digi XBee Cellular 3G Global.

SUPPORTED PRODUCTS

- Digi XBee Cellular 3G Global

KNOWN ISSUES

1. By-pass mode is now deprecated and is not recommended for new designs.
2. Intermittent failure to go to sleep or wake up when using pin sleep with the SPI_nSSEL line while in SPI mode. [XBCELL-3100]
3. Transparent mode connections that are closed by timeout (TM value) will sometimes show different then expected CI values.
4. Receiving large UDP datagrams (> 1024 bytes) can cause the frame to be split into multiple API frames on the serial interface, with the second portion delayed. [XBCELL-3257]
5. If upgrading to version 11310 or later from a firmware prior to the 11310 release, you will need to reformat the file system using the ATFS FORMAT CONFIRM command or by calling os.format() from the MicroPython REPL.
6. Versions of XCTU earlier than 6.4.2 will error out at the end of a firmware update, due to the 35 second delay on first boot. Fix: Update to the latest version of XCTU.
7. 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]

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

1131A (September, 2022)

This is a recommended release.

NEW FEATURES

1. The **ATFC** command has been added to read the (U)ARFCN of the current cellular connection.
2. **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.
3. When entering command mode from the MicroPython REPL (ATAP=4), MicroPython will hold output until leaving command mode.
4. 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]
5. The built-in function enumerate is now available in MicroPython. [XBPY-77]
6. **ATOT** command has been added to read the active technology for the current network connection.
7. 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.
8. The Digi Remote Manager default keepalive intervals have been increased to reduce data usage and align with network provider guidance.
9. Added support for reporting Timezone when using ATDT1. [XBCELL-7785]
10. Updated MicroPython to version 1.18.
11. The AI value 0x30 (update in progress) is now applied for the XBee firmware as well. [XBCELL-5629]
12. Added support for reporting Timezone offset using time.tz_offset() as seconds west from UTC. [XBCELL-7784]
13. Added AT command for performing a MicroPython Soft Reset: ATPYR [XBPY-431]
14. Added support for MicroPython boot.py, for consistency with other MicroPython platforms. [XBPY-167]

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

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

7. 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]

8. Fixed an issue where closing a TLS socket could cause the loss of queued TX data. [XBCELL-3400, XBCELL-7614]

9. 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]

10. 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]

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

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

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

11316 (September 18, 2020)

This is a recommended release.

NEW FEATURES

1. Added support in MicroPython for doing nonblocking socket connect() calls.
2. Added support for 4 digit short code SMS targets (P#, 0x1F frames and sms_send() in MicroPython)
3. Updated MicroPython to version 1.12. This does change the bytecode format requiring

recomplication of program code.

4. The ER (for TCP) and ES (for UDP) AT commands have been added to allow override of the IP ports used for Remote Manager.
5. 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).
6. The ATPG (Ping) command has been added to assist in network diagnostics.
7. Digi's version of MicroPython now allows for step sizes other than one in slicing bytes and string objects.
8. API frames have been added to provide filesystem access. See the documentation for further details.
9. The ATMU command was added, which reads the firmware revision number of the cellular component.

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]

11315 (February 19, 2020)

This is a recommended release.

NEW FEATURES

1. Added support for closing all open sockets when using the API Close Socket frame.
2. Add support for various line ending conventions in TLS/SSL certificates and keys.
3. The Reboot command in Digi Remote Manager will now cleanly shut down the cellular radio before rebooting device.
4. Added Cellular.shutdown command in MicroPython.
5. Added Clean Shutdown button (ATSD command) to XCTU firmware definition file.
6. Added username (ATCU) and password (ATCW) settings that are needed by some cellular carriers to authenticate and connect to the network.
7. Added PIN (ATPN) and PUK (ATPK) settings that are needed when using a locked SIM.
8. The ATSD (Shutdown) command now takes an optional parameter to reboot the XBee after shutting down.
9. The ATDB command now can take an optional parameter to get an uncached RSSI signal value.
10. In MicroPython, slice-assignment to arrays and bytearrays is now supported.
11. MicroPython has had the 'uselect' module added. This will allow cleaner asynchronous socket operations.
12. Added option to ATDO command to disable AT&T-specific configuration which sometimes causes issues while operating in Europe. [XBCELL-6003]

BUG FIXES

1. Fixed issue with ATDT reporting a time value that was far into the future/incorrect.
2. ATPY^ now correctly interrupts a MicroPython script which has disabled keyboard interrupts using `micropython.kbd_intr(-1)`. [XBPY-446]
3. 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]

11313 (August 7, 2019)

This is a recommended release.

NEW FEATURES

1. A new family of socket operation API frames (Create, Connect, Close, Socket Status) have been added to increase the level of control and visibility into network connection creation and management.
2. The ATSD (Shutdown) command was added. You should use the ATSD command to safely shut down a device before removing power.
3. Over-The-Air (OTA) update notifications will be sent out as modem statuses. This applies to OTA XBee firmware updates.
4. The ATII command was added, which reads the IMSI (International Mobile Subscriber Identity) from the SIM.

BUG FIXES

1. Increase space available for phone numbers to accomodate full length international numbers including country code. [XBCELL-5110]
2. Extended blocking module entering sleep when performing Over-the-Air update to include the image download phase. [XBCELL-5322]

11311 (April 12, 2019)

This is a recommended release.

NEW FEATURES

1. Cellular Network Time command (ATDT)
   - Reports the local time of the XBee device, if time has been synchronized with the network.
   - Read the number of seconds since Jan 1 2000 00:00:00 UTC, or an ISO 8601-formatted timestamp.
2. Enhanced support for Digi Remote Manager
   - Filesystem support
     - Upload, download, list and delete files remotely using the SCI File System service or File Management UI in Digi Remote Manager.
   - SM/UDP connection management
     - In order to minimize data charges for an inactive connection, the XBee will no longer maintain an active TCP connection to DRM. DRM will periodically be polled through Digi's SM/UDP protocol on an interval determined by the DF AT value (default of once per day). Requests to bring up and terminate a full-featured TCP connection can be made from DRM over SM/UDP.
     - The previous constantly connected behavior may be regained by setting bit-0 of the MO AT command.
     - See the documentation for additional details.
   - Configuration and status reporting
     - Read current settings, configure the XBee device, and read the XBee device's current status remotely.
3. Active Scan command (ATAS)

- Scans for mobile cells in the vicinity and returns information about the cells in the service area of the XBee.

BUG FIXES

1. When SPI operation has been forced by holding DOUT/DIO13 pin 2 low while resetting the XBee, data arriving at the configured listening socket would be dropped. [XBCELL-4691]
2. Keyboard interrupt at the MicroPython REPL only works when the interrupt byte appears first in a block of input. [XBCELL-4853]
3. The RO parameter (packetization timeout) no longer applies when at the MicroPython REPL (AP = 4). [XBCELL-4853]

11310 (November 2018)

This is a recommended release.

NEW FEATURES

1. User Data Relay Frame
   - Relay custom user data to and from MicroPython and the local interface.
2. MicroPython Features:
   - Flash upload mode now compiles and stores the code in the file system at /flash/lib/main.mpy.
   - Cross compilation support using mpy-cross on a PC and uploading them to the file system.
   - The XBee adds an os.compile() method to compile .py files into .mpy files on the device itself.
   - The XBee adds an os.bundle() method to freeze multiple .mpy files into the device flash for execution in place to reduce heap usage.

BUG FIXES

1. Unable to delete mpy files from the file system after failing to import them. [XBCELL-219]
2. Server certificates programmed previously on the system may still be used to authenticate servers despite configuration change or being removed from the file system. [XBCELL-3736]

1130C (September 2018)

This is a recommended release.

BUG FIXES

1. Fixed issues with a memory leak when using TLS mutual authentication and additional sockets cannot be opened. [XBCELL-3861]
2. Sequence to initially connect to cellular network improved. [XBCELL-4091]

1130B (June 2018)

This is a recommended release.

NEW FEATURES

1. File system support

- ATFS command to access through Command Mode
- MicroPython file interfaces for programmatic access
- Provides MicroPython module import support
- Allows storage of TLS certificates for authentication
- Secure encrypted file storage to protect MicroPython code and TLS private keys
2. TLS Authentication
    - Accessed in MicroPython with the ussl.wrap_socket method
    - Configurable with the $0/$1/$2 commands
    - Uses certificates stored on the filesystem
    - New API frame 0x23 to access multiple authentication profiles

11309 (October 9, 2017)

This is a recommended release.

NEW FEATURES

1. Feature Highlights
    - MicroPython XBee Sleep Control.
    - Better integration between MicroPython and XBee Sleep modes.
    - API for entering low power modes.
    - MicroPython Secondary UART.
        - Configure DIO Lines to use as a second UART usable by MicroPython.
    - I2C Master Support.
        - Pin 7 and 19 on the XBee can be used as an I2C Master bus by MicroPython.
    - Incoming TCP/UDP connections.
    - Incoming connections can be used with API, Transparent and MicroPython.
    - PWM0/RSSI support.
    - SPI.
        - The XBee can be configured as a SPI Slave device.

BUG FIXES

1. Failed socket attempts will no longer cause the modem to leave then rejoin the network. [XBCELL-3]

11308 (June 8, 2017)

This is a recommended release.

NEW FEATURES

1. Initial release
2. Feature Highlights
    - MicroPython!
        - On-device programmability to add local intelligence.
        - Many examples in the Digi MicroPython Programmer Guide.
        - AT commands for managing run-time behavior.
    - Digital I/O support.
    - Analog Input support.
    - API & Transparent mode
    - AT command mode

- Bypass to raw cellular modem
- SMS
- TCP/UDP (up to 7 sockets)
- TLS/TCP (up to 4 sockets)
- Deep sleep mode.
- Pin sleep support.
- Cyclic sleep support.
- Airplane mode sleep support.
- DNS lookup command (ATLA).
- Domain names now supported in DL command.
- Operating Destination Address (ATOD) support.
- SMS UTF-16/UCS-2 encoding support.

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