



RELEASE NOTES

JN-SW-4063-JN516x-802.15.4-SDK

Related Products and Versions

This document relates to:

JN-SW-4063-JN516x-802.15.4-SDK

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RELEASE SUMMARY

1. SDK Software Components

The supplied software (JN-SW-4063) comprises the JN516x IEEE802.15.4 SDK (Libraries) which provides support for IEEE802.15.4 application development on the NXP JN5168, JN5164 and JN5161 wireless microcontrollers. This SDK must be installed on top of JN-SW-4041 (SDK Toolchain), which is available from <http://www.nxp.com/techzones/wireless-connectivity/jn51xx.html>. Please also check for newer versions of JN-SW-4007, the JN51xx Flash programmer.

This SDK release is version v983 and it provides:

- Chip support libraries for JN5168, JN5164 and JN5161
- IEEE802.15.4 Stack API
- JN516x Integrated Peripherals API
- Makefile options for JN516x (JENNIC_CHIP=JN516x)
- PDM (Persistent Data Manager) for JN516x, using EEPROM instead of a serial Flash device
- A bootloader update program to update early sample devices

2. Supported Products

This SDK supports the following NXP products:

Chips	Protocols	Evaluation Kits
JN5168 JN5164 JN5161	802.15.4	JenNet-IP EK001

Please note that this SDK does not include support for the JN514x family of microcontrollers.

3. Software Installation

The SDK can be installed directly from the supplied installer. To choose the installation directory, follow the instructions within the installer.

If you already have the JN5148 SDK on your machine, before installing this JN516x SDK you should first back up your Applications development directory and any user-modified files within the SDK directory.

This SDK, JN-SW-4063, is installed on top of JN-SW-4041 (SDK Toolchain), currently available from <http://www.nxp.com/techzones/wireless-connectivity/jennet-ip>.

Therefore, before installing JN-SW-4063, you must install the SDK Toolchain:

JN-SW-4041-SDK-Toolchain-v1.1.exe

You can then install the JN516x IEEE802.15.4 SDK:

JN-SW-4063-JN516x-802.15.4-SDK-v983.exe

The MD5 checksum for the JN-SW-4063 installer is:

b0b48771b1c9cdba024bea32475139e2

For programming devices, the JN516x Flash Programmer version v1.8.6 (or greater) should be used. This is also available from <http://www.nxp.com/techzones/wireless-connectivity/jennet-ip>, as JN-SW-4007.

Full SDK installation instructions are provided in the *SDK Installation and User Guide (JN-UG-3064)*, available from <http://www.nxp.com/techzones/wireless-connectivity/jennet-ip>

4. Components and Version Numbers

This release includes the following component versions:

Component	Version
IEEE 802.15.4-2006 Network Layer	55198
Bootloader	V6/45532
Production Test Libraries	1v49/57142

5. Release Details

The following sections provide further details on the features and changes within each software component in the SDK. Changes are relative to the previous release.

5.1 New Features and Changes

This release supports production changes and does not introduce any new functionality.

5.1.1 Board Support Libraries

New features are:

- The DK4 board support library now has support for the DR1215 LCD expansion board in addition to the previous DR1201 LCD expansion board. Binary application files built using the new board library will work with both boards

5.1.2 Production Test API

New features are:

- The production test API library (libJPT_JN516x.a) has been updated

5.2 Modifications Required

5.2.1 Chip and stack type variables

- JENNIC_CHIP variable should be set to JN5168 (note no hyphen)
- JENNIC_STACK variable should be set to MAC

For example, make `JENNIC_CHIP=JN5168 JENNIC_STACK=MAC clean all`

5.2.2 Toolchain location variable

- TOOL_BASE_DIR variable may be set to allow a single installation of the toolchain to be used if multiple product libraries are installed into separate directories

e.g. `make TOOL_BASE_DIR=C:/AppData/NXP4065/Tools clean all`
to use the compiler located in `C:/AppData/NXP4065/Tools/ba-elf-ba2`

5.2.3 Porting Notes

Moving from the previous JN516x release to this one requires no special porting instructions.

5.2.4 Application changes

No application changes are required when moving from the previous release.

5.2.5 JN5161 IEEE802.15.4 applications

When porting IEEE802.15.4 applications to the JN5161, the stack and heap size may be reduced to increase application space.

In files:

```
Chip/JN5161/Build/AppBuildStart_JN5161.ld  
_minimum_heap_size = 1500;
```

```
Stack/MAC/Build/App_Stack_Size.ld  
_stack_size = 2048;
```

6. Bootloader Updater

Early engineering samples of the JN516x included an older bootloader that must be updated to the latest version.

6.1 Confirming Version

To determine if an update is required, connect the JN516x for programming with the JN51xx Flash Programmer v1.8.6 (or newer) and press the 'Refresh' button in the Flash Programmer GUI.

If it reports:

Device: JN5168, BL: 0x128F0000

then the bootloader needs to be updated.

If it reports:

Device: JN5168, BL: 0x00080003 or **Device: JN5168, BL: 0x00080006**

then the bootloader has already been updated, and a further update is not required.

6.2 Performing Update

To update the bootloader follow the steps below:

1. Using the JN51xx Flash Programmer v1.8.6 (or newer), program the **BootloaderUpdate_JN5168.bin** installed by this SDK at **C:\Jennic\Tools\BootloaderUpdater\BootLoaderUpdater_JN5168.bin** to the device. The Flash Programmer will report:
"The firmware file was built for another processor version and might not run on the connected device. Are you sure you want to continue?"
Select 'Yes' and then wait for the programming operation to complete.
2. Close the Flash Programmer application
3. Start a terminal emulator application (for example, HyperTerminal) and configure it to use the serial port that the JN516x device is connected to, with port settings of 115200 baud, 8 bits, no parity, 1 stop bit
4. Reset the JN516x device. Do not press reset a second time or disconnect power during the update process. Wait until the serial output on the terminal emulator indicates the update has completed. If there is no serial output (e.g. due to mis-configuration of the terminal emulator), do not try to reset a second time but wait for at least 10 seconds before re-trying
5. Once the bootloader has been updated, restart the Flash Programmer, press the 'Refresh' button and confirm that it now reports:

Device: JN5168, BL: 0x00080006

Note: The bootloader update is only required for engineering sample parts and the update will only be required once per part.