Z-Wave 700 SDK 7.13.9.0 GA
Gecko SDK Suite 2.7
March 3, 2021

Z-Wave 700 is designed to meet the demands of the future smart home, where increasing needs for more sensors and battery-operated devices require both long range and low power. Context-aware environments are the next evolution in the smart home market, and they require technologies that have been optimized specifically for these applications.

100% Interoperable: Every product in the Z-Wave ecosystem works with every other product, regardless of type, brand, manufacturer or version. No other smart home/IoT protocol can make this claim.

Best-In-Class Security: Z-Wave’s Security 2 (S2) framework provides end-to-end encryption and the most advanced security for smart home devices and controllers. Homes with S2 Z-Wave devices are virtually un-hackable.

SmartStart Easy Installation: SmartStart radically simplifies the installation of smart devices by using QR code scans for uniform, trouble-free setup. Devices and systems can be pre-configured dramatically easing deployments.

Backwards-Compatible: Z-Wave certification mandates backward-compatibility. The very first Z-Wave devices on the market, more than ten years old still perform as intended in networks with the latest Z-Wave technologies.

The Z-Wave 700 SDK v7.13.9 GA release is intended for development of Z-Wave-certifiable, 700-based products entering volume production. One bug is fixed in this release regarding OTA migration, for details see section 2.3 - Fixed Issues. Notice: The Z-Wave 700 SDK v7.13.0 was a beta release and therefore could not be used for Z-Wave certification, see section 6 - Product Life Cycle and Certification.

These release notes cover SDK version(s):

7.13.9.0 released March 3, 2021
7.13.8.0 released October 28, 2020
7.13.7.0 released August 12, 2020
7.13.6.0 released May 27, 2020
7.13.5.0 released April 29, 2020
7.13.4.0 released April 15, 2020
7.13.3.1 released March 27, 2020
7.13.3.0 released March 20, 2020
7.13.2.0 released February 21, 2020
7.13.1.0 released January 24, 2020
7.13.0.0 released December 13, 2019

Compatibility and Use Notices

If you are new to the Z-Wave 700 SDK, see Using This Release.
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1 Z-Wave Protocol

1.1 New Items

Added in release 7.13.0.0 Beta

Code execution before entering sleep mode: Several callbacks from the protocol to the framework supported allowing code execution last before entering sleep mode. Up to three callbacks are available. For details refer to function ZAF_PM_SetPowerDownCallback() in ZAF/ApplicationUtilities/PowerManagement/ZAF_PM_Wrapper.h.

SmartStart (6.81.0x+)

SmartStart introduces a number of new APIs for using learn mode and adding nodes to the network. For end nodes, the ZW_NetworkLearnModeStart() is now used to control learn mode. For controller nodes, ZW_AddNodeToNetwork() is used.

SmartStart and S2 QR Code Generation

Z Wave devices supporting the Security 2 (S2) Command Class or SmartStart provisioning must provide a QR code physically on the device as well as on packaging. The actual marking and layout requirements are documented in SDS11847: Z Wave Plus Device Types Specification while the data string encoded in the QR code is specified in SDS13937: Node Provisioning QR Code Format.

Both the QR code and S2 DSK are generated in the SmartStart device itself and Simplicity Commander facilitates readout of the QR code for printing.

The current SDK release contains two software utilities described in INS13975: Smart Start Production Control to assist developers in creating and verifying the contents of a QR code:

- QrCodeEncoder.xlsm
  - Encoding of QR code fields
  - Single-sample generation of QR codes for prototyping
  - Generation of dynamic string for the Production Control File with fields to be replaced during production

- QrCodeDecoder.xlsm
  - Decodes the string contained in a QR code using an arbitrary smart phone QR code scanner application

These utilities are implemented using Excel sheets, incorporating several macro functions for SHA-1 checksum calculation, QR code rendering, and control file generation. The utilities must therefore be stored in a folder that is not write protected. All gray fields in the spreadsheets should be left untouched.

1.2 Improvements

Changed in release 7.13.0.0 Beta

FLiRS enhancement: FLiRS power consumption is reduced to 30 µA in average for Korea and Japan.

File system enhancement: Improve access time to filesystem NVM3 by decreasing the number of files and code optimizations. For example, it is six times faster to add a node to the network than in the previous SDK release.

1.3 Fixed Issues

Fixed in release 7.13.4.0 GA

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>448052</td>
<td>During inclusion of a secondary controller in a network with existing FLiRS nodes the neighbor discovery of FLiRS nodes from the secondary controller will time out too fast and prevent the secondary controller from obtaining correct routing information for FLiRS nodes. This timeout will prevent the secondary controller from routing to FLiRS nodes that existed in the network when it was included.</td>
</tr>
<tr>
<td>456447</td>
<td>Slave device does not ack incoming frames when not included. Used for test on production line.</td>
</tr>
</tbody>
</table>
### 1.4 Known Issues in the Current Release

Issues in bold were added since the previous release.
<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
<th>Workaround</th>
</tr>
</thead>
<tbody>
<tr>
<td>355095</td>
<td>In small networks Assign Return Routes will only generate direct range or one hop routes even though multi hop routes are possible.</td>
<td>None</td>
</tr>
<tr>
<td>361273</td>
<td>Transport Service is used when it is necessary to split a frame in two parts due to size. However, Transport Service does not forward RSSI information from the lower layers but only routing information. The RSSI value is the difference between LWR RSSI and background RSSI. As a consequence it is not possible to use RSSI for large frames handled by Transport Service in a network health calculation.</td>
<td>None</td>
</tr>
<tr>
<td>433582</td>
<td>The supply voltage of the EFR32ZG14 SoC for gateways must be 2.5V or higher. This will ensure stable operation since low noise DCDC conversion is enabled on the SoC instead of DCDC bypass.</td>
<td>None</td>
</tr>
<tr>
<td>436188</td>
<td>Priority routes are written to a cache in RAM and not flushed to file system NVM3 when a soft reset is issued.</td>
<td>Host application must always restore priority routes in controller at startup.</td>
</tr>
<tr>
<td>436380</td>
<td>Serial API-based controller can seldom reset during SmartStart inclusion in large networks. Seen rarely in networks larger than 40+ nodes.</td>
<td>Important to enable watch dog to recover from SmartStart failure. Host application must set controller in SmartStart mode again to proceed.</td>
</tr>
<tr>
<td>448729</td>
<td>Virtual nodes on a bridge controller will ack frames from a foreign homeID when the bridge controller is in the process of adding a node to the network</td>
<td>None</td>
</tr>
</tbody>
</table>

### 1.5 Deprecated Items

None

### 1.6 Removed Items

None
2 Z-Wave Plus V2 Application Framework

2.1 New Items

None

2.2 Improvements

Added in release 10.13.1.0 GA

Improved Z-Wave Plus V2 Framework: Added delayed activation functionality in the Firmware Update Meta Data Command Class fulfilling requirements according to version 5. The delayed activation functionality enables programming of a device using a previously transferred firmware image.

Added in release 10.13.0.0 Beta

Improved Z-Wave Plus V2 Framework: The Z Wave Plus V2 Framework is an extension of the well-known Z-Wave Plus certified solutions. It features a selected set of extended features and capabilities that enhance the end user experience and make Z-Wave installations even faster and easier to install and set up.

The Z-Wave Plus V2 requirements are as follows:

- SmartStart is mandatory.
- OTA Firmware update is mandatory.
- Extended CC support for root devices and Multi-Channel End Points. All actuator Device Types must support Basic CC.
- Indicator to identify device such as a visible LED.
- Dynamic capabilities and node discovery. Capabilities may change due to user interaction.
- New controller requirements to strengthen interoperability; for instance, blocking or forced exclusion of non-preferred devices is no longer allowed.
- Minimum CC to be controlled by a controller extended. This applies also for bridging devices interfacing to another technology.
- Detection of Z-Wave Plus V2-compliant nodes using Z-Wave Plus Info CC.


2.3 Fixed Issues

Fixed in release 10.13.9.0 GA

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>495621</td>
<td>Fixed a bug regarding Association initialization when doing OTA migration from 7.13.1 to 7.13.8. In version 7.13.4 the format for storing unassigned associations in the ZAF_FILE_ID_ASSOCIATIONINFO file was changed. Unfortunately the necessary code was not added for migrating old files to the new format at that release. That code is necessary to keep track of unused associations when doing OTA firmware update from any earlier version to v 7.13.4 or later. The bug was discovered in June 2020 and a fix was subsequently pushed to v7.14.2 and to v7.15.x. Unfortunately the fix was not pushed to later patches of v7.13.x like v7.13.8.</td>
</tr>
</tbody>
</table>

Fixed in release 10.13.4.0 GA

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>471325</td>
<td>Multichannel/Multicast with single cast follow up does not work for all association combinations.</td>
</tr>
<tr>
<td>472305</td>
<td>Association Set Command does not set the correct associations. Associations Report Command returns an incorrect result. First and last association is correct but associations in between are all set to the second association. Device fails certification!</td>
</tr>
<tr>
<td>ID #</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>472886</td>
<td>Sample apps build correctly but fail to build GBL files used to make OTA firmware update.</td>
</tr>
</tbody>
</table>

**Fixed in release 10.13.1.0 GA**

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>402207</td>
<td>Wakeup Notification Command Class – Callback function ZCB_WakeUpNotificationCallback() must have the same arguments as pCallback.</td>
</tr>
<tr>
<td>452390</td>
<td>The Z-Wave Product Type value remains 4 in the QR code despite changing APP_PRODUCT_TYPE_ID in config_app.h file.</td>
</tr>
<tr>
<td>453561</td>
<td>SessionID in Supervision Command encapsulated frames is not incremented.</td>
</tr>
</tbody>
</table>

**Fixed in release 10.13.0.0 Beta**

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>396608</td>
<td>UART1 Tx/Rx PORT/PIN defined incorrectly.</td>
</tr>
<tr>
<td>436136</td>
<td>S2 Commands Supported Get does not trigger a correct response depending on the security type of the inclusion.</td>
</tr>
</tbody>
</table>

### 2.4 Known Issues in the Current Release

Issues in bold were added since the previous release.

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>369430</td>
<td>All S2 multicast frames are sent using verified delivery S2_TXOPTION_VERIFY_DELIVERY whether or not a response is expected.</td>
</tr>
<tr>
<td>412848</td>
<td>Multichannel association groups works incorrectly when having multiple associations to the same device.</td>
</tr>
<tr>
<td>429745</td>
<td>In CC_Supervision.c the session_id gets increased before Supervision GET is sent. So condition if ((supervision_session_id - 1) == pCmd-&gt;ZW_SupervisionReportFrame.properties1) is never true.</td>
</tr>
</tbody>
</table>

#### Workaround

- Change source code depending on frame sent.
- Change source code according to specification.
- Replace

```c
if ((supervision_session_id - 1) == pCmd->ZW_SupervisionReportFrame.properties1) with
if (supervision_session_id == pCmd->ZW_SupervisionReportFrame.properties1)
```

### 2.5 Deprecated Items

None

### 2.6 Removed Items

None
3 Certified Applications

3.1 Door Lock Key Pad

3.1.1 New Items

Added in release 10.13.0.0 Beta

Current Consumption of Door Lock Key Pad in Sleep Mode: The current consumption of Door Lock Key Pad FLiRS device is typical 19 µA on average. The configurations of the FLiRS device is configured as follows:

- 2-channel frequency, such as EU, US, etc.
- Wakeup interval of 1000 ms
- No communication

3.1.2 Improvements

None

3.1.3 Fixed Issues

Fixed in release 10.13.1.0 GA

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>449819</td>
<td>The Door Lock Key Pad application disables the ADC which in turn makes the protocol layer set the DCDC converter to pass mode and thereby increase power consumption.</td>
</tr>
<tr>
<td>450070</td>
<td>Door Lock Configuration Set Command with Supervision should return FAIL when setting unsupported components in the command parameters.</td>
</tr>
<tr>
<td>450243</td>
<td>The Door Lock Operation Set command handler incorrectly modifies the Outside- and Inside Door Handles Mode values. Those values should only be set by the Door Lock Configuration Set command.</td>
</tr>
<tr>
<td>451858</td>
<td>The Door Lock Key Pad responds with a Door Lock Operation Report Command after a locally initiated lock/unlock operation is incomplete. The last two bytes of the fields &quot;Target Door Lock Mode&quot; and &quot;Duration&quot; are missing.</td>
</tr>
<tr>
<td>456219</td>
<td>When Door Lock Key Pad receives a DoorLock Operation Get Command then it must report 0 for the Door Handles Mode if the Door Lock Mode is secured (0xFF).</td>
</tr>
</tbody>
</table>

Fixed in release 10.13.0.0 Beta

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>448027</td>
<td>The Door Lock Key Pad application does not support inside door handles. Hence, the Door Lock Operation Set command should not alter these values.</td>
</tr>
</tbody>
</table>

3.1.4 Known Issues in the Current Release

None

3.1.5 Deprecated Items

None
3.1.6 Removed Items
None

3.2 Power Strip

3.2.1 New Items
None

3.2.2 Improvements
None

3.2.3 Fixed Issues

Fixed in release 10.13.1.0 GA

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>455109</td>
<td>PowerStrip doesn't send the Alarm Event Notification Reports to nodes added in the EP 1 and EP 2 association groups.</td>
</tr>
</tbody>
</table>

Fixed in release 10.13.0.0 Beta

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>434820</td>
<td>DUT must allow a command to go through with a higher security level. Both a S2-Access Msg Encap [S0 Security Commands Supported Get] and a S0 Msg Encap [S0 Security Commands Supported Get] must return a S2-Access Msg Encap [S0 Security Commands Supported Report (empty list)].</td>
</tr>
<tr>
<td>436136</td>
<td>When the DUT is included non-securely, the endpoint capability report does not advertise the S0 Security CC but it is still listed in the NIF for the root device.</td>
</tr>
</tbody>
</table>

3.2.4 Known Issues in the Current Release
None

3.2.5 Deprecated Items
None

3.2.6 Removed Items
None

3.3 Sensor PIR

3.3.1 New Items
None
3.3.2 Improvements

None

3.3.3 Fixed Issues

Fixed in release 10.13.1.0 GA

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>450403</td>
<td>Sensor PIR doesn’t extend the stay awake period by 10 seconds when receiving a Request Node Info frame.</td>
</tr>
<tr>
<td>452674</td>
<td>The macro DISABLE_UART0 is missing in the Simplicity Studio Sensor PIR project causing power consumptions up to 50 µA in EM2 sleep.</td>
</tr>
</tbody>
</table>

Fixed in release 10.13.0.0 Beta

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>407674</td>
<td>Sensor PIR wakeup phase is much longer than expected. Measurements show that the initial wakeup phase is prolonged by ≈300 ms. It should not take more than ≈10 ms.</td>
</tr>
</tbody>
</table>

3.3.4 Known Issues in the Current Release

Issues in bold were added since the previous release.

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>386208</td>
<td>Sensor PIR does not always generate SHORT_PRESS events for short button presses in EM4. If the device has been awakened by a button press, the button handling logic starts by looking at the current state of the button. If the button is UP, a SHORT_PRESS event is immediately sent to the application. If the button is DOWN, then the de-bouncing logic is triggered to properly generate HOLD or LONG_PRESS events as needed. However, this leaves a tiny timing window where the button could be DOWN when initially tested, but is released before the DOWN time required for the de-bouncing logic to generate even a SHORT_PRESS event.</td>
</tr>
</tbody>
</table>

3.3.5 Deprecated Items

None

3.3.6 Removed Items

None

3.4 Switch On/Off

3.4.1 New Items

None
3.4.2 Improvements

None

3.4.3 Fixed Issues

Fixed in release 10.13.1.0 GA

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>450496</td>
<td>Long press on BTN0 on the BRD8029A Button Board triggers watchdog reset.</td>
</tr>
</tbody>
</table>

3.4.4 Known Issues in the Current Release

None

3.4.5 Deprecated Items

None

3.4.6 Removed Items

None

3.5 Wall Controller

3.5.1 New Items

None

3.5.2 Improvements

None

3.5.3 Fixed Issues

None

3.5.4 Known Issues in the Current Release

None

3.5.5 Deprecated Items

None

3.5.6 Removed Items

None
4 Serial API Bridge Controller

Unchanged serial interface version 8.

4.1 New Items

None

4.2 Improvements

None

4.3 Fixed Issues

None

4.4 Known Issues in the Current Release

Issues in bold were added since the previous release.

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
<th>Workaround</th>
</tr>
</thead>
<tbody>
<tr>
<td>387655</td>
<td>Pre-built SerialAPI delivered in Simplicity Studio will not work if the ZG14 bootloader is also flashed to the radio board.</td>
<td>Use serialAPI without bootloader or, if OTW support is needed, contact the Z-Wave Apps team for workaround.</td>
</tr>
</tbody>
</table>

4.5 Deprecated Items

None

4.6 Removed Items

None
5 Using This Release

This release contains the following

- Z Wave Plus V2 Application Framework
- Z-Wave Certified Applications for a broad range of smart home applications
- Z-Wave Protocol and Serial API Applications

If you are a first-time user, Z-Wave documentation is installed with the SDK. See INS14280: Z-Wave 700 Getting Started for End Devices, INS14278: How to Use Certified Apps in Z-Wave 700, and INS14281: Z-Wave 700 Getting Started for Controller Devices for instructions.

This SDK depends on Gecko Platform. The Gecko Platform code provides functionality that supports protocol plugins and APIs in the form of drivers and other lower layer features that interact directly with Silicon Labs chips and modules. Gecko Platform components include EMLIB, EMDRV, RAIL Library, NVM3, and mbedTLS. Gecko Platform release notes are available through Simplicity Studio’s Launcher Perspective, under this SDK’s Release Notes doc header.

5.1 Installation and Use

Order a Z-Wave 700 Wireless Starter kit. The kit offers the easiest and fastest way to start evaluation and development of your own Z-Wave 700 mesh application. It provides a single world-wide development kit for both end devices and gateways with multiple radio boards, to enable developers to create a mesh network and evaluate the Z-Wave 700 module.

Download and install Simplicity Studio from https://www.silabs.com/support/getting-started/mesh-networking/z-wave/z-wave-700. Simplicity Studio ensures that most software and tool compatibilities are managed correctly. Install software and board firmware updates promptly when you are notified.

After Simplicity Studio installs, select Install By Product Group, check Z-Wave, and follow the steps to install the SDK.

Documentation specific to the SDK version is installed with the SDK. API references and other information about this and earlier releases are available on https://docs.silabs.com/.

To implement a specific application, Silicon Labs recommends starting with one of the existing pre-certified apps with the desired Role Type.

5.2 Support

Development Kit customers are eligible for training and technical support.

See support resources and contact Silicon Laboratories support at http://www.silabs.com/support.
6 Product Life Cycle and Certification

Silicon Labs will add new features based on market requirements and continuously improve the Z-Wave Protocol to position the Z-Wave Ecosystem. The Z-Wave Protocol Life Cycle is a process to provide rapid innovation, new features and robust matured protocol release to Z-Wave Partners. The Z-Wave Protocol Life Cycle defines the maturation process of Z-Wave Protocol generations and consist of three phases divided in five Life Cycle stages.

Ascent Phase (BETA)

Silicon Labs releases new Z-Wave protocol generations (branches), i.e. initial BETA release of a Z-Wave Protocol generation that will introduce major new features/functions or support for a new Z-Wave Single Chip generation. This release is not certified and not eligible for certification.

Maturity Phase (ACTIVE/MAINTAINED)

Each new generation will generate follow on matured releases to resolve protocol issues prioritized by Silicon Labs and based on input from Z-Wave Alliance Partners.

Decline Phase (MONITORED/OBSOLETE)

After a period of 17-24 months in the maturity phase a branch/release is discontinued and for an additional period (up to 24 months) a discontinued branch/release will be monitored since products based on this branch may still be shipping or under warranty in the field.

<table>
<thead>
<tr>
<th>Series</th>
<th>Branch</th>
<th>SDK Version</th>
<th>Release Date [DD/MM/YYYY]</th>
<th>Life Cycle Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>700</td>
<td>7.1.x.x</td>
<td>7.13.9 GA</td>
<td>03-MAR-2021</td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.13.8 GA</td>
<td>28-OCT-2020</td>
<td>Maintained</td>
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<td></td>
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<td>7.13.7 GA</td>
<td>12-AUG-2020</td>
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<td>7.13.6 GA</td>
<td>27-MAY-2020</td>
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<td>29-APR-2020</td>
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<td>20-MAR-2020</td>
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<td>24-JAN-2020</td>
<td>Maintained</td>
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<td></td>
<td>7.13.0 Beta</td>
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<td>Obsolete</td>
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<tr>
<td></td>
<td></td>
<td>7.12.2 GA</td>
<td>26-NOV-2019</td>
<td>Maintained</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.12.1 GA</td>
<td>20-SEP-2019</td>
<td>Obsolete</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.11.1 GA</td>
<td>12-JUL-2019</td>
<td>Maintained</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.11.0 GA</td>
<td>29-MAR-2019</td>
<td>Monitored</td>
</tr>
</tbody>
</table>
A change in the Z-Wave SDK utilized for a specific device does require recertification; however, the type of certification required, the amount of testing needed, and the associated fees depend on the scope of the change.

**Table 6-2. Z-Wave Certification in case of a SDK upgrade.**

<table>
<thead>
<tr>
<th>SDK Version</th>
<th>Upgrade to SDK Version</th>
<th>Type of Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.13.9 GA</td>
<td>NA</td>
<td>-</td>
</tr>
<tr>
<td>7.13.8 GA</td>
<td>7.13.9 GA</td>
<td>Re-certification</td>
</tr>
<tr>
<td>7.13.7 GA</td>
<td>7.13.8 GA</td>
<td>Re-certification</td>
</tr>
<tr>
<td>7.13.6 GA</td>
<td>7.13.7 GA</td>
<td>Re-certification</td>
</tr>
<tr>
<td>7.13.5 GA</td>
<td>7.13.6 GA</td>
<td>Re-certification</td>
</tr>
<tr>
<td>7.13.4 GA</td>
<td>7.13.5 GA</td>
<td>Re-certification</td>
</tr>
<tr>
<td>7.13.3 GA</td>
<td>7.13.4 GA</td>
<td>Re-certification</td>
</tr>
<tr>
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<td>7.13.3 GA</td>
<td>Re-certification</td>
</tr>
<tr>
<td>7.13.1 GA</td>
<td>7.13.2 GA</td>
<td>Re-certification</td>
</tr>
<tr>
<td>7.13.0 Beta</td>
<td>7.13.1 GA</td>
<td>Full certification</td>
</tr>
<tr>
<td>7.12.2 GA</td>
<td>7.13.1 GA</td>
<td>Re-certification</td>
</tr>
<tr>
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<td>7.13.1 GA 7.13.0 Beta 7.12.2 GA</td>
<td>Re-certification NA Re-certification</td>
</tr>
<tr>
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<td>7.13.1 GA 7.13.0 Beta 7.12.2 GA 7.12.1 GA</td>
<td>Re-certification NA Re-certification NA</td>
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<tr>
<td>7.11.0 GA</td>
<td>7.13.1 GA 7.13.0 Beta 7.12.2 GA 7.12.1 GA 7.11.1 GA</td>
<td>Re-certification NA Re-certification NA Re-certification</td>
</tr>
</tbody>
</table>
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