

Overview

One of the most important goals of Roon Ready certification is to ensure a consistently stellar user experience with each and every certified partner device.

Devices should “just work” and the features that the user could reasonably expect must be present and working properly. Features made available to other output options must be available to the Roon Ready integration as well--RAAT should never be a second class citizen.

Certifying a device as Roon Ready is performed at Roon Labs' discretion. We fully expect that the certification process will involve some iteration with product and technical teams and will evolve over time. Do not hesitate to contact us as soon as you have any questions or concerns about the process.

Product Requirements

Roon Ready devices must:

- Report device identification information to Roon.
 - Vendor name
 - Model name
 - Serial number (if capable)
 - Hardware/Firmware version information
 - RAAT SDK version
- Support two-way synchronized volume control with Roon.
 - Roon Ready devices must support volume control from Roon.
 - For devices without an existing volume solution we've included an optional software volume control in the RAAT SDK.
 - It must always be possible to control the volume of the device from Roon.
 - Ensure that the volume control in Roon is functional while the device is streaming from a different service or on a non-networked input.
 - It must always be possible to see the current volume of the device from Roon.
 - The device should immediately report any changes to its volume level to the RAAT volume plugin, regardless of the current input.
 - The volume control should be the highest quality volume mechanism offered by the device.
 - Devices implementing analog or DAC-chip level volume control must implement these controls to work with the RAAT volume plugin.
 - For devices with DSP or software volume control, make sure to discuss this with the Roon team before submitting your device.
 - If the device supports network-aware standby, it must allow the user to adjust the volume level while the device is in standby mode.
 - This allows the user to adjust the volume before playback is started.

- Allow Roon Ready playback to be started at any time.
 - Devices with multiple inputs must report their input/source selection status via the RAAT SDK source selection plugin.
 - The device should remain discoverable in Roon as long as it is powered and connected to the network.
 - When playback is started in Roon the device should automatically switch inputs and start playback of the stream.
 - This feature is commonly known as “Convenience Switching”.
 - Note that other networked playback systems like Spotify Connect and AirPlay are to be treated as sources for the purposes of this certification requirement.
 - Ensure that there are no unpleasant noises or artifacts on the audio output of the device when convenience switching inputs.
 - When Roon Ready playback is interrupted on the device it should pause playback in Roon and report the proper error message.
 - If the input is changed while Roon Ready playback is active the track should be automatically paused and the “input was switched” error message should be shown in Roon.
 - If the device is put into standby mode while Roon Ready playback is active the track should be automatically paused and the “device was turned off” error message should be shown in Roon.
- Report any on-device DSP processes in the Roon Signal Path.
 - The exact product behavior and strategy for the Signal Path feature should be discussed with the Roon team prior to implementation.
 - Examples include: Upsampling, EQ, Phase Invert, Balance, DSD to PCM conversion, DSP volume
 - The device should update the status of Signal Path elements in real-time, always reflecting the current status of the device.
 - For example: If the user increases the Bass EQ by 2dB, the Signal Path element in Roon should update itself with the new value instantaneously
 - The device must always report the proper “Output Method” in the Signal Path.
 - Possible output methods include “Analog Outputs”, “Headphones”, “USB”, “Digital Outputs”....
- Forward device transport commands to control Roon Ready playback.
 - Devices supporting transport controls (play/pause, skip/previous etc...) must implement the transport plugin (see RAAT SDK documentation)
 - If the device supports transport controls for any digital sources it must also be implemented for Roon Ready.
 - If the device supports toggling shuffle and loop for UPnP playback, it must implement these toggles for controlling Roon Ready.
 - If the device supports play/pause controls for Spotify Connect it must implement play/pause control for Roon Ready.
- Display metadata and artwork from Roon on supported displays and companion apps.

- Devices supporting metadata and/or artwork display must implement the transport plugin (see RAAT SDK documentation).
- It must accept metadata updates from Roon and update its displays in real time.
- Accept artwork updates from Roon and update its displays in real time.
- Metadata and artwork from Roon should be displayed only while the Roon source is active.
- Allow for Roon Ready playback of any formats, bit depths, and sample rates the device is advertised as supporting.
 - Roon Ready playback should have parity with other networked and file based sources in regards to format support.
 - If the device supports UPnP playback of DSD256 content, it must be possible to play DSD256 via Roon Ready as well.
 - When the device communicates its supported audio formats to Roon, it should include support for all advertised supported formats, bit depths, and sample rates.
 - First example: If the device supports playback of 384kHz PCM via UPnP but downsamples to 192kHz, the device should report 384kHz support to Roon and then report the downsampling in the Signal Path.
 - Second example: If all audio is resampled on the device to 24/96kHz PCM, the device should still report support for all PCM rates up to its advertised limit and report the resampling via Signal Path.
 - Third example: If the device supports MQA playback using the built-in Tidal app, it must support MQA playback via Roon Ready.
 - Playback must be stable and dropout free in all supported formats
 - The device must be able to sustain continuous playback for 24 hours
 - The device must be capable of switching between different formats without unpleasant noise or artifacts.
 - If the device takes time to switch formats, it must work with the appropriate RAAT APIs to ensure that Roon doesn't begin playback before the device is ready, resulting in cut-off audio.
- The device must be well behaved on standard home networks.
 - It should also handle situations where the network status changes like
 - Power-cycling a switch or router
 - Pulling and replacing the device's ethernet cable
 - Pulling and replacing the Roon server's ethernet cable
 - Enabling/disabling network interfaces on the Roon server machine and on the device (if applicable).
- Devices which pass-through audio to a USB port must provide the USB IDs and manufacturer/model information of connected devices to Roon so they can be accurately reflected in Signal Path.
 - This information is shown in-app in the Signal Path as well as the Device Setup screen.

- Implementation of source code must be provided to the Roon team for review purposes. The focus is on stability, defect prevention, and ensuring that the device is using the SDK properly.
- Devices must support a firmware update mechanism.
 - This mechanism must be something that an end user can perform in the field.
 - This mechanism must be exposed to the Roon team so that we can load firmware onto the hardware for testing purposes.
- The device must work well in zone-linked situations. It must.
 - Play in a linked configuration with other devices for 24hrs without crashing or experiencing noticeable clock drift.
 - Use the best possible mechanism for addressing clock drift. If the hardware supports an adjustable or configurable clock, this should be used. Otherwise, the device may use Roon's simple stuff/drop implementation or provide its own DSP to adjust for clock discrepancies.
- The device must not crash or exhibit user experience problems during tests.
- If the device has a remote control, controls on the remote control must work as well as controls on the front panel.
- If the RAAT process crashes, it must be restarted automatically. We suggest a 2 second pause between restarts so that startup crashes don't cause the device to spin.
- USB Bridges must behave sanely when the USB device is connected/disconnected.
 - On disconnect, the RAAT software should be torn down
 - On reconnect, it should recover automatically.
 - If the device boots without a USB device, and it's plugged in later, the RAAT software should be started automatically
- Digital (S/PDIF, AES, I2S, etc) bridge products must provide a way for the user to
 - Choose whether or not to engage a digital volume control.
 - Choose whether or not to output DSD in DoP mode.
- Devices with a configuration web page must report its URL to Roon via the "config_url" mechanism so that a link can be shown in the app.
- Device must be using an up-to-date version of the RAAT SDK at the time of certification

Hardware Units for Testing and QA

Roon Labs RAAT SDK Certification Requirements

- In order to begin supporting integration of the SDK, Roon Labs must have two of each unit being integrated. One unit will stay with the development team for troubleshooting purposes. In order to finalize certification, the second unit for the support/qa team needs to be delivered to support end users and for ongoing QA.