

1 Addressing the eeprom corruption issue in SIR120

1.1 Problem definition

The SIR120 suffers from corruption of the settings in eeprom, which seems to be especially high when the provisioning platform serving settings and content to the device is overloaded. A device with corrupted settings will not be able to connect to or be identified on the provisioning platform, resulting in audio not being played or not being updated.

Streamit has implemented a patch for the SIR120, to avoid eeprom corruption from effecting the connectivity of the device to the provisioning platform.

1.2 Patch for SIR120

The patch for SIR120 should make sure that a device will keep connecting to and will be identified correctly on the provisioning platform, also if eeprom corruption was to occur. For this patch to work, some functionality is required on the provisioning platform.

1.2.1 What is this patch

The patch will be enabled the moment the user sends a specific command from the server, to a device running software where the patch is supported (version 1.68 and higher).

When this command is issued, the device will copy the settings important for the identification and connectivity of the device, from eeprom to external flash memory. Checks have been implemented to ensure that the data will be copied to the external flash correctly.

From this moment on, the settings from flash will overrule the settings in eeprom, meaning that if eeprom corruption was to occur after this point, it should not affect the connectivity and identification of the specific device.

Please note that if a device was corrupted before this moment in time, then the settings copied to the external flash will be considered 'correct' and the device will continue using these settings. There is no way for the device to validate whether the settings found at the specific moment in eeprom are correct or not; it is only possible to verify that no issues occurred while copying the data.

In the unlikely event that reading data from external flash was to fail or the data was corrupted, the SIR120 will detect this and will use the information from eeprom.

Settings are continuously written to eeprom, which is one block of memory and a buffer overflow could easily result in corruption of settings. External flash is paginated and page content will not be corrupted if buffer overflow was to occur with some; you cannot write over page boundaries.

Settings will be copied from eeprom to external flash only when the command is issued, which limits the write access to the specific memory location enormously and corruption of data is in fact due to writing of (corrupted) data.

1.2.2 Settings that are saved in external flash

Any number of settings could be overwritten, was a device to experience eeprom corruption. Corruption of some of the settings would not pose any problems, because these settings would be

set back to the correct values the next time the device updates the configurations from the provisioning platform. However, the device needs to be able to reach the platform in the first place.

For a device and a platform to communicate properly with each other the following is required:

- The device needs to find its way out of the network, requiring the IP and proxy configurations to be properly configured for the specific network.
- The device needs to be identified properly by the provisioning platform, in order for the platform to send the correct configuration to the device.

To ensure that a device and platform can always communicate with each other, the following settings (let us call these reserved settings) are copied to external flash:

- Serial number
- Configuration URL
- IP settings
- Proxy settings

Depending on the degree of corruption, it is still possible that some user interaction is required should a device experience eeprom corruption. In this case user interaction is limited to powering the device on, or in extreme cases going through the configuration wizard (where user can just press OK to all options).

1.2.3 What does this mean for the provisioning platform

The provisioning platform needs to send the instruction for copying the settings to the external flash to each device once (if a device can connect to the platform and identifies itself correctly, then it is not corrupted).

This is a command which can be sent from any of the available command interfaces (STP or monitoring channel).

Syntax: *"copycfg EepromToFlash"* (without double quotes)

Once the device starts using the reserved settings from external flash, then any settings changes made to reserved setting from the configuration file, command line or device menu will be overruled at startup by the values in external flash.

If any of the reserved settings require to be changed, then the instruction for copying the settings to external flash needs to be issued again.

When a copy instruction is issued, the device will reply with the result. It is highly recommended to check on this result and only re-send copy instructions to devices which did not get this already, limiting this way the write actions to no more than required.