Checking the OpenLCB Firmware Upgrade Protocol Standard

August 9, 2024

1 Introduction

This note documents the procedure for checking an OpenLCB implementation against the Firmware Upgrade Protocol Standard.

The checks are traceable to specific sections of the Standard.

The checking assumes that the Device Being Checked (DBC) is being exercised by other nodes on the message network, e.g. is responding to enquiries from other parts of the message network.

2 Firmware Upgrade Protocol Procedure

A node which does not self-identify in PIP that it supports the Firmware Upgrade Protocol should be considered to have passed these checks.

This check requires a vendor-provided current version of the appropriate firmware file for downloading into the node being checked. Do not start this check without having that file available, as a node is not required to recover from a firmware upgrade attempt without being successfully upgraded.

2.1 Firmware Upgrade status

This check follows the sequence documented in Section 5.5

At this time, only the datagram-based transfers are checked.

1. The checked uses SNIP to retrieve the software version and displays that for manual validation.
2. The checker sends a Memory Configuration datagram command "Freeze" with an argument of Firmware Space 0xEF. A Datagram Received reply may or many not be received in response.

3. The checker waits up to 20 seconds for a Node Initialization Complete message from the node being checked.
4. The checker confirms that the PIP Firmware Upgrade active bit is set.
5. The checker uses Memory Write operations of 64 bytes to download the contents of the firmware file.
6. The checker resets the node being checked using a Memory Configuration datagram command "Unfreeze" with an argument of Firmware Space 0xEF. A Datagram Received reply may or many not be received in response.
7. The checker waits up to 20 seconds for a Node Initialization Complete message from the node being checked.
8. The checker confirms that the PIP Firmware Upgrade active bit is reset.
9. The checked uses SNIP to retrieve the software version and displays that for manual validation.