RN00388

EtherNet/IP Protocol Software Stack for Ring-Node

Rev. 3.0 — 12 December 2025 **Release notes**

Document information

Information	Content
Keywords	RN00388, EtherNet/IP, protocol software stack, MIMXRT1180-EVK
Abstract	This document is the release notes for EtherNet/IP protocol software stack for ring-node. Supports: MIMXRT1180-EVK.

1 Features

This page lists all supported features of the EtherNet/IP protocol stock.

- Class 3 Server (connected explicit messages).
- Class 1 I/O (connected) Server (implicit messages).
- UCMM (unconnected) Server (unconnected explicit messages).
- Extensible for application and profile objects.
- Number of Explicit connections: configurable (limited by RAM).
- Number of Implicit connections: configurable (limited by RAM).
- Supported connection types: exclusive owner input only and listen only.
- IP Assignment via Dynamic Host Configuration Protocol (DHCP) or static IP address.
- Support single-port or multiport devices.
- Supported link speeds 10 Mbit/s, 100 Mbit/s, 1000 Mbit/s.
- Support LargeForwardOpen service (connections with data size > 511 bytes).
- DLR Beacon-based ring nodes are supported with a beacon period of 400 µs.
- Address Conflict Detection (ACD) is supported for single-port and multiport devices.

Note: *The demo version of the software libraries has no feature restrictions, but are limited to a runtime of five hours.*

1.1 Objects supported by default

- Identity Object
- Message Router Object
- Assembly Object
- Connection Manager Object
- TCP/IP Object
- Ethernet Link Object
- DLR (Ring Node only)
- QoSParameter Objects

2 Known restrictions

Only one instance of the DLR protocol is supported, which means only two ports of a device can be used as ring ports.

Note: *The DLR supervisor implementation is not supported yet*

3 Changelog and open issues

The following is the list of the changelog and open issues.

- **Conformance test for app `04_parameter`**
  - The conformance test for the app `04_parameter` failed.
  - The following errors occurred during testing for instances of the Parameter class:
    - Error: Instance ID is out of sequence order – occurred four times.
    - Error: Found four instances, expected eight instances – occurred multiple times.
  - The CT tool attempted to find instances with IDs 1, 2, 3, and 4, but the app did not respond to these requests.

  - For instance, ID 6, invalid settings caused two STC errors.
  - The parameter section of the EDS file does not contain an entry. For instance, ID 8.
- **Simplified handling of UDP sockets for implicit connections**
  - The stack now uses a fixed number of UDP sockets for implicit connections, not a new socket for each connection.
  - This change obsoletes the function goal_eipCfgNumImplicitConSet().
- **Connection event callback invoked Twice for time-out connections**
  - Previously, if an active connection timed out, the stack invoked the connection event callback twice: once for closure and once for timeout.
  - The bug fix ensures that only the event GOAL_EIP_CONNECTION_EVENT_TIMEOUT is raised when a connection times out.
- **ForwardOpen requests with connection points only**
  - The stack rejects ForwardOpen requests for implicit connections that contain only connection points without an instance ID.
- **ForwardOpen requests with zero-length configuration data**
  - If a ForwardOpen request includes a data segment of length 0, the stack evaluates the configuration connection point.
  - If the Assembly ID is not found, the stack rejects the request.
  - If configuration data is absent, the stack ignores the configuration connection point.
- **Configuration API typo**
  - The header file contained a typo in the function name goal_eipCfgNumExplititConSet().
  - Renamed the function to goal_eipCfgNumExplicitConSet() to align with the generated code.
- **Support for parameter object without config assembly**
  - If the application does not use a config assembly, parameter class attribute 9 returns the value 0.
- **CIP output assemblies are not updated with preset sequence numbers**
  - Some PLCs start implicit I/O connections with CIP sequence counters not equal to zero.
  - Due to signed/unsigned conversion issues, received I/O data with sequence counters greater than 32,767 did not trigger new-data callbacks.
  - The fix ensures proper handling of large sequence counters.
- **Closing event of IO net channels**
  - When GOAL shuts down, all Net channels close.
  - The callback handler of the IO Net channels always assumes that a data buffer is present.
  - The fix prevents null pointer access.
- **Interface configuration attributes not updated with ACD enabled**
  - The stack now correctly updates the Interface Configuration attribute when set by the application and ACD is enabled.
- **TCP server socket QoS DSCP value**
  - The TCP server socket did not apply the DSCP value in the IP header of the TCP acknowledgment frame during connection setup.
  - The fix ensures that the DSCP value is applied correctly from the start.
- **Invalid Netmask configurations**
  - The TCP/IP Interface Object previously accepted invalid Netmask values via Attribute 5.
  - The fix enforces validation for Netmask configurations.
- **Missing COS trigger type in device descriptions**
  - The EDS file lacked information about the supported COS trigger type.

  - Added COS trigger type to all device descriptions.
- **CM: Proper error status for invalid ForwardOpen parameters**
  - For misconfigured multicast addresses, for example, 0.0.0.0, in the ForwardOpen requests, the device now returns the extended error status 0x0810 – NO TARGET APPLICATION DATA AVAILABLE as per ODVA specification.

4 Revision history

Table 1 summarizes the revisions to this document.

Table 1. Revision history

Document ID	Release date	Description
RN00388 v.3.0	12 December 2025	Initial public release

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