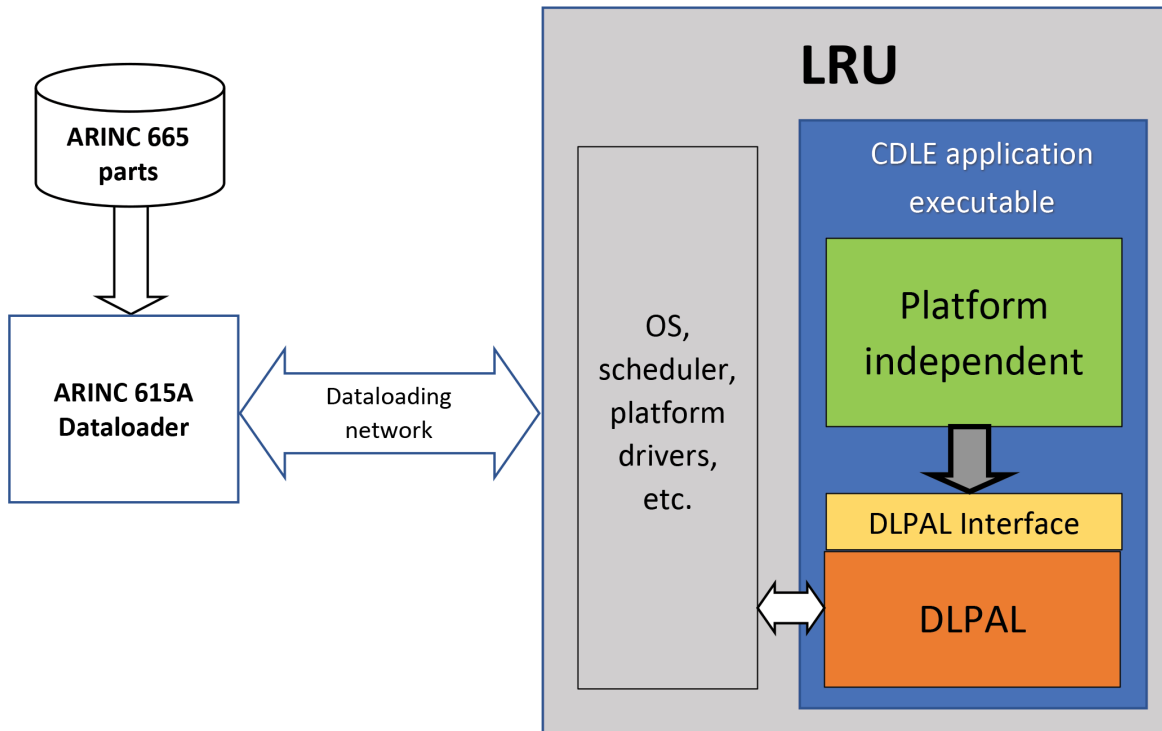


C-Coded ARINC 615A CDLE

ANSI C ARINC 615A Configurable Data Loading Engine



- ARINC 615A Data Loading Engine, coded in ANSI C
- Simplified and efficient integration into customer-specific LRU platform using the Data Loading Platform Abstraction Layer (DLPAL)
- Delivered with supporting artefacts
- Delivered with sample LRU implementations for Windows and Linux platforms
- Seamless integration with other TechSAT data loading tools for testing and integration (NetLoader, Data Loading Protocol Checker, A665 Media Creator)
- Initial integration support



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ANSI C ARINC 615A Configurable Data Loading Engine

Application Scope

The C-coded CDLE (Configurable Data Loading Engine) is an application for avionics target computers. It is an implementation of an ARINC 615A compliant data loading engine, allowing users to receive ARINC 665 parts, report the configuration of installed ARINC 665, and transfer files from a target over Ethernet via the ARINC 615A Upload, Information, and Download operations.

The C-coded CDLE is delivered as source code in ANSI C which has to be compiled and integrated by the customer on the LRU platform. Sample implementations of the C-coded CDLE are provided for Windows and Linux platforms.

Software Architecture

The C-coded CDLE has two main components:

- > An ARINC 615A platform independent component
- > A platform dependent component to be customized for the LRU platform, called the **Data Loading Platform Abstraction Layer (DLPAL)**

Platform Independence

The majority of the C-coded CDLE is platform independent (no dependency on the underlying I/O bus, operating system, and way the file storage/retrieval is done). Most of the complexity of A615A and A665 is carried in this part of the source code, which is fully tested and requires no further changes by the customer. The CDLE process/thread model is simple and is designed to be used by a wide variety of customer applications. Customers who use a sophisticated time/space partitioning OS will be able to integrate CDLE, as will customers who have a simple scheduler. The CDLE is a single-threaded application, status files and data/support files are exchanged alternately (no parallel status reporting or uploading).

The platform independent part of the CDLE is responsible for all top-level functionality of the CDLE, including the following functionality:

- > Program startup and initialization
- > Top level flow and algorithm of all the A615A operations
- > Status messaging of all operations
- > Operation start sequences, which can include a reboot or mode change of the target LRU
- > Complete client and server implementation of TFTP
- > CRC calculations specified in ARINC 665
- > File level retries

- > Handling of all A615A and A665 protocol files
- > Abort sequencing when a data loading operation fails

Data Loading Platform Abstraction Layer (DLPAL)

The DLPAL is composed of two source code files that have to be customized by the customer. The DLPAL presents a function call interface that is used by the platform independent parts of CDLE.

Certification

The C-coded CDLE is provided to customers in source code form along with design which are intended to serve as baseline inputs for documentation for the customer's certification activities.

It is the customer's decision to choose a certification level and to perform certification activities according to their own procedures.

The design artifacts include the following:

- > Detailed design document (for all files, functions, structures, and data types)
- > Function flow (calling hierarchy of all functions)
- > Use case scenario (step-by-step description of the A615A algorithms in English narrative form)
- > Requirements (cross-referenced to the main guiding specifications: A615A, A665, and TFTP RFCs as well as to test cases)
- > Test artifacts (test cases provided, along with step-by-step test procedures and test datasets). Testing is done using a DLPAL for a Windows PC platform, using NetLoader over Ethernet.
- > C-language coding conventions

Technical Data

Hardware Requirements

- To be integrated on customer-specific platform.
- Integrated and tested on Intel/AMD, ARM, and Motorola platforms

Operating System Options

- To be integrated on customer-specific LRU operating system. Integrated and tested on:
- Windows 32 and 64 bit
- Linux 32 and 64 bit

Software Support Options

- A615A NetLoader (PN 202053)
- ARINC 665 MediaCreator/PartMaker (PN 212126)
- ARINC 615A Data Loading Protocol Checker (PN 202123)

Part Number

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