

Automating Device Description Updates with the use of Product Support

Introduction

Emerson's AMS Device Manager software enables users to manage field devices from start-up and commissioning to turnarounds and outages to daily operation by supporting user's decisions through configuration, calibration, proactive and predictive diagnostics to improve plant's reliability as well as delivering business results across the lifecycle of a facility.

Part of every standard field device management strategy is to regularly update the Device Description (DD) files.

This paper aims to define several architecture options for an automated DD file update process, enabled using Emerson's Product Support applications and DD Update Manager software application.

What are Device Description files?

Device Description files are a set of instructions written in Device Description Language (DDL) or Electronic Device Description Language (EDDL) that describes all or part of a field device, including its parameters and methods. EDDL is a text-based language for describing the digital communication characteristics of intelligent field instrumentation and equipment parameters—device status, diagnostic data, and configuration details—in an operating system and human machine interface (HMI) neutral environment.

Today EDDL technologies form the engineering and operating foundation on which all major digital fieldbus protocols—FOUNDATION, HART, and Profibus—construct parametric and device descriptions. And, because EDDL is an open technology with international standard status, it can be easily and effectively applied to any device and any fieldbus protocol. The EDDL technology enables a host system manufacturer to create a single engineering environment that can support any device, from any supplier, using any communications protocol, without the need for custom software drivers for each device type.

Reference: <https://www.emerson.com/documents/automation/white-paper-why-electronic-device-description-language-eddl-technology-right-choice-for-smart-plant-installations-deltav-en-57264.pdf>

Benefits of updating DD files

It's important to update device descriptions regularly. Whether you use a HART Communicator or one of the other software-enabled devices available to talk to your field devices, you have to have the correct device descriptions in the communications tool, or your tool will not recognize newer transmitters and control valves. Staying current with your device descriptions helps you avoid:

- Being shut out of new equipment
- Having your instrument or valve operate in a generic mode
- Surprising difficulties at startup and commissioning

Reference: <https://www.automationservice.com/complete-beginners-guide-device-descriptions/>

Guardian Software Update Delivery Service (GSUDS)

The GSUDS application is available for download to all active Guardian subscribers. Please visit the Downloads / Self-service section at guardian.emerson.com and download GSUDS from the Tools menu. GSUDS provides an automated delivery (either on demand or scheduled) of updates specific to the enrolled system(s). For enrolled AMS Device Manager systems, this includes AMS Device Manager software updates as well as Device Install Kits. The installed application communicates and pulls update files from an Emerson server via the internet.

For more details on minimum system requirements and setup options, please refer to the GSUDS User Guide on the Resources page of Guardian. Please also check for the latest Knowledge Base Article (KBA) for known issues and workarounds. Additionally, the Global Service Center or your local Emerson team may be engaged for more detailed information about the use of the GSUDS application.

In order for Guardian to automatically match DD files to your system components, an updated AMS Device Manager registration file must be submitted. Please refer to the System Info / Registration page on Guardian for details on the registration upload process.

Device Description Update Manager (DDUM)

The AMS Device Manager Books Online and the Installation Guide provides some information about the Device Description Update Manager operation and components. As this is supplemental information to the AMS Device Manager Help system, the Books Online and Installation Guide should be referenced for an understanding of Device Description Update Manager components or terms, and for any other details.

DDUM software can be installed as a Client, Server, or both. The Client component must be installed on the AMS Device Manager Server Plus Station. DDUM Servers can be configured as "Direct" or "Pass-Through".

DDUM is supported on AMS Device Manager v12 and later. DDUM currently works with HART and FOUNDATION Fieldbus devices.

Architectural Options

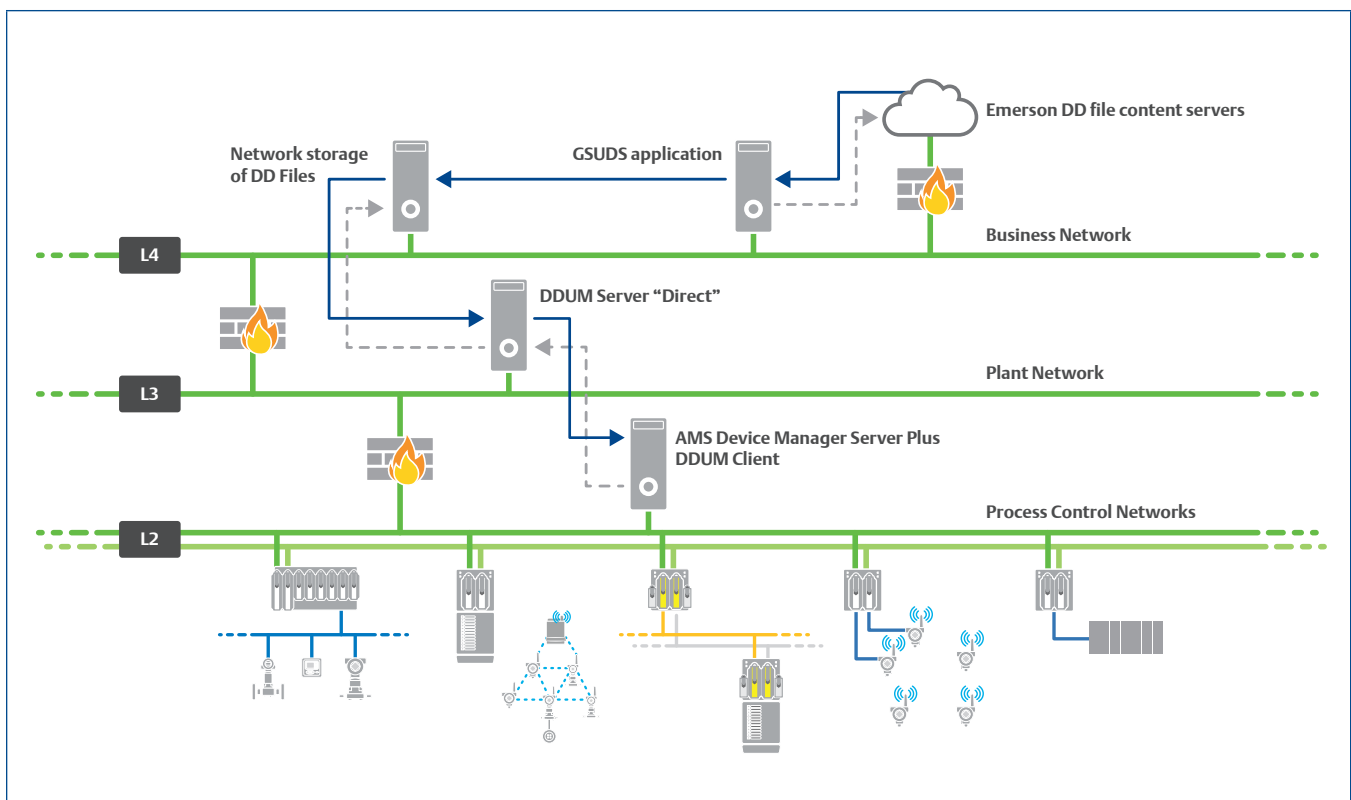
Begin by establishing a directory or network storage location where the DD install kits will reside. This location will be used by the DDUM software for DD installation and updates. The “Direct” configuration DDUM Server requires access to this DD file directory. DD files can be manually downloaded and stored in this location. Alternatively, in order to automatically download DD files the GSUDS application can be configured to store the latest files in your chosen location.

Note on firewall ports: DDUM Client and Server communications use TCP ports 8004 and 8005. Ensure these ports are open if a firewall exists between the Client and Server.

Arrows in the following diagrams are for illustrative purposes only. Please note that the DDUM server does not push files to the DDUM client. Instead, the DDUM client requests the file list from the server. Thus requests and connections are always created from the lower level computers to the higher level computers.

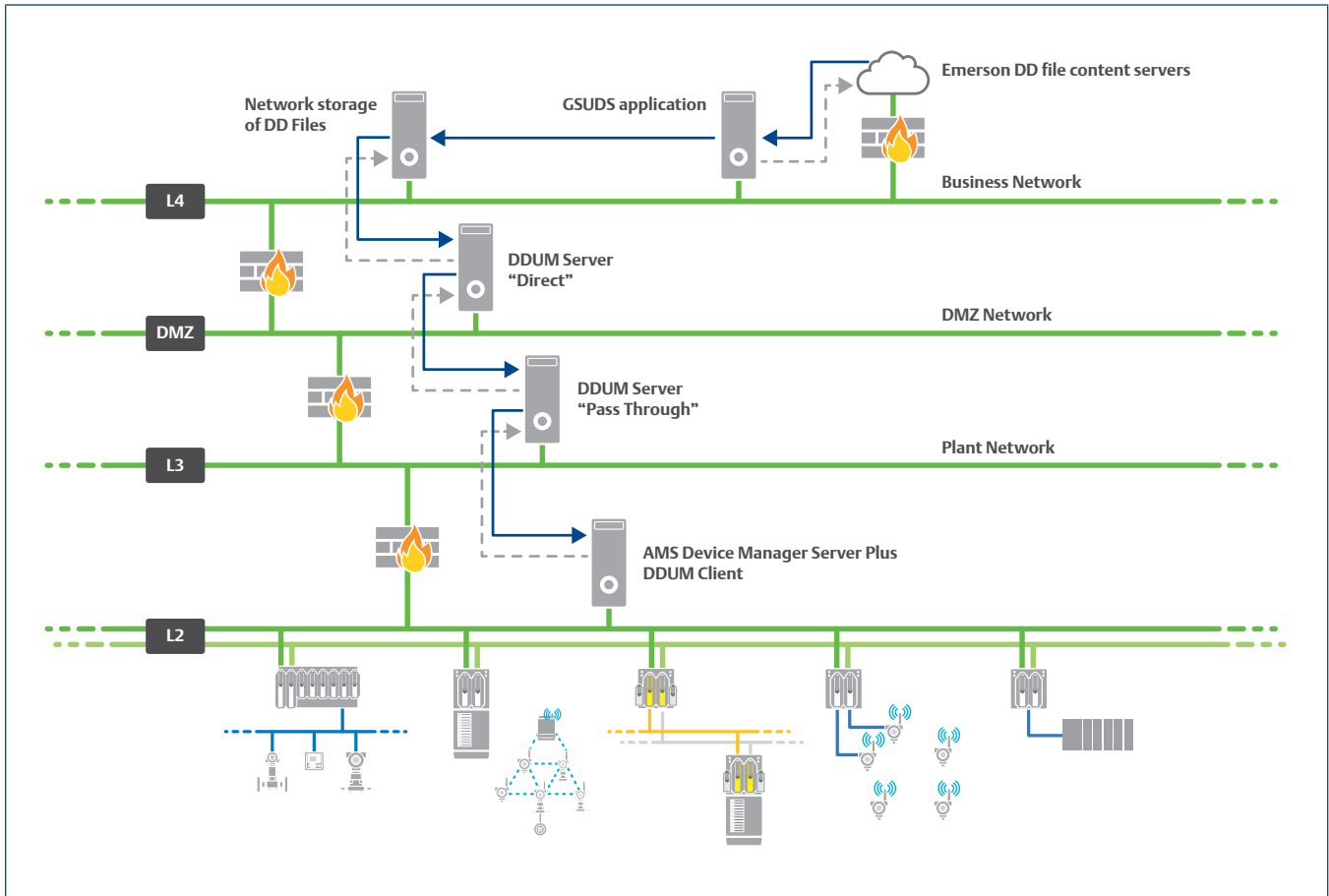
Three level architecture

The GSUDS application connects via the internet to Emerson’s DD file content servers and stores the files in your desired location – somewhere accessible by the “Direct” DDUM Server. And the DDUM Client communicates with the “Direct” server to get the updates.



Four level architecture

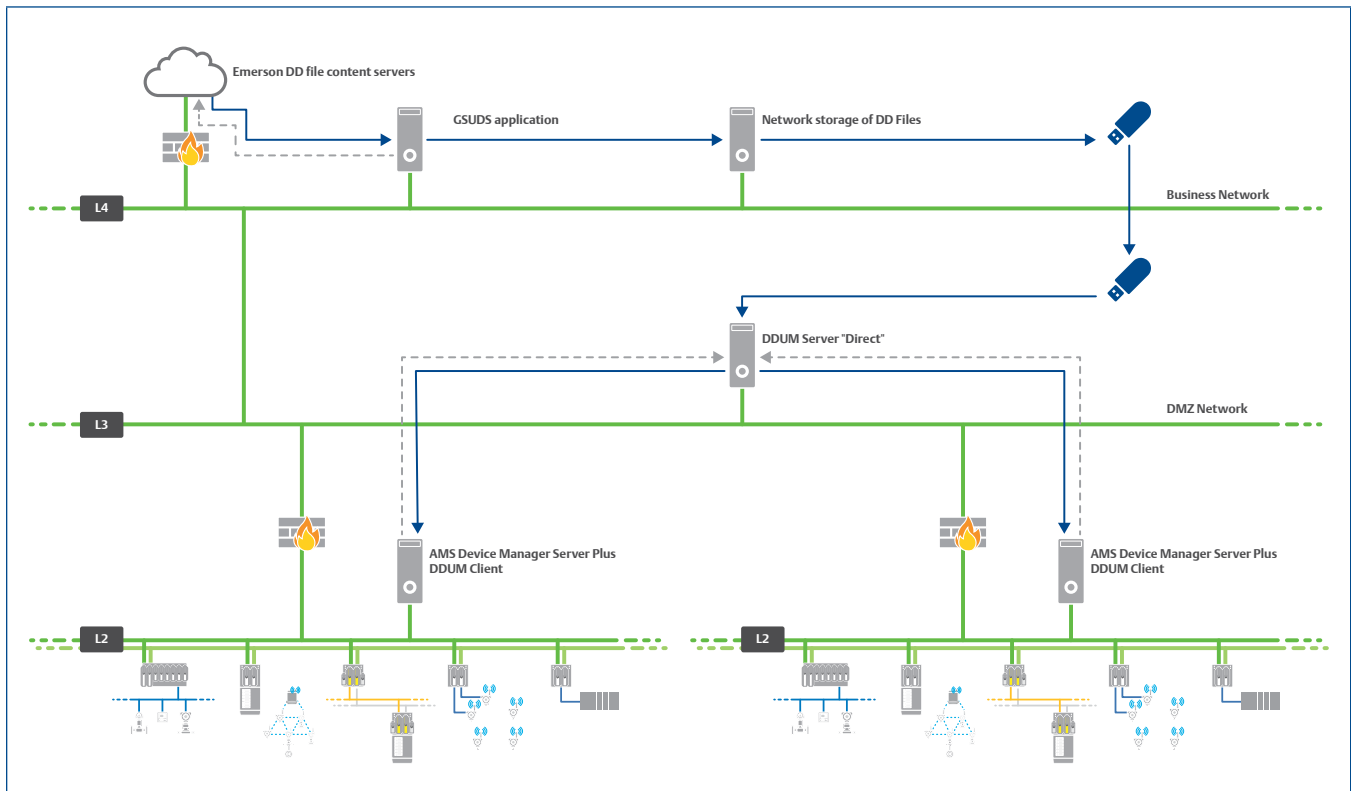
The GSUDS application connects via the internet to Emerson's DD file content servers and stores the files in your desired location – somewhere accessible by the "Direct" DDUM Server. A "Pass Through" DDUM Server is utilized to distribute the files across the DMZ to the Plant Network. And the DDUM Client communicates with the "Pass Through" server to get the updates.



“Air-gapped” architecture

It's important to remember that “air-gapped” architectures are not truly isolated when “sneakernet” is used.

In this model, the GSUDS application can remain privately connected to the internet without opening additional ports and connections either up from or down through the traditional Purder Enterprise Reference Architecture (PERA) model architecture. Simply connect and configure GSUDS to automatically or manually download the necessary DD files. Later, transfer these files to the AMS Device Manager system in a secure manner. Any introduction of USB devices brings a cybersecurity risk of malware infection and proper scanning and protections can be provided to reduce these risks.



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