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1 Overview

To support a broad set of field devices and Device Management/Asset Management applications, GE developed a set of FDT™-Group-certified device type managers (DTMs) that provide HART®, PROFIBUS®, and FOUNDATION Fieldbus™ for Mark® VLe over Ethernet capability to coordinate with the WorkstationST Device Manager Gateway. The DTMs allow you to manage HART, PROFIBUS DPv1, and FOUNDATION Fieldbus devices from any FDT Frame Application from any computer.

A Communication or Device DTM can be used in any system that supports the FDT interface. GE Communication DTMs provide a method to communicate with HART, PROFIBUS, and FOUNDATION Fieldbus devices in the Mark® VLe control system. They support FDT Standard 1.2, adhere to the FDT Style Guide, and provide graphical overview of DTM functions.

GE also developed the Device Manager Essentials (DME) FDT Frame Application that provides essential functionality for diagnostics and maintenance of intelligent field devices. The GE Device Manager Essentials FDT Frame Application:

- Meets the FDT2 standard
- Allows the user to scan and upload the Mark VLe topology of devices
- Provides parameterization of devices
- Provides diagnostics for devices and retrieval of status messages
- Provides online and offline display of device data
- Provides a network tree view
- Supports all current fieldbus protocols through communication DTMs
- Provides user accounts with password protection
- Provides online help
- Provides language settings

For Device Management V01.02.00C and older, the supported Windows® Operating Systems are:
- 32-bit Windows XP Professional
- Windows 7

For Device Management V02.01.00C, the supported Windows Operating Systems are:
- 64-bit Windows 7
- Windows 10
- Windows Server 2012 R2
- Windows Server 2016

More advanced device management and asset management capabilities are available through third-party software such as Metso™ Fieldcare™, or PACTware™.

**Note** The Device Manager Gateway functionality to support Device Management is available starting in ControlST V04.06.09 and FOUNDATION Fieldbus over Ethernet support is available starting in ControlST V05.01.
FDT technology standardizes the communication and configuration interface between field devices and host systems. Any device can be configured, operated, and maintained through the standardized user interface, regardless of supplier, type, or communication protocol. Refer to the FDT Group™ website (www.fdtgroup.org) for a complete description of FDT Technology. Terms used throughout this document include:

- **Device Management** is the commissioning, setup, and maintaining of devices from remote workstations. This includes the capability to remotely configure parameters of a fieldbus type device (parameterization).
- **Device Management Essentials (DME)** is the GE FDT Frame Application that provides the functionality for diagnostics and maintenance of intelligent field devices.
- **Device Type Manager (DTM)** provides a unified structure for accessing device parameters, configuring and operating the devices, and diagnosing problems. DTMs can range from a simple Graphical User Interface (GUI) for setting device parameters to a highly sophisticated application capable of performing complex real-time calculations for diagnosis and maintenance purposes.
- **Electronic Device Description Language (EDDL)** technology describes information that is accessible in digital devices. The files are commonly referred to as DD files.

**Note** Electronic device descriptions are available for over 15 million devices that are currently installed in the process industry.

- **Field Device Tool (FDT)** standardizes the communication and configuration interface between all field devices and host systems.

**Note** Any device can be configured, operated, and maintained through the standardized user interface – regardless of supplier, type, or communication protocol.

- **FDT Frame Application** hosts Device DTMs and Communication DTMs. The Frame Application provides:
  - Common environment
  - User Management
  - DTM Management
  - Data Management Network Configuration Navigation
- **Generic Station Description (GSD)** is a file provided by the device manufacturer that contains a description of the HART, PROFIBUS DP/PA, and FOUNDATION Fieldbus device. GSD files allow an open configuration tool to automatically get the device characteristics.
- **Plant Asset Management** is a global management process that allows plant owners to consistently make and execute the highest value decisions about the use and care of their plant equipment.
2  FDT Frame Application

The steps to install and configure the FDT Frame Application and GE DTMs are the same regardless of the FDT Frame Application product (GE DME, Metso Fieldcare, PACTware, and such). The steps are intuitive to users already familiar with FDT Technology and FDT Frame Applications. They are:

• Install the FDT Frame Application
• Install the Communication DTM on the same computer as the frame application (HART, PROFIBUS, and/or FOUNDATION Fieldbus)
• Create an instance of the DM Gateway Communication DTM (HART, PROFIBUS and/or FOUNDATION Fieldbus) in the frame application to enable HART device communication
• Enter the DM Gateway IP address in the communication DTM if it is running on a remote computer
• Use the Communication DTM Build Topology function to upload the system topology from the DM Gateway
• Use the I/O module DTM Create Network or Lifelist functions to scan for connected devices and assign device DTMs
• Upload, download, and modify device parameters using the device DTMs
2.1 Application Differences

Although all FDT-certified Frame Applications conform to the common FDT standard, some differences include:

- User interface and feature support
- Performance

2.1.1 User Interface and Feature Support

The Frame Applications may not support every possible feature provided by the DTMs, and the wording and location of the user interface and menus can differ between software vendors. The same DTM code runs in every container, but differences in the Frame Applications can result in a slightly different presentation. In some cases, the DTM functionality may be limited based on Frame Application implementation.

Refer to the Frame Application Help for information on supported features and instructions on performing specific tasks.

Device Manager Essentials displays the following for the PHRA device menu:

![Device Manager Essentials Screenshot]

Note All information displayed for the PHRA device would be similar for the PPRF device.
The PACTware FDT Frame Application displays the following for the PHRA device menu:

Device Manager Essentials uses the terms *Go Online* and *Go Offline* for connecting the DTM to the physical device, while PACTware uses the terms *Connect* and *Disconnect*. The result is the same, but the menu text is different.

### 2.1.2 Performance

Device DTM implementation and memory usage can significantly impact the Frame Application performance. Memory management is performed differently between Frame Applications. This causes some Frame Applications to perform better than others under heavy memory usage. With the GE Communication DTMs the user can select a subset of I/O modules to instance DTMs when the communication DTM requests the system topology from the Device Manager Gateway. If performance issues are encountered due to the number of device active DTMs in the frame application, the system can be represented in the frame application as multiple projects, allowing a subset of the system to be viewed at one time instead of the entire system.
2.2 Error and Progress Messages

Based on the FDT specification, the application receives all error messages from the DTMs through the interface IDtmEvents. OnErrorMessage. Examples are:

- Communication setup to the communication interface and hardware
- Communication error
- Error in the device parameter-upload

The reported errors indicate the possible root cause.

In accordance to the FDT specification, and in case of long-term activities, the application receives progress messages from the DTMs generated through the interface IDtmEvents. Examples for long-term activities include:

- Communication setup to the communication interface and hardware
- Scanning for connected devices
- Parameter uploads and downloads

The messages indicate the progress status and the activity.
2.3 **Install GE DME**

Install the GE Device Manager Essentials FDT Frame Application on the desired computer. The Device Management Software Suite DVD includes the option to install Device Manager Essentials FDT Frame Application.

➢ **To install the Device Manager Essentials software suite**

1. Place the Device Management DVD into the CD/DVD drive. The installation starts automatically. The **Setup-Device Management Software Suite** dialog box displays.

2. Select the **Device Manager Essentials** checkbox and click **Install**.

3. When the wizard displays, follow instructions on each page to complete the installation.

---

*Note* For online help, refer to Device Manager Essentials Help - Content.
2.4 Startup

➢ To start up Device Manager Essentials: from the Start menu, select Device Manager Essentials to display the Device Manager Essentials screen, with no DTMs installed and no projects created or saved.

**Note** Unnamed in the header indicates there is no project currently open.
3 DTM

A Communication or Device DTM can be used from virtually any computer in systems that support the FDT interface. Device DTMs are provided by the device manufacturers and represent the whole logic and parameters of a device. They can be used in any FDT Frame Application. Communication DTMs represent communication components, such as computer communication cards, couplers, gateways, remote I/O, and linking devices.

The GE Communication DTMs manage HART, PROFIBUS, and FOUNDATION Fieldbus devices in the Mark VIe control system. The HART, PROFIBUS, and FOUNDATION Fieldbus over Ethernet DTMs:

- Support FDT Standard 1.2
- Adhere to the FDT Style Guide
- Provide graphical overview of DTM functions
3.1 Install HART, PROFIBUS and FOUNDATION Fieldbus DTMs

The Device Management Software Suite DVD also includes the option to install the HART, PROFIBUS, and FOUNDATION Fieldbus over Ethernet DTMs. These DTMs must be installed on the computer hosting the FDT Frame Application.

**Note** The example procedures in this section use HART over Ethernet DTMs. The installation process is the same for PROFIBUS and FOUNDATION Fieldbus over Ethernet DTMs.

➢➢➢ To install the HART, PROFIBUS, or FOUNDATION Fieldbus over Ethernet DTMs

1. From the Setup dialog box, select the HART Over Ethernet DTMs or PROFIBUS Over Ethernet DTMs, or FOUNDATION Fieldbus DTMs checkbox.

2. Click Install.

3. When the wizard displays, follow instructions on each page to complete the installation.
The DTM installations contain the Communication DTM and Gateway (I/O Module) DTMs for all GE I/O Modules that support the associated Fieldbus Type. For example, after installing the HART Over Ethernet DTMs the Device Catalog of Device Manager Essentials (or any other FDT Frame Application) displays the DM Gateway HART Communication DTM and Gateway (I/O Module) DTMs for the HART enabled I/O modules, which includes PHRA, YHRA, YSIL, PUAA, and PUAB modules.

**Note** The PPRF module shown in the following figure is an artifact of the ToolboxST application installation and does not represent a HART module DTM.

![Device Catalogue](image)

The original version of the HART Over Ethernet DTMs installation supported only the PHRA module. New versions will add support for new module types as they become available. If support for an I/O module type is required, but the module type does not show up in the Device Catalog the DTM should be upgraded to the latest version in order to get full support of all of the available I/O module types. This applies to HART, PROFIBUS, and FOUNDATION Fieldbus Over Ethernet DTMs and any additional bus types that may be supported in the future.
3.2 Online Configuration

The device manufacturer DTMs may be included on a disk with the HART, PROFIBUS, or FOUNDATION Fieldbus device documentation, or the vendor may provide the DTMs through a download from their website. The FDT Group website, www.fdtgroup.org, maintains a list of certified DTMs. The list can be filtered by protocol (HART, PROFIBUS, FOUNDATION Fieldbus, and such). If a HART device-specific DTM is not available, a universal HART Device DTM may be used. However, for PROFIBUS and FOUNDATION Fieldbus devices, it is highly recommended to use the manufacturer’s certified Device DTM that is compatible with the device firmware.

**Note** Refer to the device documentation for device-specific Web site information.

➢➢➢ **To update the DTM catalog**

1. From the **Start** menu, select **Device Manager Essentials** to display the **Device Manager Essentials** screen.
2. Click the **Catalog** icon to open the Frame Application’s **Device Catalog**.
3. If the **DM Gateway HART Communications** DTMs, the **DM Gateway PROFIBUS Communication** DTMs, or the **DM Gateway FOUNDATION Fieldbus Communication** DTMs do not display, add them.
4. Install any device-specific DTMs at this time.
5. Click **Update** to update the catalog.
3.2.1 Add Communication DTMs

This section describes adding HART Communication DTMs. The procedures for PROFIBUS and FOUNDATION Fieldbus Communication DTMs are the same.

➢➢ To add communication DTMs

1. From the Start menu, select Device Manager Essentials to display the Device Manager Essentials screen.
2. From the Tree View, right-click My network and select Add from the shortcut menu.
3. From the Add dialog box, select the item to add and click OK.

The DM Gateway HART Communication item displays in the Tree View.
3.2.2 Read Topology

➢ To read topology

1. From the Start menu, select Device Manager Essentials to display the Device Manager Essentials screen.
2. From the Tree View, right-click the DM Gateway HART, PROFIBUS, or FOUNDATION Fieldbus Communication DTM and select Configuration.
3. From the **Configuration tab**, enter the **IP Address** of the WorkstationST computer running the Device Manager gateway feature, or leave the **IP Address** defaulted to local host (127.0.0.1) if the Device Manager Gateway and the Frame Application are running on the same computer.

4. Click **Apply** (if necessary, press [Tab] to activate the Apply button).

5. Click **Test Communication** to verify that the IP Address is correct and the Device Manager Gateway is running.
➢ To establish the connection: From the Tree View, right-click the DM Gateway HART, PROFIBUS, or FOUNDATION Fieldbus Communication DTM and select Go online.

Each Communication DTM checks for a valid license key whenever it is requested to Go online. If one is not found, the following message box displays.

![Message Box]

The connection to the Device Manager Gateway has been refused because the license verification failed.
The USB Protection Device (Dongle) is not installed.

Note If the connection fails, verify that the DM Gateway IP address is correct, the Device Manager Gateway Feature is running on the target computer, and the HART Communication DTM Interface has a valid license key.

Note To request a valid license key, contact your local GE representative.

➢ To build topology

1. From the Tree View, right-click DM Gateway HART Communication and select Additional Functions and Build Topology.

This causes the DTM to request the system topology from the DM Gateway.
The DM Gateway HART Communication - Build Topology tab displays.

2. Click **Add Selected** to create a PHRA DTM instance for each PHRA module under the selected devices.

![Image of network view](image1)

The PHRA DTMs item displays in the **Tree View**.

![Image of tree view](image2)

The system topology displays the controllers, the number of HART enabled I/O modules under each controller, and the total number of HART enabled I/O modules. One or more controllers can be removed from the list of selected devices to avoid creating large numbers of I/O Gateway modules and Device DTMs in large systems.

**Note** Each controller can have multiple I/O modules with many connected devices.

Some Device DTMs have a large memory footprint that can affect the Frame Application performance. The user interface allows you to limit the number of devices that display at one time. This minimizes performance impacts in a large system. It can be used to create a project for each controller or for small groups of controllers for better performance in a large system.

The number of selected I/O Gateway modules indicates the total number of I/O Gateway modules under all selected controllers. The number of I/O Gateway modules to add represents the number of selected I/O Gateway modules that do not already have a corresponding Gateway DTM instance in the frame container. These numbers indicate the total number of I/O Gateway instances that will be created.
3.2.3 Scan Gateway Module DTMs

This section describes the scanning of PHRA I/O Gateway DTMs. The procedures for all other I/O Gateway module types are the same.

➢➢ To scan a PHRA DTM

1. From the Frame Application Tree View, right-click a PHRA DTM, select Scan and Create Network. The PHRA DTM sends commands to the PHRA I/O module to determine the devices connected and the channels used. The discovered HART devices and the default assignment of device DTMs to each device display in the Tree View.

2. The default device DTM assignment can be accepted by clicking Add All and Continue.

3. Or, a different DTM can be assigned by selecting the device, clicking Change Device Type, and selecting Type from the list of available devices in the DTM library.

When the scanning is complete, the topology displayed in the Frame Application matches the topology of the system displayed on the DM Gateway Status Viewer HART tab. The controllers are not explicitly represented in the Frame Application, but the PHRA I/O module names include the controller and cabinet names to convey the physical topology of the system.
4. Repeat this procedure for each PHRA DTM.

### 3.2.4 Upload Device Parameters

➢ To upload the device parameters

1. From the Frame Application **Tree View**, right-click a device and select **Upload Parameters from device**.

2. Repeat this step for each device.

3. From the **File** menu, select **Save Project** and save the project using the file extension `.prj`.

Saving the project allows the Frame Application to return to the last saved state when opening the saved project.
3.3 Offline Configuration

In most cases, pre-configuring the system topology in the Frame Application prior to having the hardware configured is not necessary. However, offline configuration is supported. It is a manual process that should only be done when absolutely necessary.

The DM Gateway Communication DTM and the DM Gateway provide automatic discovery of the system topology and automatic instancing of the PHRA, PPRF, or PFFA DTMs. The PHRA, PPRF, and PFFA DTMs provide automatic discovery of connected devices and instancing of the associated Device DTMs. This automatic topology discovery requires the DM Gateway to be configured and running, the associated Mark VIe controllers to be configured and running with the associated PHRA, PPRF, or PFFA I/O modules, and the HART, PROFIBUS, FOUNDATION Fieldbus devices connected.

The following procedure configures a project in GE Device Manager Essentials with HART device support. The sequence to configure PROFIBUS or FOUNDATION Fieldbus is the same, with the only difference being that the PROFIBUS over Ethernet or FOUNDATION Fieldbus over Ethernet DTM is used.

3.3.1 Add DM Gateway HART Communication DTM

➢ To add a DM Gateway HART Communication DTM

1. From the FDT Frame Application Tree View, right-click My Network and select Add.
2. From the Add dialog box, Device Type list, select DM Gateway HART Communication DTM and click OK.
3. If the DM Gateway is running on a remote computer, edit the IP Address.

3.3.2 Add Gateway Module DTMs

Create a Gateway I/O module DTM instance for each HART enabled I/O module in the system by adding Gateway I/O module DTMs for the HART enabled I/O modules under each controller.

➢ To add PHRA DTMs

1. From the ToolboxST* application System Editor File menu, select Open System, locate and select the appropriate system.
2. From the Tree View, double-click a controller to display the Component Editor.
3. From the Hardware tab, expand Distributed I/O and each cabinet to display each PHRA I/O module (PHRA I/O modules are always added under cabinets in the Mark VIe configuration).
4. From the FDT Frame Application Tree View, right-click the DM Gateway HART Communication DTM and select Add.

5. Select the PHRA device type and click OK.

6. Double-click the newly added PHRA DTM to display the PHRA – Configuration tab.

7. Enter the device name as <Controller Name>_<Cabinet Name>_<PHRA Name> and click Apply. (In this example, AnalogM6e_Cab1_PHRA-1A1A)

8. Repeat these steps for each PHRA I/O module in the system.

### 3.3.3 Add Device DTMs

If the HART device connections to the PHRA I/O modules are known, the associated Device DTMs can be added.

- **To add Device DTMs**
  1. From the FDT Frame Application Tree View, right-click the PHRA I/O module and select Add.
  2. From the Add dialog box, Device Type list, select the appropriate device DTM and click OK.
  3. From the Select Channel dialog box, select the channel that the device is connected to and click OK.
  4. Repeat this step for each device connected to the PHRA I/O module(s).
4 Troubleshooting

**Note** Device Manager Essentials relies on Manufacturer developed DTMs for device communication. If you are having issues with device communication, check the [FDTGroup.org](http://FDTGroup.org) website to confirm there is a certified DTM for the device of interest, as well as the version of the Device DTM to ensure it agrees with the device firmware revision.
4.1 Device Manager Unhandled Exception Error

**Note** This Exception is now handled in V01.05

**Description**
In version 01.03.00, an *Unhandled Exception* may occur when the **DTM Limit** is exceeded. Refer to the following figure, *Unhandled Exception, DTM Limit Exceeded*.

**Possible Cause**
DME has built-in memory management and is watching the number of running DTMs. Therefore, the configuration file has an entry with a running DTM limit that is set to 20. When this limit is reached, DME tries to shut down unused DTMs.

**Solution**
This was a prudent limit when it was established and 32–bit operating systems such as Windows NT and Windows 2000 were in common use.

With a Windows 7 and Windows 8 / 8.1 64–bit operating systems, additional memory is available and the DTM limit can be increased to 80. This will not fix the problem, but it should meet immediate needs for continued operation. The file is located at C:\Users\Public\GE\Device Manager Essentials \RuntimeOptions\RuntimeFrame.dll.config and you can either replace the RuntimeFrame.dll.config file with a previously modified file, or open the file and change the value of RunningDTMLimit entry – 20 to a recommended value of RunningDTMLimit entry – 80.

Prior to modifying the file, you should make and save a copy of the file.

It is difficult to tell which DTMs are used exactly in which configuration. However, you can reduce the number of running DTMs because from a technical point of view, DTMs should be unused when:
- DTM is offline
- User Interface for the DTM is closed
- No transactions are running
- DTM is not being referenced by any other DTM (difficult to tell)
- Does not have a reference to any other DTM (difficult to tell)

Based on these criteria, to decrease the number of running DTMs, make sure the DTMs not currently in use are offline and the User Interface for unused devices is closed so the DTM is not being accessed.

There are some DTMs that have references to each other. Even if there are none in GE's DTM, a third-party DTM could have such a reference. This could occur due to a call to the FDT interface IFdtTopology::GetDtmForSystemTag(). If there are such references, from technical point of view, the DTM is being used. A permanent fix for this issue will be incorporated into later versions of DME.
Unhandled Exception, DTM Limit Exceeded
4.2 **HART Over Ethernet Communication**

*Note*  This section discusses HART over Ethernet Communication. The resolution of the issues for PROFIBUS/FOUNDATION fieldbus over Ethernet communication are similar.

<table>
<thead>
<tr>
<th>Description</th>
<th>DM Gateway Communication DTM does not display in the installed DTM list in the FDT frame container.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Cause</td>
<td>DM Gateway HART over Ethernet DTM not installed</td>
</tr>
<tr>
<td>Solution</td>
<td>Install or re-install the DM Gateway HART over Ethernet DTM package.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Error during DTM installation and/or DM Gateway Communication DTM does not display in the installed DTM list in the FDT frame container.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Cause</td>
<td>DM Gateway HART over Ethernet DTM installation failure</td>
</tr>
<tr>
<td>Solution</td>
<td>Remove and then reinstall the DM Gateway HART over Ethernet DTM package.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>DM Gateway Communication DTM does not display in the installed DTM list in the FDT Frame Container.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Cause</td>
<td>DM Gateway HART over Ethernet DTM failure</td>
</tr>
<tr>
<td>Solution</td>
<td>Remove and then reinstall the DM Gateway HART over Ethernet DTM package.</td>
</tr>
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</table>
### 4.3 DM Gateway Communications

<table>
<thead>
<tr>
<th>Description</th>
<th>FDT frame container generates an error message when the DTM attempts to go online and fails.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Cause</td>
<td>No valid license key</td>
</tr>
<tr>
<td>Solution</td>
<td>Verify there is a USB license key installed on the computer. The error message indicates if the HART/PROFIBUS/FOUNDATION Fieldbus license is valid.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>FDT frame container generates an error message when the DTM attempts to go online and fails.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible Cause</td>
<td>Wrong DM Gateway IP Address configured in the DM Gateway Ethernet Communication DTM</td>
</tr>
<tr>
<td>Solution</td>
<td>Open the DM Gateway HART Communication DTM and enter the correct IP address (be sure to click <strong>Apply</strong> after entering the IP address).</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>FDT frame container generates an error message when the DTM attempts to go online and fails.</td>
</tr>
<tr>
<td><strong>Possible Cause</strong></td>
<td>DM Gateway feature is not enabled in the WorkstationST application</td>
</tr>
<tr>
<td><strong>Solution</strong></td>
<td>Open the workstation device in the ToolboxST application and enable the Device Manager Gateway feature, then build and download the workstation.</td>
</tr>
</tbody>
</table>
Description: FDT frame container generates an error message when the DTM attempts to go online and fails.

Possible Cause: DM Gateway is not configured for HART over Ethernet function.

Solution: Open the workstation device in the ToolboxST application and open the Device Manager Gateway tab. Select the type of FDT Frame Application being used and set the **Enable HART Message Server** option to True. Build and download the workstation.
**Description**  
FDT frame container generates an error message when the DTM attempts to go online and fails.

**Possible Cause**  
DM Gateway is not running on workstation computer

**Solution**  
Open the WorkstationST Status Monitor and start the Device Manager Gateway feature if it is not running.

---

**Description**  
FDT frame container generates an error message when the HART Communication DTM attempts to go online and fails.

**Possible Cause**  
Firewall blocking connections on DM Gateway HART over Ethernet TCP/IP port

**Solution**  
Configure the firewall to allow connections over TCP/IP port 7084.

---

**Description**  
FDT frame container generates an error message when the HART Communication DTM attempts to go online and fails.

**Possible Cause**  
WorkstationST computer running DM Gateway is offline

**Solution**  
Verify that the WorkstationST computer running the DM Gateway feature is online and restart the computer if necessary.

---

**Description**  
FDT frame container generates an error message when the HART Communication DTM attempts to go online and fails.

**Possible Cause**  
Network Failure

**Solution**  
Ping the IP address used by the HART Communication DTM. If there is no response, resolve the source of the communication issue (a disconnected network cable, a network adapter failure in one of the computers, or a network switch failure.)
4.4 I/O Gateway Module DTM Operations

**Note** This section uses PHRA HART enabled I/O Gateway Modules in the examples. The procedures to troubleshoot issues related to all other I/O Gateway Module DTM types are equivalent, regardless of fieldbus or module type.

<table>
<thead>
<tr>
<th>Description</th>
<th>Build Topology initiated at frame container fails to add any PHRA instances.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Possible Cause</strong></td>
<td>DM Gateway configuration missing some or all controllers hosting HART devices</td>
</tr>
<tr>
<td><strong>Solution</strong></td>
<td>Open the Device Manager Gateway tab in the ToolboxST application and verify that all controllers hosting PHRA I/O modules are referenced.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>FDT frame container is unable to create PHRA DTM instances.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Possible Cause</strong></td>
<td>Installation failure</td>
</tr>
<tr>
<td><strong>Solution</strong></td>
<td>Remove and re-install the HART Over Ethernet DTM package.</td>
</tr>
</tbody>
</table>
Description: Unable to communicate with HART devices.
Possible Cause: Controller is offline
Solution: Open the Device Manager Gateway Status Viewer and select the HART tab to determine the state of the controller.

Description: Cannot communicate with any devices connected to the PHRA I/O module.
Possible Cause: PHRA I/O module offline
Solution: Open the Device Manager Gateway Status Viewer and select the HART tab to determine the state of the PHRA I/O module.
<table>
<thead>
<tr>
<th>Description</th>
<th>Possible Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannot communicate with some or all devices</td>
<td>PHRA I/O module not configured correctly (HART channels not</td>
<td>Check installation and connections.</td>
</tr>
<tr>
<td>connected to the PHRA I/O module.</td>
<td>enabled)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannot communicate with some or all devices</td>
<td>PHRA I/O module failure</td>
<td>Replace PHRA I/O module.</td>
</tr>
<tr>
<td>connected to the PHRA I/O module.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannot communicate with HART device.</td>
<td>HART device failure</td>
<td>Replace HART device.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannot communicate with HART device.</td>
<td>HART device disconnected or connected incorrectly</td>
<td>The Device Manager Gateway Status Viewer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>indicates situations where a device is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>disconnected or connected incorrectly to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a channel that has the HART interface</td>
</tr>
<tr>
<td></td>
<td></td>
<td>enabled. The PHRA I/O module also</td>
</tr>
<tr>
<td></td>
<td></td>
<td>generates diagnostic alarms in this case.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check and correct any connection issues.</td>
</tr>
</tbody>
</table>

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Public Information
Appendix A DME User Interface

The following figures display various DME operations.

The **Network View** displays a typical **Tree View** with two HART and one PROFIBUS networks and their associated devices.

The **Device Catalogue** displays the installed and available DTM's.
From the **Network View**, right-click on a device to display options. In the **Network View**, online status displays bold.

From the **Network View**, right-click an online device to display additional options.
From the **Network View**, right-click an online device and select **Parameterize Online** to open the Device DTM.

Using the **Parameterize Online** option, the Frame Application found and displays HART device information using a **Universal DTM**.
The Identification tab displays the HART device manufacturer details when using the universal or the device-specific DTM.

The online device with Universal DTM open to Loop Current.
The online device with *Universal DTM* open to *Sensor*.

The online device with *Universal DTM* open to *Output*. 
Closing a device after changing parameters displays the following message: *The device data was changed and differs from data set. Do you want to store the changed parameters to data set?*

Using the *Parameterize Online* option, the frame application found and displays the device information using a manufacturer’s DTM (*auma®*) in place of the universal DTM.
The online device with manufacturer’s DTM displays device Version information.

From the right-click menu, select Additional functions and About.
The online device with manufacturer’s DTM displays the *DTM Version* in the *About* tab.