ControlST* Software Suite
Installation, Upgrade, and Compatibility Guide

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Issued: April 2008


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We would appreciate your feedback about our documentation. Please send comments or suggestions to controls.doc@ge.com
<table>
<thead>
<tr>
<th>Revision</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
</table>
| AC       | HMI Compatibility | Added a row for ControlST V07.08  
Moved V05.04 from Active Releases to Legacy Releases |
| AB       | HMI Compatibility | Added a row for ControlST V07.07 providing compatibility with CIMPPLICITY V11.0 and Proficy Historian V7.1  
Added support for Windows Server 2016 to CIMPPLICITY Project and Advanced Viewer V9.0 |
| AA       | HMI Compatibility | Added a row for ControlST V07.06  
Updates for ControlST V06.02 and prior versions compatibility with CIMPPLICITY 6.1 and 7.2 only supported in XP OS  
Removed Windows Server 2016 support from V07.02; this was not supported until V07.03 |
| Z        | Introduction | Added introduction paragraph and Warning  
HMI Compatibility | Added a row for ControlST V07.05  
ControlST Installation and Upgrade | Added Warning and expanded first bullet item in list of procedures to perform before installation and upgrade  
Pre-upgrade System Data Collection | Updated the procedure To collect system data and made the Alarm and Events limit information as the new step 6.  
Platform Software Upgrade | Updated the definition for the ControlST Supplement Package in the ControlST Installation Options table  
Additional Installation Options | Combined this section within the new section ControlST Version Upgrade  
WorkstationST Upgrade | Removed the step to enter the computer’s Full Name and Organization name in the procedure To upgrade the WorkstationST Application  
CMS Server Upgrade | Updated upgrade instructions to include upgrade from ControlST V05.xx or earlier to ControlST V06.00 or later  
System Upgrade | Updated step 9 to include all system-level tools, not just Live Views, in the procedure To upgrade the .tcw system file in a CMS environment  
Library Upgrade | Update the procedure To upgrade the libraries  
Controller Upgrade | Updated the procedure To upgrade controller components  
Controller Download | Updated the procedure To download controller components  
Throughout the document | Updated references to the ToolboxST User Guide for Mark Controls Platform to reference GEH-6700 (internal document) or GEH-6703 (external customer document) |
<table>
<thead>
<tr>
<th>Revision</th>
<th>Location</th>
<th>Description</th>
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<tbody>
<tr>
<td>Y</td>
<td>HMI Compatibility</td>
<td>Added a row for ControlST V07.04</td>
</tr>
<tr>
<td>W</td>
<td>HMI Compatibility</td>
<td>Added Windows Server 2016 as supported OS for ControlST V07.03, CIMPPLICITY, and Proficy Historian</td>
</tr>
<tr>
<td></td>
<td>HMI Compatibility</td>
<td>Updated Proficy Historian V6.1 to V7.0 for Windows Server 2012R2 and Windows Server 2016 as supported OS for ControlST V07.02</td>
</tr>
<tr>
<td>V</td>
<td>HMI Compatibility</td>
<td>Added a row for ControlST V07.02</td>
</tr>
<tr>
<td></td>
<td>Updated the table with support for Windows 7 Ultimate or Professional for ControlST releases V05.04 to V07.02</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>Downgrade Considerations</td>
<td>Added this section to provide information that should be considered when performing a downgrade of a ControlST system or component software or firmware</td>
</tr>
<tr>
<td></td>
<td>HMI Compatibility</td>
<td>Added Proficy Historian V7.00 (only with Windows 10) and Historian 6.0 (only with 2012 R2) to ControlST V07.00</td>
</tr>
<tr>
<td></td>
<td>Upgrade Rules (Version Specific)</td>
<td>Clarified the upgrade rules for YVIBS1B and YAICS1B, YDIAS1B, and YDOAS1B</td>
</tr>
<tr>
<td></td>
<td>Platform Software Upgrade</td>
<td>Added information about the new Configuration Tools Documentation install.</td>
</tr>
<tr>
<td></td>
<td>To upgrade a new version of the ControlST software suite</td>
<td>Added instructions for .ISO files.</td>
</tr>
<tr>
<td></td>
<td>Known Issues</td>
<td>Added ControlST versions 6.01, 6.02, and 7.00</td>
</tr>
<tr>
<td></td>
<td>HMI Compatibility</td>
<td>Updates for ControlST versions 7.00 and 5.04</td>
</tr>
<tr>
<td></td>
<td>Upgrade Rules (Version Specific)</td>
<td>Added PVIBH1B, YVIBS1B, YAICS1B, YDIAS1B, and YDOAS1B</td>
</tr>
<tr>
<td>T</td>
<td>ToolboxST Application, WorkstationST Application, Trender Tool, Localization</td>
<td>These sections moved from GEH-6721 Vol I into this document</td>
</tr>
<tr>
<td></td>
<td>Additional Installation Options</td>
<td>Added a Note notifying users that if the Proficy Client license installation does not occur during ControlST installation setup automatically, the ProficyClientInstaller.exe can be installed directly from the DVD_files directory</td>
</tr>
<tr>
<td></td>
<td>EX2100e and LS2100e Control Systems Upgrade with Windows 2012 R2 OS</td>
<td>Added this section with upgrade instructions for an EX2100e or LS2100e system using Windows 2012 R2, which requires that both the new and current (old) version of the runtime be present on the workstation where the upgrade is being performed</td>
</tr>
<tr>
<td>R</td>
<td>Introduction, Benefits of an Integrated Tools Suite</td>
<td>New sections</td>
</tr>
<tr>
<td></td>
<td>Introduction, Benefits of an Integrated Tools Suite</td>
<td>New sections</td>
</tr>
<tr>
<td></td>
<td>Multi-lingual Support</td>
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Safety Symbol Legend

**Warning**
Indicates a procedure or condition that, if not strictly observed, could result in personal injury or death.

**Caution**
Indicates a procedure or condition that, if not strictly observed, could result in damage to or destruction of equipment.

**Attention**
Indicates a procedure or condition that should be strictly followed to improve these applications.
# Introduction

The instructions in this document are intended to assist a team of qualified personnel in implementing a ControlST* Software Suite upgrade on a GE control system. These instructions apply to a scenario wherein the system that is being upgraded has been previously commissioned.

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**Warning**

Prior to upgrade, make sure the control system is placed in a Safe state. Upgrading controllers and/or I/O packs results in the controllers and/or I/O packs going offline for safety purposes. This can have serious consequences if the system is not in a Safe state prior to upgrade. These consequences can range from process shutdown to equipment damage or even, potentially, injury or death.

Review the site-specific upgrade procedures. Also review the system documentation, including one-line diagrams, wiring diagrams, logic diagrams, and so forth, to understand how the system will be affected when the controllers and/or I/O packs go offline.

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The ControlST Software Suite is an integrated suite of Windows®-based applications, tools, and component firmware for the Mark* Controls products that spans a wide variety of power generation plants and other industrial equipment. The high-performance applications and tools are used by operators and maintenance personnel for communication, monitoring, and asset management, including:

- ToolboxST* configuration and diagnostics
- WorkstationST* Human-machine Interface (HMI) and Historian management
- Trend process data (Trends)

ControlST is constantly evolving to improve customer experience, network security, enhance plant operation, and keep pace with advancements in technology. Refer to the following related documents for more information.

## ControlST Related Documents

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEZ-S2034</td>
<td>ControlST Software Suite V05.00, V05.01, V05.02, V05.03, and V05.04 Versions Product Life-cycle Announcement</td>
<td>Older versions of ControlST phased out of production</td>
</tr>
<tr>
<td>GEZ-S2033</td>
<td>ControlST Software Suite V04.07 and Earlier Versions Product Life-cycle Announcement</td>
<td>Older versions of ControlST phased out of production</td>
</tr>
<tr>
<td>GEH-6700 or GEH-6703</td>
<td>ToolboxST User Guide for Mark Controls Platform</td>
<td>Application used to configure the control system hardware, networks, program the controller, and troubleshoot the system</td>
</tr>
<tr>
<td>GEH-6839</td>
<td>Mark Vle Control Systems Secure Deployment Guide</td>
<td>Information to improve the cyber security of Mark Vle Control systems</td>
</tr>
</tbody>
</table>
ControlST and its user interface provides the following benefits:

- Right-mouse click contextual links between the tools
- Common variable database
- Designed, built, tested, and documented as a system

Examples of Contextual Links Between ControlST Tools
### Most Frequently Used ControlST Applications and Tools

<table>
<thead>
<tr>
<th>ControlST Component</th>
<th>Description</th>
<th>Contextual Integration</th>
</tr>
</thead>
</table>
| **ControlST Variable Browser** | The variable browser is common across the ControlST suite of tools. Examples include:  
• Assigning a variable to a function block in ToolboxST*  
• Adding a variable to a trend in Trender  
• Creating a variable list in Watch Window  
• Animating an object in Advanced CimEdit | ToolboxST  
Trender  
Watch Window  
Advanced CimEdit |
| **ToolboxST**         | ToolboxST application features include:  
• Configuration, modification, and monitoring of Mark Vle and Mark VleS controllers  
• Configuration and monitoring WorkstationST* applications and services  
• Ethernet Global Data (EGD) editor | ControlST variable browser  
Trender  
Watch Window  
Advanced CimEdit |
| **Trender**           | Watch Window displays live values for a collection of variables in a tabular stand-alone window. Features include:  
• Live data from Mark Vle and WorkstationST  
• Historical data from Mark Vle capture buffer  
• Live data from OPC® DA server  
• Historical data from Mark Vle Dynamic Data Recorder (DDR)  
• Historical data from Proficy® or PI historian  
• Historical data from Mark Vle trip log  
• Alarm and event data from Alarm Server | ControlST variable browser  
ToolboxST  
Advanced CimView  
Alarm View |
| **Watch Window**      | Displays live values for a collection of variables in tabular stand-alone window, features:  
• Drag-and-drop variables from ToolboxST  
• Column configuration across all variable properties  
• Variable forcing | ControlST variable browser  
ToolboxST  
Trender |
| **Alarm Viewer**      | The Alarm Viewer application manages live/historical alarms. Alarm information is displayed in tabular form with advanced filtering and sorting capabilities.  
Common functions include:  
• Acknowledging Alarms  
• Locking Alarms  
• Silencing Alarms  
• Sequence of Events (SOE)  
• Component Diagnostic Alarms | ToolboxST  
CimView  
Trender |
| **Advanced CimEdit / CimView** | Advanced CIMPLICITY* Edit/View provides a full-featured graphic editor with WorkstationST OPC DA interface and tight integration with ControlST, including:  
• ControlST variable browser  
• Embedded Trender option  
• Embedded alarm management option  
• Contextual links to other ControlST applications | ControlST variable browser  
ToolboxST  
Trender  
Alarm Viewer  
Alarm Management |

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8 GEI-100694AC GEI-100694 ControlST Installation, Upgrade, and Compatibility Guide  
Public Information
### Most Frequently Used ControlST Applications and Tools (continued)

<table>
<thead>
<tr>
<th>ControlST Component</th>
<th>Description</th>
<th>Contextual Integration</th>
</tr>
</thead>
</table>
| Configuration Management System (CMS) | The CMS provides configuration revision control and tracking across the system. It consists of three components:  
  • CMS Server  
  • Stand-alone Client (from Start menu)  
  • Integrated Client (from ToolboxST) | ToolboxST               |
| LiveView                      | Live View is the graphical editor for commissioning and maintenance views of control functions and equipment. | ControlST variable browser  
                               |                                                                            | ToolboxST               |
| Control System Health (CSH)   | CSH provides component health status (controllers, I/O modules, PC Workstations) across the system in an intuitive, animated tree structure. | ToolboxST  
                               |                                                                            | Alarm Viewer            |
| Network Monitor               | Network Monitor displays the status of devices (controllers, computers, network switches) that are connected to Ethernet networks (excluding IONet), including network switches and their ports. | ToolboxST  
                               |                                                                            | Alarm Viewer            |
| WorkstationST Status Monitor  | The WorkstationST Status Monitor provides status and control of the WorkstationST features on the local computer, including:  
  • Alarm server  
  • EGD configuration server  
  • OPC DA server | ToolboxST               |
| Mark Controller Firmware      | Mark controller firmware includes the following products:  
  • Mark VIe  
  • Mark VIeS  
  • MarkStat  
  • EX2100e  
  • LS2100e | N/A                   |
| Mark VIe I/O Module Firmware  | Mark VIe I/O module firmware includes:  
  • Discrete I/O modules  
  • Analog I/O modules  
  • Turbine protective I/O modules  
  • Safety I/O modules | N/A                   |
2 ToolboxST Application

The ToolboxST application is composed of Windows-based software used to configure, program, and maintain the Mark control systems, and other related products. ToolboxST features include:

- System component layout
- Configure, edit, and view real-time Mark control application code
- EGD editor
- Hardware diagnostic alarm annunciation
- Password protection
- Trending

Note For more information, refer to the ToolboxST User Guide for Mark Controls Platform (GEH-6700 or GEH-6703).
3 WorkstationST Application

The WorkstationST application is used to manage the HMI, Historian, and Alarm Viewer, as well as provide an interface to third-party devices. It provides the following functions:

- Alarm display and management
- Process variable trending
- Point control panel right-click menu add-on for CIMPLICITY screens is normally used during troubleshooting to access variables for trends and watch windows
- HMI access security
- Server data interface for communication with OPC, Modbus, and other clients

3.1 WorkstationST Alarm Viewer

Alarm Viewer aids in the analysis of the system, especially after an upset. It displays and manages live and historical alarm and event information from a computer configured with the WorkstationST application running the Alarm Server. Alarm and event information display provides advanced filtering and sorting capabilities, and other functionality such as Acknowledging, Locking, and Silencing.

The following information can be generated:

- Alarms
- Events
- Holds
- Sequence of Events (SOE)
- Diagnostics

The Alarm Viewer also provides alarm management functions, such as sorting and filtering by priority, unit, time, or source device. Also supported are configurable alarm field displays and embedding of dynamically updated objects into the CIMPLICITY CimView screens.

Note: For more information, refer to the WorkstationST Alarm Viewer Instruction Guide (GEI-100620).

3.2 WorkstationST Server

The WorkstatationST server provides an interface for Modbus (Serial or Ethernet), GE Standard Messaging (GSM), or OPC UA, DA, AE communications. These third-party interfaces allow the HMI to exchange data with DCS systems, PLCs, I/O devices, and other computers.

The WorkstationST OPC server provides a standards-based interface to the runtime database or third-party interfaces. The OPC server conforms to the 2.0 data access standards. Fundamentally, the OPC standard defines two software roles, OPC clients and OPC servers. In general, clients are consumers of automation information and servers are producers of the same information. OPC is a technology standard initially developed by a group of automation industry companies and now managed by the not-for-profit organization called the OPC Foundation. The standard was developed to provide a common de-coupling mechanism for automation system software components. OPC provides for simpler integration of automation software components from multiple vendors.
4 Trender

Trender is the graphical interface used for trending analog or digital points to collect process data (Trends), including real-time and Historical data. It is fully configurable and can auto-range the scales or set fixed indexes. For accurate read out, the trend cursor displays the exact value of all points trended at a given point in time. It can be set up to mimic strip chart recorders, analyze the performance of particular parameters over time, or help troubleshoot root causes of issues. Trender can be launched from the ToolboxST application or from the right-click menu on the CIMPLICITY screen with the WorkstationST application.

Trender is based on ActiveX® technology to give users data analysis capabilities. Trender uses data collected by the HMI, or data from other third-party software packages or interfaces. Trending includes multiple trending charts per graphic screen with unlimited pens per chart, and the operator can resize or move trend windows to convenient locations on the display.

Example Trend

Note For more information refer to the Trender Instruction Guide (GEI-100795).
5  Localization - Translation to Native Languages

ControlST software tools provide several ways to support requirements for local languages. For both diagnostic and process alarm descriptions, the ToolboxST application provides a way to export text strings to and import from a .csv file. The resource translation manager tool enables Windows-based applications to have embedded text displayed in a native language (for example, menu bars). The Alarm Viewer and CIMPLICITY also support second language options. Refer to the following table for user documents that provide information on how to configure the HMI and other tools for local languages.

<table>
<thead>
<tr>
<th>Document Number</th>
<th>Title</th>
<th>Section(s) within Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEH-6808 (if available)</td>
<td>ControlST Software Suite How-to Guides</td>
<td>How to Configure a Second Language for ControlST HMI Applications</td>
</tr>
<tr>
<td>GEH-6700 or GEH-6703</td>
<td>ToolboxST User Guide for Mark Controls Platform</td>
<td>System Editor, Diagnostic Translations Component Editor, Second Language Report</td>
</tr>
<tr>
<td>GEI-100793</td>
<td>Resource Translation Manager User Guide</td>
<td></td>
</tr>
<tr>
<td>GEI-100620</td>
<td>WorkstationST Alarm Viewer Instruction Guide</td>
<td>Multi-language Support</td>
</tr>
</tbody>
</table>
## 6 HMI Compatibility

### ControlST HMI Compatibility — Active Releases

<table>
<thead>
<tr>
<th>ControlST</th>
<th>Microsoft® Windows</th>
<th>CIMPLICITY</th>
<th>Proficy Historian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version</td>
<td>Release Date</td>
<td>CIMPlicITY</td>
<td></td>
</tr>
</tbody>
</table>
| V07.08    | Aug 2020           | • V8.2 (only with Windows 7)  
|           |                    | • V9.0 (only with Windows Server 2012 R2 or Windows Server 2016)  
|           |                    | • V9.5 (only with Windows 10 or Windows Server 2016)  
|           |                    | • V11.0 (only with Windows Server 2016 or Windows Server 2019)  
|           |                    | V07.07     | • V8.2 (only with Windows 7)  
|           |                    |            | • V9.0 (only with Windows Server 2012 R2 or Windows Server 2016)  
|           |                    |            | • V9.5 (only with Windows 10 or Windows Server 2016)  
|           |                    |            | • V11.0 (only with Windows Server 2016 or Windows Server 2019)  
|           |                    | V07.06     | • V8.2 (only with Windows 7)  
|           |                    |            | • V9.0 (only with Windows Server 2012 R2 or Windows Server 2016)  
|           |                    |            | • V9.5 (only with Windows 10 or Windows Server 2016)  
|           |                    |            | • V11.0 (only with Windows Server 2016 or Windows Server 2019)  
|           |                    | V07.05     | • V8.2 (only with Windows 7)  
|           |                    |            | • V9.0 (only with Windows Server 2012 R2)  
|           |                    |            | • V9.5 (only with Windows 10 or Windows Server 2016)  
|           |                    |            | • V11.0 (only with Windows Server 2016 or Windows Server 2019)  

- Windows Server 2019 Standard
- Windows Server 2016 (Standard Edition)
- Windows 10 Professional, 64-bit
- 64-bit Windows 7 Ultimate or Professional
- 64-bit Windows Server 2008 R2, single-user configuration, Service Pack 1 and latest Microsoft updates
- 64-bit Windows Server 2012 R2, single-user configuration

- V8.2 (only with Windows 7)
- V9.0 (only with Windows Server 2012 R2 or Windows Server 2016)
- V9.5 (only with Windows 10 or Windows Server 2016)
- V11.0 (only with Windows Server 2016 or Windows Server 2019)
### ControlST HMI Compatibility — Active Releases (continued)

<table>
<thead>
<tr>
<th>Version</th>
<th>Release Date</th>
<th>Microsoft® Windows</th>
<th>CIMPLECTIVITY</th>
<th>Proficy Historian</th>
</tr>
</thead>
</table>
| V07.04  | Dec 2018     | • Windows Server 2016 (Standard Edition)  
• Windows 10 Professional, 64-bit  
• 64-bit Windows 7 Ultimate or Professional  
• 64-bit Windows Server 2008 R2, single-user configuration, Service Pack 1 and latest Microsoft updates  
• 64-bit Windows Server 2012 R2, single-user configuration  | • V8.2 (only with Windows 7)  
• V9.0 (only with Windows Server 2012 R2)  
• V9.5 (only with Windows 10 or Windows Server 2016)  | • V4.5 (only with Windows 7)  
• V7.0 (only with Windows 10, Windows Server 2012 R2, or Windows Server 2016)  |
| V07.03  | July 2018    | • Windows Server 2016 (Standard Edition)  
• Windows 10 Professional, 64-bit  
• 64-bit Windows 7 Ultimate or Professional  
• 64-bit Windows Server 2008 R2, single-user configuration, Service Pack 1 and latest Microsoft updates  
• 64-bit Windows Server 2012 R2, single-user configuration  | • V8.2 (only with Windows 7)  
• V9.0 (only with Windows Server 2012 R2)  
• V9.5 (only with Windows 10 or Windows Server 2016)  | • V4.5 (only with Windows 7)  
• V7.0 (only with Windows 10, Windows Server 2012 R2, or Windows Server 2016)  |
| V07.02  | Dec 2017     | • Windows 10 Professional, 64-bit  
• 64-bit Windows 7 Ultimate or Professional  
• 64-bit Windows Server 2008 R2, single-user configuration, Service Pack 1 and latest Microsoft updates  
• 64-bit Windows Server 2012 R2, single-user configuration  | • V8.2 (only with Windows 7)  
• V9.0 (only with Windows Server 2012 R2)  
• V9.5 (only with Windows 10 or Windows Server 2016)  | • V4.5 (only with Windows 7)  
• V7.0 (only with Windows 10, Windows Server 2012 R2, or Windows Server 2016)  |
| V07.01  | July 2017    | • Windows 10 Professional, 64-bit  
• 64-bit Windows 7 Ultimate or Professional  
• 64-bit Windows Server 2008 R2, single-user configuration, Service Pack 1 and latest Microsoft updates  
• 64-bit Windows Server 2012 R2, single-user configuration  | • V8.2 (only with Windows 7)  
• V9.0 (only with Windows Server 2012 R2)  
• V9.5 (only with Windows 10 or Windows Server 2016)  | • V4.5 (only with Windows 7)  
• V6.1 (only with Windows Server 2012 R2)  
• V7.0 (only with Windows 10)  |
| V07.00  | Dec 2016     | • Windows 10 Professional, 64-bit  
• 64-bit Windows 7 Ultimate or Professional  
• 64-bit Windows Server 2008 R2, single-user configuration, Service Pack 1 and latest Microsoft updates  
• 64-bit Windows Server 2012 R2, single-user configuration  | • V8.2 (only with Windows 7)  
• V9.0 (only with Windows Server 2012 R2)  
• V9.5 (only with Windows 10 or Windows Server 2016)  | • V4.5 (only with Windows 7)  
• V6.1 (only with Windows Server 2012 R2)  
• V7.0 (only with Windows 10)  |
| V06.02  | Sept 2016    | • 64-bit Windows 7 Ultimate or Professional  
• 64-bit Windows Server 2008 R2, single-user configuration, Service Pack 1 and latest Microsoft updates  
• 64-bit Windows Server 2012 R2, single-user configuration  | • V8.2 (only with Windows 7)  
• V9.0 (only with Windows Server 2012 R2)  | • V4.5 (only with Windows 7)  
• V6.1 (only with Windows XP)  |
Note For more details related to HMI computer hardware, refer to the ToolboxST User Guide for Mark Controls Platform (GEH-6700 or GEH-6703).
## ControlST HMI Compatibility — Legacy Releases

<table>
<thead>
<tr>
<th>Version</th>
<th>Release Date</th>
<th>Microsoft® Windows</th>
<th>Project</th>
<th>Adv. Viewer</th>
</tr>
</thead>
<tbody>
<tr>
<td>V3.01</td>
<td>May-07</td>
<td>Windows 2000</td>
<td>V6.1</td>
<td>—</td>
</tr>
<tr>
<td>V3.02</td>
<td>May-08</td>
<td>Windows 2000</td>
<td>V6.1</td>
<td>—</td>
</tr>
<tr>
<td>V3.03</td>
<td>Oct-08</td>
<td>Windows 2000</td>
<td>V6.1 and V7.5</td>
<td>V7.5</td>
</tr>
<tr>
<td>V3.04</td>
<td>Dec-08</td>
<td>Windows 2000</td>
<td>V6.1 and V7.5</td>
<td>V7.5</td>
</tr>
<tr>
<td>V3.05</td>
<td>Jun-09</td>
<td>Windows XP Professional</td>
<td>V6.1 and V7.5</td>
<td>V7.5</td>
</tr>
<tr>
<td>V3.06</td>
<td>Mar-10</td>
<td>Windows XP Professional</td>
<td>V6.1 and V7.5</td>
<td>V7.5</td>
</tr>
<tr>
<td>V4.00</td>
<td>Jun-10</td>
<td>Windows XP Professional, Service Pack 3</td>
<td>V6.1 and V7.5</td>
<td>V7.5</td>
</tr>
<tr>
<td>V4.01</td>
<td>Aug-10</td>
<td>Windows XP Professional, Service Pack 3</td>
<td>V6.1 and V7.5</td>
<td>V7.5</td>
</tr>
</tbody>
</table>
### ControlST HMI Compatibility — Legacy Releases (continued)

<table>
<thead>
<tr>
<th>ControlST</th>
<th>Microsoft® Windows</th>
<th>CIMPPLICITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CIMPLICITY V6.1 and V7.5 are only supported in Windows XP operating systems.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>V6.00</td>
<td>Nov-15</td>
<td>32-bit Windows 7</td>
<td>64-bit Windows 7</td>
<td>64-bit Windows Server 2008 R2, single-user configuration, Service Pack 1 and the latest Microsoft updates</td>
<td></td>
<td></td>
<td>V8.2</td>
<td>V8.2</td>
</tr>
<tr>
<td>V6.01</td>
<td>June-16</td>
<td>32-bit Windows 7</td>
<td>64-bit Windows 7</td>
<td>64-bit Windows Server 2008 R2, single-user configuration, Service Pack 1 and the latest Microsoft updates</td>
<td></td>
<td></td>
<td>V8.2</td>
<td>V8.2</td>
</tr>
</tbody>
</table>
This document provides the instructions and procedures to upgrade ControlST and its associated applications and components. The following procedures must be performed in the order listed:

**Warning**

Prior to upgrade, make sure the control system is placed in a Safe state. Upgrading controllers and/or I/O packs results in the controllers and/or I/O packs going offline for safety purposes. This can have serious consequences if the system is not in a Safe state prior to upgrade. These consequences can range from process shutdown to equipment damage or even, potentially, injury or death.

Review the site-specific upgrade procedures. Also review the system documentation, including one-line diagrams, wiring diagrams, logic diagrams, and so forth, to understand how the system will be affected when the controllers and/or I/O packs go offline.

- Pre-installation and upgrade procedures, including placing the control system in Safe state, reviewing and performing site-specific upgrade procedures, reviewing system documentation, and performing the instructions provided in this chapter
- ControlST installation from the ControlST DVD or an .iso file
- **System Upgrade** (non-CMS and CMS)
- **Library Upgrade**
- **Controller Upgrade**
- **WorkstationST Device Upgrade**

**Attention**

Refer to the section Known Issues (Version-specific Upgrade Requirements) for version-specific upgrade requirements. Failure to follow these requirements can result in upgrade delays or other plant operation problems.

The requirements and procedures in this document assume a complete plant shutdown prior to installing the new ControlST version. If a complete plant shutdown is not feasible, it is possible for two versions of ControlST to coexist in a single plant. During a partial shutdown transition period, the plant can be operational with the following limitations:

- Online value changes are not recommended during this period; changes will be temporary and not retained after the upgrade.
- Additional logic forcing is not recommended during this period unless it is temporary and documented by the site.
- Maintenance limitations for multi-unit workstations and Mark VIe controllers are affected during partial upgrades. The pairing of workstations with controllers is required to prevent other devices from modifying or downloading the inappropriate software to a controller. Refer to the table Sample ControlST Upgrade Pairing for an example of such pairing in a multi-unit plant. This process may prevent a user from performing a download to a controller using a workstation that has not been upgraded.
- An upgrade matrix identifying the scheduled unit availability should be discussed, generated, and approved by the customer. Refer to the table Sample ControlST Upgrade Matrix Checklist for an example of an upgrade matrix checklist used in a multi-unit plant.

**Attention**

If a complete plant shutdown is not planned, contact your GE representative as required for additional requirements and planning.
In preparation for the upgrade, identify a backup storage device. Select a network drive or server to save the backup information prior to the upgrade. It is recommended the storage device is not a device included in the upgrade process.

Users should not make application code changes during the upgrade process. These changes should be made before the start of the upgrade process or after it is complete.

### 7.1 Licensing

Beginning with ControlST V05.04, a new software license is required. ControlST V04.07 or an earlier hardware dongle is not compatible with ControlST V05.04.00C and later versions. The ToolboxST and WorkstationST applications can be used only if the license key is programmed to allow access. If the customer site has more than one product, the license key must be programmed to allow access to each product. Refer to the following documents for more information on ControlST licensing.

<table>
<thead>
<tr>
<th>Document Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHT-200048</td>
<td>How to Order ControlST Software and License Keys</td>
</tr>
<tr>
<td>GHT-200049</td>
<td>How to Install, Activate, Update, and Troubleshoot ControlST Licenses</td>
</tr>
<tr>
<td>GHT-200060</td>
<td>ControlST Software Suite License Key Ordering Flow Diagram</td>
</tr>
</tbody>
</table>
7.2 Pre-upgrade System Data Collection

Verify that there is a minimum of 10 GB of system disk space for each version of ControlST installed, in addition to operating system requirements. (Refer to the ToolboxST User Guide for Mark Controls Platforms (GEH-6700 or GEH-6703), the section Computer Recommendations.) Free up adequate space if necessary before proceeding with the installation.

Prior to upgrade, collect system information from all controllers.

➢➢ To collect system data

1. Close all programs currently open.

2. From the ToolboxST Component InfoView, select the Status tab and verify that the controllers are in an Equal state.

3. Verify that no outstanding diagnostic or process alarms, such as defective I/O packs or network hardware, are present that will interfere with the site upgrade.

4. Generate a Forced Points report as follows:
   a. Open the project *.tcw system file.
   b. From the Tree View, double-click the controller to display the Component Editor.
   c. From the toolbar, click the Go On/Offline icon to go online with the controller.
   d. From the View menu, click Forced Variables.
   e. From the Forced Variables dialog box File menu, select Print Preview, and click the disk icon to save a .pdf file of the forced variable list for archiving to the network drive or server previously selected.
   f. Repeat for all controllers.
5. Generate a Control Constants report as follows:
   a. Open the project .tcw file.
   b. From the Tree View, double-click the controller to display the Component Editor.
   c. From the toolbar, click the Go On/Offline icon to go online with the controller.
   d. From the View menu, click Control Constants.
   e. From the Control Constants dialog box File menu, click Reconcile Differences.
   f. If there are differences between the initial and live values of the control constants, a Difference Report displays. From the Control Constants dialog box File menu, click Export to CSV and save the file to the selected backup storage device. Determine the best course of action to address these discrepancies.
   g. After all the differences are reconciled, from the Control Constants dialog box File menu, click Export to CSV and save the file to the selected backup storage device.
   h. If you require time to address these, click Print Preview and the disk icon to save a .pdf file of the Control Constants report (includes the live and initial values of the control constants).
   i. Save the file to the selected backup storage device.
   j. Repeat for all the controllers.

6. Generate a Nonvolatile RAM report as follows:
   a. Open the project .tcw file.
   b. From the Tree View, double-click the controller to display the Component Editor.
   c. From the toolbar, click the Go On/Offline icon to go online with the controller.
   d. From the View menu, click Global Variables.
   e. From the Global Variables dialog box, right-click on one of the displayed column names and select Organize Columns.
   f. From the Organize Columns dialog box, verify that Nonvolatile displays in the Shown list and not in the Hidden list.
   g. Sort on the Nonvolatile column (click on the column name to sort) until all cells that are True are grouped together.
   h. Capture screen copies of all variables Nonvolatile and their current value and save to a file.
      - Select the window you want to copy and press the [Alt] + [Print Scrn] keys to capture the screen.
      - Open WordPad® and paste the screen to the page.
      - Save to the selected storage device.
   i. Repeat for all the controllers.

7. Generate an Alarm and Events report.

8. Beginning with ControlST V04.04, controller configurations must not exceed limit thresholds. Verify that the following Alarm and Events limits are not exceeded:
   - Configured Process Alarms and Holds limit = 4,096 maximum
   - Configured Holds limit = 512 maximum
   - Configured Events limit = 2,048 maximum
   If these limits are exceeded, reduce the number of configured Process Alarms, Events, and Holds.
Caution

Do not proceed with the upgrade until the limits are reviewed and do not exceed the limit thresholds.

9. Capture Totalizer data as follows:
   a. Open the project .tcw system file to display the System Editor.
   b. From the Tree View, double-click the controller to display the Component Editor.
   c. From the toolbar, click the Go On/Offline icon to connect the controller online.
   d. From the Device menu, click Administer and Totalizers.
   e. Select the designated controller and click OK to display the Totalizers dialog box.

   
   ![Totalizer Data Capture]

   f. Record the Totalizer data for each controller by taking a screen copy of the values.
      The Totalizer data can also be recorded by taking a screen copy of each controller using the HMI screens.

   **Note** Clicking **Save** does not capture the actual values; it only records the Identifier number.

   **Note** The Totalizer data does not change during a controller firmware download or restart.

   g. Repeat this procedure for all controllers.
7.3 Non-CMS System Archive

After all other preparations are complete, archive the master .tcw system file with all controllers in an Equal state (refer to the section Pre-upgrade System Data Collection, step 2).

➢➢ To archive the .tcw system file

1. Identify the master workstation where the Mark VIe .tcw file is stored.
2. Open the running software from the master workstation device.
3. Make sure all system components are saved.
4. From the File menu, select Archive System.

5. From the Archive System dialog box, click All, then click OK.
6. Save the zipped file to a storage device.
7. From the master workstation, back up the Master folder.
8. From the Historian* workstation device (if a GE-supplied Historian exists), archive the Historian data to the selected backup storage device.
9. If the WorkstationST* Status Monitor, WorkstationST Alarm Viewer, and Trender features are currently configured to display non-English text, prior to uninstalling or installing ControlST, create a backup copy of the folders containing translated Resource DLLs. (Refer to the section Multi-lingual Support.)
7.4 CMS System Archive

➢ To archive the .tcw system file

1. Identify the Master Server where the .tcw software is installed.

2. Open the running software from the Master Server Workstation where the .tcw system file is stored (E:\Site\local\_checkout).

3. Make sure all system components are saved.

4. Make sure all system components are checked in to Configuration Management System (CMS).

5. From the System Editor Tree View, right-click the system icon (the top item in the tree), select CMS, and click Get Latest Version.

6. Verify that all Workstation components are at the Equal state.

7. From the File menu, select Archive System.

8. From the Archive System dialog box, click All, then click OK.

9. From the Save As dialog box, save the .zip file to a separate storage device, then save it to an HMI that is not affected by the current upgrade.

10. From the Historian workstation device (if a GE-supplied Historian exists), archive the Historian data to the selected backup storage device.

11. If the WorkstationST Status Monitor, WorkstationST Alarm Viewer, and Trender features are currently configured to display non-English text, prior to uninstalling or installing ControlST, create a backup copy of the folders containing translated Resource DLLs. (Refer to the section Multi-language Support.)

7.5 Shared IONet

Beginning with ControlST V04.06, the Shared IONet feature allows two controllers to share inputs from I/O packs and modules. To use this feature, the following items must be considered before performing an upgrade:

• If a Mark VIeS Safety controller is configured, perform an upgrade on this controller first.
• If present, the Mark VIeS Safety controller becomes the new grand master for NTP time synchronization. Verify that the NTP settings are identical for each controller.
• Identify I/O packs and modules that are not supported for use with the Shared IONet feature.
• Modify the controller IONet IP addresses (third octet) as needed.
• Determine if any I/O need to be compressed and restart the controller if required. Further troubleshooting may be required.

---

Attention

For Shared IONet upgrade you must have the previous release still installed on the workstation.

---

Note Refer to the Mark Controllers Shared IONet User Guide (GEH-6812) for more information.
8 Platform Software Upgrade

This chapter describes how to upgrade the ControlST Software Suite using a ControlST DVD or an .iso file. The upgrade process requires that the procedures be performed in the order they are provided. These instructions are intended to assist a qualified GE Field Engineer implementing a site software upgrade.

The procedures in this document assume that the user is upgrading their existing ControlST version and has (in their possession) the GE ControlST DVD or access to the .iso file, a license (hardware or software), access level privileges, and required system passwords.

Attention
Beginning with ControlST V05.00, a new GE Proficy license is required to use the ToolboxST and WorkstationST applications. You must have the new license installed to open or create .tcw files.

Attention
Install the appropriate options from the ControlST DVD or .iso file on all workstations, HMIs, and computers. Do not install the CMS server application on any other computer except the HMI that is currently used as the CMS server.

Note If working in a CMS environment, the upgrade process requires coordination with, and the cooperation of, other clients and users on the system. A system administrator should upgrade the master workstation (master copy) first. This requires that all master system files under CMS control be checked out of the repository for the update and checked back in after the update. Build changes and downloads to devices, libraries, or workstations made by other users while the master system files are checked out will be lost since their access is limited to a read-only copy of the data.

Note The release and version numbers displayed in this document are examples only that may differ from those displayed during actual installation. The content may also differ depending on the actual version being installed.

8.1 ControlST Version Upgrade

➢➢➢ To upgrade to a new version of ControlST

1. Verify that the computer hard drive (C:) has a minimum of 10 GB available disk space for installing the new ControlST version. Free up adequate space if necessary before proceeding with the installation.

2. If upgrading from a version prior to V05.00, remove the hardware key.

3. If installing from a .iso file, use one of the following methods to run the installation program:

   • If installing on a Windows 8 or Server 2012 R2 or newer operating system, this is available directly from Windows®. Click the .iso file to mount it to a drive letter and run the setup.exe program from there.
   • If installing on a Windows 7 operating system, first install a freely distributed mounting software, for example Virtual Clone Drive or use 7-zip to extract the contents from the .iso into a folder or burn the .iso to a physical DVD. Run the setup.exe program.

Note Detailed procedures for all of the above methods for installation from .iso images are available on the internet.
4. If using a DVD, place the new ControlST DVD into the CD/DVD drive. The installation automatically begins. If the installation does not start automatically, use Windows Explorer to navigate to the CD-ROM drive and double-click on setup.exe program.

5. Review the ControlST Software Suite Setup Notes, then click Continue.

6. From the ControlST Setup dialog box, select the installation options to install, then click Install.
## ControlST Installation Options

<table>
<thead>
<tr>
<th>Install</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration Tools Package</td>
<td>Installs the ToolboxST application for configuration of the various controller types that it supports. The Configuration Tools Package is required to be installed on each HMI that will be involved in the site configuration; it is typically installed on all HMIs.</td>
</tr>
<tr>
<td>Configuration Tools Documentation</td>
<td>Installs the Mark controls platform product release documentation (.pdf files)</td>
</tr>
<tr>
<td>WorkstationST</td>
<td>Installs the runtime portion of the HMI or Historian, which communicates with controllers to collect real-time data and alarm information for the HMI. It includes the EGD Configuration Server which is the real-time server of the configuration information. The WorkstationST application must be installed on each HMI and Historian.</td>
</tr>
<tr>
<td>CMS-SVN Server</td>
<td>Installs the Configuration Management Server (CMS). This package should only be installed on one HMI, the one designated as the site's CMS Server (if used) [S-CMS = Server].</td>
</tr>
<tr>
<td>Hart® Message Server</td>
<td>Installs a special package that operates as a Hart Message Server for Emerson® AMS® support. It is typically installed on only one HMI at the site (if used).</td>
</tr>
<tr>
<td>Simulink™ Block Lib</td>
<td>Installs a special block library used for MATLAB™ configuration and simulation. It is only installed if this HMI requires that support (most do not).</td>
</tr>
<tr>
<td>Historian Reports</td>
<td>Installs a Historian Reports package that is only installed on site Historians, not on HMIs</td>
</tr>
<tr>
<td>ControlST Supplement Package</td>
<td>Beginning with ControlST V07.02, this option installs older versions of runtime for hardware platforms that are no longer supported by the current version. For example, Mark VIeS V06.00.00C and later do not support the UCCC hardware platform. The last Mark VIeS runtime version that supports UCCC (V05.03.03C) is installed with this package.</td>
</tr>
</tbody>
</table>

7. When the Welcome dialog box displays, click **Next**.
8. When the License Agreement dialog box displays, select the I accept check box and click Next.

9. The Destination Folder dialog box displays the installation location for this version of the product. Click Next.

10. Leave the default setup selections and click Next.

11. Click Install.

12. After installation is complete, click Finish.

**Note** Beginning with V06.00, the ControlST Support Package is installed first (and Product Def interfaces), then the Configuration Tools Package installation begins. The ControlST Support Package includes files such as those required for the new GE licensing. These files only need to be installed one time and will not be re-installed if additional products are selected.

13. If any other options were selected, a Setup dialog box displays asking if you want to install the next selected option. Click Yes and repeat the installation procedure for each selected option.

Any updates for the Proficy client licensing are installed after all product installations (but before the Exit Setup dialog box displays).

If the Proficy License Client does not automatically install during ControlST installation, the following Security Warning dialog box displays. You must exit setup and manually run the installer ProficyClientInstaller.exe file from the DVD_files directory to install it. Without the Proficy License Client installed, you will not be able to open the installed ControlST applications.

**Attention**

14. When all selected installation options are complete, click Yes to exit setup.

15. From the Start menu, select All Programs, Proficy Common, and License Viewer, and verify that the correct ControlST options are enabled.
Note  The desktop icons and Start menu update to reflect the most recently installed version.

### 8.2 Configuration Tools Package (ToolboxST) Installation

When the Configuration Tools Package installation option is selected during ControlST installation, installation automatically begins.

➢ To upgrade the ToolboxST application

1. From the ControlST Setup dialog box, click Install.
2. From the Welcome dialog box, click Next.
3. From the License Agreement dialog box, select Agree. To continue the installation you must accept the agreement.
4. Click Next.
5. From the Destination Folder dialog box, click Next. The Custom Setup (or Select Features) dialog box displays.

For a complete installation, click Next and go to step 7.

For a single-feature installation, go to step 6.
6. For a single-feature installation, perform the following:

Click the icon next to GE Configuration Tools Package and select **Entire feature will be unavailable** (red X) to disable all features.

Click the icon next to the desired feature and select **Entire feature will be installed on local hard drive**.

Click **Next** and go to step 7.

**Note**  This example would be used if only installing the firmware for a BPPC-based PAIC I/O module. Refer to the *Mark VIe and Mark VIeS Control Systems Volume I System Guide* (GEH-6721_Vol_I), the section *Mark VIe BPPC I/O Migration Guidelines* for more information on upgrading from BPPB to BPPC.

7. From the **Ready to Install** window, click **Install**. A progress window displays. When the installation is complete, click **Finish**.
### 8.3 Configuration Tools Documentation Installation

When the Configuration Tools Documentation *installation option* is selected during ControlST installation, the ControlST Documentation application is installed on the HMI computer in the location specified during installation. The ControlST Documentation application contains the Mark controls product documentation (.pdf files).

### 8.4 WorkstationST Upgrade

If WorkstationST is selected as a ControlST *installation option*, when the Configuration Tools (ToolboxST application) installation is complete, the Setup dialog box displays asking the user if they want to install WorkstationST.

➢ **To upgrade the WorkstationST application**

1. From the Setup dialog box, click **Yes**.

![Setup dialog box](image)

2. From the Welcome dialog box, click **Next**.

3. From the License Agreement dialog box, select **Agree** to continue the installation.

4. Click **Next**.

5. Click **Next** again.

6. From the Destination Folder dialog box, click **Next**. The Custom Setup (or Select Features) dialog box displays.

---

**Note** The Alarm Viewer can be installed by itself for use on a remote computer.
To select a component not to be installed, click the icon next to the component and select the red X.

Click Next.

7. A progress window displays. When the installation is complete, click Finish.
If you are upgrading from ControlST V05.xx or earlier to ControlST V06.00 or later, refer to the section Upgrade from CMS to CMS-SVN. All others refer to the section Upgrade the CMS Server.

8.5.1 Upgrade from CMS to CMS-SVN

Beginning with ControlST V06.00, the CMS Server has been updated to improve its responsiveness and reliability. This change is not backwards compatible; systems must be moved into a new CMS-SVN repository. These systems will not include the history from the previous repository; it will use only the latest version from the previous repository.

Perform the following procedures to upgrade:

- Get a copy of the system from the current repository
- Configure the new repository
- Add a system to the new repository

➢➢ To get a copy of the system from the current repository

1. Make sure no files are checked out.
2. Use the current ToolboxST version (prior to V06.00) to get the latest version of files from the CMS repository.

To configure the new repository, add the system to the CMS Server.

➢➢ To add a system to a repository

This operation is performed only once for a system, at initial use.

1. Open the ToolboxST application system .tcw file.
2. Log in to the CMS Client.
From the CMS menu, select **Login**.

The Repository URL address is available from the CMS Administrator Tool configuration and can be provided to site users.

Enter the Repository URL in the **Server URL** field, enter your **username** and **password**, then click **OK**.
3. If the CMS Server was configured with a self-signed certificate, users are prompted to save and accept the certificate. Select **Save certificate** and click **Accept**. 

**Note:** If you do not select **Save certificate**, you will be asked to accept this certificate each time you log on to the CMS server.

4. Add the system to the repository.

From the CMS menu, select **Add System to Repository**...
To get a Working Copy from the CMS Server to other computers

Attention

This operation only needs to be performed one time for each computer to get a local Working Copy of the system on each computer.

1. From the ToolboxST application, get the system from the CMS Server.

   From the CMS menu, select Get System from Repository...

   Enter the Repository URL in the Server URL field, enter your username and password, then click OK.
2. If the CMS server has been configured with a self-signed certificate, users are prompted to save and accept the certificate.

Select Save certificate and click Accept.

Note: If you do not select Save certificate, you will be asked to accept this certificate each time you log on to the CMS server.

3. Save the Working Copy of the system to a designated location on the computer.

From the drop-down menu, select the system. Enter the folder path or click Browse and select a location to save the system folder, then click OK.

Note: Even if the folder path requires a new folder, the system will automatically create the new folder.
➢ To open a system from the CMS Client

1. From the ToolboxST application, open a system.

   From the **File** menu, select **Open System**...

2. Log on and connect to the CMS Server.

   **Note** You must connect to the correct CMS Server to log on.

   Verify that the Repository server URL is correct. Enter your **username** and **password** and click **OK**.
Example System Open in ToolboxST Application
To upgrade the Legacy CMS Server

1. From the Setup dialog box, click Yes.

2. Click Yes.

3. From the License Agreement dialog box, select Agree. To continue the installation you must accept the agreement.

4. Click Next.

5. From the Destination Folder dialog box displays, click Next.

6. From the Ready to Install dialog box, click Install. A progress window displays.

7. When the installation is complete, click Finish.
9 System and Component Upgrade

ControlST supports a variety of control equipment. This includes updated firmware for the equipment and configuration tools that are accessed from the ToolboxST Component Editor. When a new ControlST version is installed, newer versions of some components may be installed as well. To use the new versions, the user must upgrade each ToolboxST .tcw system component. The procedure provided in the following section, System Upgrade, is a generic procedure that can be used to upgrade a system in the absence of site-specific upgrade procedures. There is not one correct way to upgrade a system; requirements vary.

9.1 System Upgrade

➢➢ To upgrade the .tcw system file in a CMS environment

1. Open the running software from the Master Server Workstation device where the .tcw system file is stored (E:\Site\local_checkout).

2. A Warning dialog box may display, indicating that the system was last opened with an older version of ToolboxST. Click No to upgrade the system to the new version. The system displays in the System Editor, OR

   Click Yes to keep the system in the old version.

Note If the selection is made to keep the old version, upgrade prompts do not display when opening the system file in the future, unless the Maintain Compatibility property is turned off (disabled) at the system level. This option allows the use of different ToolboxST versions for different devices in the same system. If an attempt is made to use a feature incompatible with the file version the system is in (such as Shared IONet between V04.05 and V04.06), a Warning displays and provides the option to cancel.

3. If CMS server is used to manage the .tcw system file, perform the following steps. If a CMS server is not used, go to step 4 in this procedure.

   a. From the Tree View, right-click the system icon (the top item in the tree), select CMS and click Check Out.

   b. From the System Editor, double-click the system icon to display the System Information Editor.
c. If the Warning dialog box displays, indicating that the system was last opened with an older version of ToolboxST, click OK to continue.

4. From the File menu, click Save.

5. Close the System Information Editor.

6. From the System Editor File menu, click Save System.

7. If the Warning dialog box displays, click OK.

8. Open all system-level tools (Trends, Watch Windows, Live Views) and click Save to upgrade the tools to the new version.

9. For CMS systems, from the Tree View, right-click the system icon (the top item in the tree), select CMS and click Check In.
9.2 EX2100e and LS2100e Control Systems Upgrade with Windows 2012 R2 or Windows 10

The upgrade of an EX2100e or LS2100e control system requires that both the new and current (previous) version of the runtime be present on the workstation where the upgrade is performed. However, ControlST versions prior to V06.00.xx (with older runtimes required for upgrade) will not install on workstations with a Windows 2012 R2 operating system. Upgrade instructions for this issue are provided in this section.

9.2.1 Upgrade System on Existing Windows 7 Workstation

➢➢➢ To upgrade the system with Windows 7

1. Verify the current GE Configuration Tools Package version (with the current EX2100e and LS2100e runtime versions) is installed on the workstation.
2. Install the new GE Configuration Tools Package on the workstation. The new ToolboxST and EX2100e/LS2100e runtimes will be installed in parallel with the old versions.
3. Open the ToolboxST system, and upgrade the system including EX2100e and/or LS2100e.
4. Perform a Build and Download all components.
5. After successful upgrade, uninstall the previous version of the GE Configuration Tools Package.

9.2.2 Upgrade System on Windows 2012 R2 or Windows 10

Note This procedure involves manually copying the current EX2100e and LS2100e runtime files from a Windows 7 workstation to the Windows 2012 R2 workstation.

1. Install the new GE Configuration Tools Package on the Windows 2012 R2 workstation.
2. Install the current GE Configuration Tools Package version (with the correct current EX2100e and LS2100e runtime versions) onto a Windows 7 workstation (laptop). Verify that this version matches what is currently being used in the system.
3. Copy the Vxx.xx.xxC folders in each of the following folders on the Windows 7 workstation to the corresponding folder on the Windows 2012 R2 workstation:
   C:\Program Files (x86)\GE Energy\EX2100e Excitation Control\EX2100e
   C:\Program Files (x86)\GE Energy\EX2100e Excitation Control\EX2100e_Reg
   C:\Program Files (x86)\GE Energy\EX2100e Excitation Control\EX2100e_TSR
   C:\Program Files (x86)\GE Energy\Static Starter Control\LS2100e

Note There will be a newer Vxx.xx.xxC folder in each of the folders on the 2012 R2 workstation. Do not delete these folders. After the copy is completed there should be both an older and newer Vxx.xx.xxC folders in each of the folders listed here.

4. Open the ToolboxST system, and upgrade the system including EX2100e and LS2100e.
5. Perform a Build and Download all components.
6. Leave the older version files in place after the upgrade is completed.
9.3 Library Upgrade

**Attention**

Libraries must be upgraded before controllers can be upgraded.

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➢➢

➢➢

To upgrade the libraries

1. If CMS server is used to manage the .tcw system file, from the System Editor Tree View, right-click a library container, select CMS, then click Check Out. If a CMS server is not used, go to step 2.

2. From the System Editor Tree View, double-click a library container (CORELIB_600PC for this example) to display the Component Editor.
3. A **Warning** dialog box indicates that the system was last opened with an older version of ToolboxST. Click **OK** to continue.

4. From the **File** menu, select **Upgrade**.
5. When the *Library Version Upgrade Wizard* Welcome dialog box displays, click **Next** to continue.

![Library Version Upgrade Wizard](image)

6. The most current available version automatically displays (V06.06.00C for this example). Click **Finish** to upgrade the library.

![Library Version Upgrade Wizard](image)
7. Review all Warnings and Errors and correct as necessary.
8. Click **Save** and close the Component Editor.
9. For CMS systems, from the **Tree View**, right-click the library container, select **CMS**, and click **Check In**.
10. Repeat this procedure for the remaining library containers.
9.4 Controller Upgrade

Attention

Libraries must be upgraded before controllers can be upgraded.

Some controller components have optional libraries referenced that are not automatically upgraded. Perform the following procedure to upgrade a controller component with or without optional library references.

Attention

As of Mark VIeS V06.00.00C, the IS215UCCCS05 platform is no longer supported. Mark VIeS V05.03 is the most current firmware version that still supports the UCCx platform. Beginning with ControlST V07.02, the UCCx is installed from the ControlST DVD by selecting the ControlST Supplement Package installation option. For more information refer to the definition for ControST Supplemental Package in the table ControlST Installation Options.

➢➢

➢➢ To upgrade controller components

1. If a CMS server is used to manage the .tcw system file, from the System Editor Tree View, right-click a controller component, select CMS, and click Check Out. If a CMS server is not used, go to step 2.

2. From the System Editor Tree View, double-click a controller component to display the Component Editor.
3. A Warning dialog box displays, indicating that the system was last opened with an older version of ToolboxST. Click OK to continue.

![Warning dialog box](image)

4. From the File menu, select Upgrade. If prompted, enter the required password.

![Upgrade dialog box](image)

The Version Upgrade dialog box displays. Select the check box next to the items to upgrade. You may select individual items, or select the check box next to the column heading Item to select all items in the list for upgrade.
Do not select incompatible versions of runtime. For example, in the following illustration the yellow Caution symbol next to the new I/O pack version number indicates that the selected version is not compatible with the BPPB-based I/O packs. Unless BPPC-based I/O packs exist in the system, the system should not be upgraded to the latest version. Similarly, Mark VIeS runtime version V06.00.00C and later do not support UCCC hardware (although a yellow Caution symbol is not displayed in this illustration next to the Mark VIeS runtime version).

5. Click OK to begin the upgrade.

6. An Upgrade External Block Library dialog box displays if a newer version of a referenced external block library is available in the new installation. To continue with the upgrade, select the new version and click OK.
7. From the **Log** tab, check for errors and warnings. Errors must be corrected before proceeding to the next step of the upgrade. Review all warnings and make any corrections that are needed for your application.
8. For versions V03.06 and higher, disable the Auto-Reconfiguration feature; it was not designed to be enabled during an upgrade. From the General tab Property Editor, set the Enable Auto-Reconfiguration property to False.

9. Click the Build icon to build the controller.
10. All errors must be corrected for the build to be successful. From the Log tab, review all warnings and correct as necessary.

11. Open all tools (Trends, Watch Windows, and Live Views) and Save to upgrade to the new version.

12. Close the Component Editor.

13. Repeat this procedure for the remaining Mark Vle components, then download the controller components (refer to the section Controller Download).

9.5 I/O Pack Firmware Upgrade

As part of the ongoing support for the Mark Vle controls platform, the processor board in many I/O packs has been migrated from a BPPB to a BPPC. Refer to Service with Updated Technology Mark Vle I/O Packs Extended Product Life Cycle Support Notice (GEZ-S2026) for more details.

There are two requirements to utilize the new BPPC-based I/O packs:

- The Mark Vle system must be at ControlST V04.04.xx or later.
- The I/O pack(s) firmware must be upgraded using BPPC I/O Upgrade V05.01.05 or later. Refer to the Mark Vle and Mark VleS Control Systems Volume I System Guide (GEH-6721_Vol_I), the section Mark Vle BPPC I/O Migration Guidelines, for a detailed description of this upgrade procedure.

For I/O packs that are not yet part of the migration to BPPC form factor, refer to the ToolboxST User Guide for Mark Controls Platform (GEH-6700 or GEH-6703), the section Upgrade Component and I/O Modules.

9.6 Controller Download

Perform a Download to download the controller components.

➢➢ To download controller components

1. Open the controller component (if it is not already open).
   a. If a CMS server is used to manage the .tcw system file, from the System Editor Tree View, right-click a controller component, select CMS, and click Check Out. If a CMS server is not used, skip to step b.
   b. From the System Editor Tree View, double-click a controller component.

2. From the Component Editor toolbar, click the Download icon to download the controller using the Download Wizard.

3. The Download Mark Vle Controller dialog box displays the equality status of controllers and I/O packs and allows selection of items for download.

4. Scan for changes to download.
   a. Verify that the Scan I/O option is selected (checked). If not, select it.
   b. Click Scan.

**Note** Do not change the Download Wizard's download selections.
5. Click **Next** to continue with the download.

6. The *Download Mark Vle Controller Download Backup File* dialog box displays, indicating that a backup file will be created for recovery. Leave the **Download Backup File** option selected and click **Next** to continue.
7. Depending on if the application code contains the APP_STATE block, the Download Mark Vle Controller dialog box displays one of the following messages. Make sure the process is secure before continuing, then click **Next** to continue.

**Download Mark Vle Controller**

*Without APP_STATE Block*

*With APP_STATE Block*
8. Click **Yes** to confirm the download and begin the download process.

9. The *Controller Download Status for <component name>* dialog box displays the progress of the download. Wait for the download sequence to complete, check for any download errors, then click **Close**.

```
<table>
<thead>
<tr>
<th>Target</th>
<th>Type</th>
<th>Status</th>
<th>Progress</th>
<th>Info</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Parameters</td>
<td>Complete</td>
<td>100 %</td>
<td>Download completed.</td>
</tr>
<tr>
<td>PTCC-CA006-1J2A-A1PackR</td>
<td>Parameters</td>
<td>Complete</td>
<td>100 %</td>
<td>Download completed.</td>
</tr>
<tr>
<td>PTCC-CA006-1J3B-J8-B1PackR</td>
<td>Parameters</td>
<td>Complete</td>
<td>100 %</td>
<td>Download completed.</td>
</tr>
<tr>
<td>PTCC-CA006-1J3B-A1PackR</td>
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<td>Complete</td>
<td>100 %</td>
<td>Download completed.</td>
</tr>
<tr>
<td>PTCC-CA006-1J4A-A1PackR</td>
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<td>Complete</td>
<td>100 %</td>
<td>Download completed.</td>
</tr>
<tr>
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<td>Parameters</td>
<td>Complete</td>
<td>100 %</td>
<td>Download completed.</td>
</tr>
<tr>
<td>PTCC-CA006-1J4B-A1PackR</td>
<td>Parameters</td>
<td>Complete</td>
<td>100 %</td>
<td>Download completed.</td>
</tr>
</tbody>
</table>
```

**Attention**

Allow time for I/O packs to complete rebooting (~two minutes) after the Download Wizard indicates that the download is complete.

10. Confirm that all controllers are healthy and all I/O packs are communicating and equal. From the **Status** tab, verify that the controllers are in the Controlling state and Equal and the I/O packs are Equal.
On some systems, it is possible that not all I/O packs will be successfully downloaded on the first pass. If necessary, repeat the download scan and accept the Download Wizard’s default selections until all I/O packs are communicating and equal.

If an I/O pack is still not communicating after multiple download scans, refer to the *Mark VIe and Mark VIeS Control Systems Volume I System Guide* (GEH-6721_Vol_I), the chapter Troubleshooting, the section *Unable to Communicate with an I/O Module*. The following figure provides an illustration of an I/O pack that is not communicating.

---

11. Enable the Auto-Reconfiguration feature. (This feature was disabled in the previous procedure *Controller Upgrade* for the operator to perform a Build.) From the General tab *Property Editor*, set the *Enable Auto-Reconfiguration* property to **True**.
12. Click the **Build** icon to build the controller.

13. All errors must be corrected for the build to be successful. From the **Log** tab, review all warnings and correct as necessary.

14. Perform a **Download**. Repeat steps 2 through 9 in this procedure.

15. Confirm that all controllers are healthy and all I/O packs are communicating and equal. From the **Status** tab, verify that the controllers are in the Controlling state and Equal and the I/O packs are Equal. On some systems, it is possible that not all I/O packs will be successfully downloaded on the first pass. If necessary, repeat the download scan and accept the Download Wizard’s default selections until all I/O packs are communicating and equal as shown in the following figure.

16. For CMS systems, from the **System Editor Tree View**, right-click the controller component, select **CMS** and click **Check In**.

17. Repeat this procedure for all controllers.
9.7 WorkstationST Device Upgrade

After all libraries and controller components have been upgraded, use the following procedure to upgrade the WorkstationST devices in ToolboxST.

➢ To upgrade WorkstationST devices

1. If the WorkstationST Status Monitor, WorkstationST Alarm Viewer, and Trender features are currently configured to display non-English text, refer to the section Multi-language Support. If not, proceed to step 2.

2. If a CMS Server is used to manage the .tcw system file, check out the system. From the System Editor Tree View, right-click the WorkstationST device, select CMS, and click Check Out.

3. From the ToolboxST System Editor Tree View, double-click the WorkstationST device.

4. From the Component Editor toolbar, click the Download icon. If any modification exists since the last download, click OK to also perform a Build.

![Device DocTeamMachine has changed since the last build. Would you like to build?](image)

![Welcome to the WorkstationST Download wizard. This wizard will guide you through downloading the WorkstationST configuration to a PC running the WorkstationST service. The first step is to select which components are to be downloaded. The next page of the wizard contains a tree of downloadable targets. The tool will perform a scan of the system and automatically select the ones that it determines need to be downloaded. You may override the selected downloads by clicking on the check boxes.](image)

Click Next.
5. Click **Finish**.

6. When the download is complete, click **Go Online**.

7. If CIMPLICITY project is used, perform steps 7 and 8. If not, go to step 9. After the HMI Device is online, the HMI importer runs to populate and/or update the CIMPLICITY project. From the **InfoView Status** tab, the HMI item displays *HMI Importer is Running*.

8. After the HMI Importer is complete, a time stamp is recorded. From the **InfoView Status** tab, the HMI item displays *HMI Importer is Ready to Import*.
9. If a backup copy of the Status Monitor, Alarm Viewer, and Trend translated Resource DLL folders was created in step 1, refer to the section Multi-language Support to restore the folders. If not, go to step 2.

10. For CMS systems, check in the .tcw system file. From the System Editor Tree View, right-click the HMI component, select CMS and click Check In.

11. Repeat this procedure for all WorkstationST devices (HMIs and Historians) applicable to the upgrade.

### 9.8 Post Upgrade

After the installation is complete and the upgrade process has been performed on all libraries, controllers, I/O packs, and HMIs, perform the following checks:

- Forced Variable checks: Generate a forced variable report as performed in the section Pre-upgrade System Data Collection. Compare both reports. Restore any necessary forces that were initially identified if necessary.
- Non-volatile RAM checks: Generate a Non-volatile RAM report as performed in the section Pre-upgrade System Data Collection. Verify the values are retained.
- Control Constant reports: Generate a new control constant report as performed in the section Pre-upgrade System Data Collection. Check for differences with the previous report (before upgrade). Correct any differences if necessary.
- Capture Totalizer Data checks: Generate Totalizer data as performed in the section Pre-upgrade System Data Collection. Check for differences with the data (before upgrade). Correct any differences if necessary.
- If a GE Historian exists, ensure it is collecting data from the upgraded controllers.
- Verify the reference HMI components are exchanging data.
- Verify any third-party communication such as GSM, Modbus, and OPC devices.

### 9.9 Uninstall Previous ControlST Version

Attention

When a system has a new EX2100e or LS2100e controller, you must have the old version runtime software present with the new version runtime software for an upgrade to be performed. Once upgrade is completed the old software can be removed.

➢➢➢ To remove the previous (older) version of ControlST

**Note** Before continuing, refer to section Known Issues (Version-specific Upgrade Requirements), item D, regarding ARES blocks.

1. From the Start menu, select Settings, click Control Panel, and double-click Add or Remove Programs or Uninstall a Program (depends on the Windows OS).

2. Select GE Configuration Tools Package (or in older versions GE ControlST Package) and click Remove.

3. When the removal is complete, close the Add or Remove Programs window.

4. When backups were made of translated Resource DLL folders, after completing ControlST installation, refer to the section Multi-language Support to restore the translated Resource DLLs prior to continuing with the upgrade process.

5. Repeat the installation and removal for all HMIs that require a ControlST upgrade.

**Note** Remember to install the Hart Message Server and CMS Server on appropriate computers as you continue the upgrade process.
10 Multi-lingual Support

Attention

This process must be done on each HMI that uses non-English displays before beginning the upgrade process.

Note The folder name containing the translated resource DLLs is based on the Language Culture Name. For example, for resource DLLs translated into French (Luxembourg) the folder name is fr-LU, and for resource DLLs translated into Spanish (Peru) the folder name is es-PE.

Note The ControlST Software Suite features are installed in the following location: C:\Program Files (x86)\GE Energy.

➢➢ To back up the translated Resource DLL folders for multi-language display

Each language folder contains several files that end with .resources.dll extension. It may also contain the application name>Dictionary.txt file, a tab-separated value file that contains the string translations used to create the .resource.dll files. It may also contain a translated online help manual that has a .chm extension.

1. For the WorkstationST Status Monitor create a backup of the folder:
   Program Files (x86)\GE Energy\WorkstationST Features\<language culture name>
   or
   Program Files (x86)\GE Energy\WorkstationST Features\<language culture name>

2. For the WorkstationST Alarm Viewer create a backup of the folder:
   Program Files (x86)\GE Energy\WorkstationST Alarm Viewer\<language culture name>
   or
   Program Files\GE Energy (x86)\WorkstationST Alarm Viewer\<language culture name>
3. For the T render create a backup of the folder:

```
Note
For ControlST versions prior to V06.02, the T render files were located in the following location:
Program Files (x86)\GE Energy\ToolboxST\Vxx.xx.xx\OperatorTools\<language culture name>
```

Program Files (x86)\GE Energy\T renderST\<language culture name>
or
Program Files (x86)\GE Energy (x86)\T renderST\<language culture name>

4. Install the ControlST Software Suite. Refer to the section Platform Software Upgrade for further details on upgrade installation.

After installation is complete, perform the following procedure to restore the translated Resource DLL folders before continuing with the upgrade process.

```
Attention
This process must be done on each HMI that uses non-English displays.
```

➢➢➢ To restore the translated Resource DLL folders from the backup location for Multi-language display

1. Restore the WorkstationST Status Monitor Resource DLLs from the backup folder to:
   Program Files (x86)\GE Energy\WorkstationST Features\<language culture name>
   or
   Program Files (x86)\GE Energy (x86)\WorkstationST Features\<language culture name>

2. Restore the WorkstationST Alarm Viewer Resource DLLs from the backup folder to:
   Program Files (x86)\GE Energy\WorkstationST Alarm Viewer\<language culture name>
   or
   Program Files\GE Energy (x86)\WorkstationST Alarm Viewer\<language culture name>

3. Restore the T render Resource DLLs from the backup folder to:
   Program Files (x86)\GE Energy\T renderST\<language culture name>
   or
   Program Files (x86)\GE Energy\T renderST\<language culture name> where Vxx.xx.xxC is the version of the application just installed.

After restoring the Resource DLLs the user may see non-translated strings in the WorkstationST Status Monitor, WorkstationST Alarm Viewer, or T render if these strings were added or changed in the application in a software release that occurred after the Resource DLLs were created.
Language Culture Names
The following table lists the available cultures and subcultures. The Name column contains names used as the Language component of all file names and used as directory names that contain resource files for that culture.

*Note* Right-to-left languages are not supported.

<table>
<thead>
<tr>
<th>Display Name</th>
<th>Name</th>
<th>Display Name</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afrikaans</td>
<td>af</td>
<td>Lao (Lao P.D.R.)</td>
<td>lo-LA</td>
</tr>
<tr>
<td>Afrikaans (South Africa)</td>
<td>af-ZA</td>
<td>Latvian</td>
<td>lv</td>
</tr>
<tr>
<td>Albanian</td>
<td>sq</td>
<td>Latvian (Latvia)</td>
<td>lv-LV</td>
</tr>
<tr>
<td>Albanian (Albania)</td>
<td>sq-AL</td>
<td>Lithuanian</td>
<td>lt</td>
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<td>Alsatian (France)</td>
<td>gsw-FR</td>
<td>Lithuanian (Lithuania)</td>
<td>lt-LT</td>
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<td>Amharic (Ethiopia)</td>
<td>am-ET</td>
<td>Lower Sorbian (Germany)</td>
<td>dsb-DE</td>
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<td>Armenian</td>
<td>hy</td>
<td>Luxembourgish (Luxembourg)</td>
<td>lb-LU</td>
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<td>Armenian (Armenia)</td>
<td>hy-AM</td>
<td>Macedonian</td>
<td>mk</td>
</tr>
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<td>as-IN</td>
<td>Macedonian (Former Yugoslav Republic of Macedonia)</td>
<td>mk-MK</td>
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<td>az-Cyr-AZ</td>
<td>Malay (Brunei Darussalam)</td>
<td>ms-BN</td>
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<tr>
<td>Azeri (Latin, Azerbaijan)</td>
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<td>Malay (Malaysia)</td>
<td>ms-MY</td>
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<td>eu-ES</td>
<td>Maori (New Zealand)</td>
<td>mi-NZ</td>
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<td>be</td>
<td>Mapudungun (Chile)</td>
<td>arm-CL</td>
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<td>mr</td>
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<td>Marathi (India)</td>
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<td>Mongolian</td>
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<td>or-IN</td>
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<td>pl-PL</td>
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11 Known Issues (Version-specific Upgrade Requirements)

Check for the issues with the currently installed version listed in the following table during ControlST upgrade.

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<thead>
<tr>
<th>Currently Installed Version</th>
<th>Known Issue(s)</th>
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Known Issues:

A. Issue: Signed/Unsigned
   Applies to: ControlST V02.01 or below, upgrading to any later version
   Description: The ToolboxST application allows connections between INTs and UINTs, LINTs and ULINTs, DINTs and UDINTs
   Action: Upgrading a configuration that was saved with ToolboxST application V02.01.13C or earlier might give build errors because variables of incompatible data types are connected. The configuration will have to be changed to use variables of the same type, or use MOVE blocks to convert signed variables to unsigned or vice-versa.

B. Issue: TRN_DLY block
   Applies to: ControlST V03.02 or below, upgrading to V03.03 through 04.03 (fixed in V04.04)
   Description: When building an application with a TRN_DLY block where the N_DELAY pin is set to 1 or 0, the validation may fail with the error Required pin does not have connection LIST.
   Action: Create a new variable of type REAL and attach it to the TRN_DLY block’s LIST pin.

C. Issue: I/O pack corruption
   Applies to: Any ControlST software suite version being upgraded
   Description: If power is turned off to panel while an I/O pack download is in progress, the pack may become corrupted and require replacement.
   Action: Do not turn power off to the panel while performing an I/O pack download. Always check the ToolboxST application screens to verify the download is complete prior to turning power off.

D. Issue: MPC ARES Block (when to uninstall old version)
   Applies to: ControlST V03.01 or below, upgrading to V03.02 (fixed in V03.03)
   Description: When upgrading a system to ControlST V03.02, the upgrade might fail because of referenced ARES and MPC block libraries.
   Action: When upgrading a system to ControlST V03.02, leave the old version of the ControlST software suite installed until AFTER the upgrade is complete.
E. Issue: Installing the WorkstationST application without the ToolboxST application  
Applies to: Any ControlST version upgrading to V04.03 R2 (fixed in V04.04)  
Description: When installing the WorkstationST application without the ToolboxST application from the ControlST DVD V04.03 R2, the OPC DA Server feature does not work correctly with the Alarm Server.  
Action: There are two ways to fix this issue. Either install the ToolboxST application, or run the vcredit_x86.exe file (provided in the install package). A computer restart is not required.

F. Issue: WorkstationST Web  
Applies to: ControlST V04.03 or below, upgrading to V04.04 or later  
Description: The WorkstationST Web subsystem uses the Microsoft® ASPX .NET framework to provide web pages containing real time and historical data. The ControlST V04.04 has switched from using .NET version 2.0 to using .NET version 4.0. This means it is necessary to tell the Microsoft Web Server to launch the programs under the .NET 4.0 framework instead of the .NET 2.0 framework. The WorkstationST Web subsystem is primarily used on the OSM to provide information via web pages, it is seldom used on an HMI. If you are not using the WorkstationST Web subsystem you do not need to make this change.  
Action: The definition of which .NET version to use is an attribute in the Microsoft Internet Information Server (IIS) settings. The location of this setting is slightly different for different operating systems. For full installation details, refer to the WorkstationST Web View Instruction Guide (GEI-100661). The following summary shows the setting that needs to be changed when updating from versions prior to V04.04.

Windows XP

- Open the Control Panel, select Administrative Tools and Internet Information Service.
- Select the entry for local computer - Web Sites - Default Web Site - scripts - Wkstn-aspx.
- Right-click on the above entry and select Properties.
- From the ASP.NET tab, set the ASP.NET version to V4.0.30319.
- Click OK and exit the application.

Windows Server 2003 R2

- Open the Control Panel, select Administrative Tools and Internet Information Service (IIS) Manager.
- Select the entry for local computer - Web Sites - Default Web Site - scripts - Wkstn-aspx.
- Right-click on the above entry and select Properties.
- From the ASP.NET tab, set the ASP.NET version to V4.0.30319.
- Click OK and exit the application.

Windows 7

- Open the Control Panel, select Administrative Tools and Internet Information Service (IIS) Manager.
- Select the entry for local computer - Web Sites - Application Pools.
- Right-click on the entry for WorkstationST AppPool and select Basic Settings.
- In the .NET Framework Version entry select .NET Framework V4.0.30319, click OK and exit the application.
G. Issue: Windows 2000 operating system obsolescence
   Applies to: ControlST V03.06 or below, upgrading to V04.00 or later
   Description: The ControlST Software Suite releases beginning with V04.00.xx will no longer run on the Microsoft Windows 2000 operating system. The Controls CoE NPI team has determined this step is necessary to allow future ControlST software suite releases to take advantage of technological improvements in more recent operating systems. Subsequent attempts to install new releases of the ControlST Software Suite onto Windows 2000 operating systems will be prevented.
   Action: Upgrades to ControlST V04.00 or later require HMI or operating system upgrades on Windows 2000-based HMIs.

H. Issue: Removal of previously installed versions of the WorkstationST application is required prior to installation of a new version.
   Applies to: ControlST V03.02 or below, upgrading to a newer release of V03.02 or below (fixed in V03.03)
   Description: For currently installed WorkstationST application V03.02 or below, it is required that the existing version of the WorkstationST application be removed prior to installing an upgraded version from the ControlST DVD.
   Action: Remove the previously installed version of the WorkstationST application prior to installation of a new version. Refer to the procedure To remove the previous installation of WorkstationST.

I. Issue: Installing the MATLAB application and the GE Simulink Block Library.
   Applies to: Any ControlST version upgrading to V04.00 or later.
   Description: When installing ControlST V04.00 or later, the MATLAB application must be installed before installing the GE Simulink Block Library.
   Action: Install the MATLAB application before installing the GE Simulink Block Library.

J. Issue: Control watchdog protection
   Applies to: Any ControlST software suite version upgrading to V04.04 or later.
   Description: With ControlST V04.04, the controller watchdog (ContWdog) is now always enabled and must be driven. After upgrading, existing systems that do not drive ContWdog will trip and produce a diagnostic alarm (Alarm 108: Control Watchdog Protection Activated).
   Action: Include a DEVICE_HB block in an application blockware task that is scheduled at frame rate. Connect the Out signal on the DEVICE_HB block to a DINT variable. Go to the Hardware tab and select the PPRO module. In the Variables tab, locate the signal ContWdog and connect that signal to that same variable.

K. Issue: SYS_OUTPUTS block build error
   Applies to: ControlST V04.02 (or below) upgrading to V04.03 or later
   Description: Prior to ControlST V04.03, a controller configuration could have more than one SYS_OUTPUTS block. When you upgrade to V04.03 (or later) if a configuration has more than one SYS_OUTPUTS block, a new build error Only one SYS_OUTPUTS block is allowed in a controller displays.
   Action: Remove one of the SYS_OUTPUTS blocks.
L. Issue: Logic not visible in device
   Applies to: ControlST V03.01 (or below) upgrading to V03.02 or later
   Description: When upgrading a library with passwords and then instancing, logic in the device logic is no longer visible without entering a password.
   Action: Contact Controls COE to update library with Inhibit scripts.

M. Issue: Compress EGD pages
   Applies to: ControlST V04.03 or below, upgrading to V04.04 or later
   Description: Starting in ControlST V04.04, the Removed Unused Variables option during instance will possibly remove variables that would not be removed during an instance in V04.03 and earlier. When this Instancing feature is set to True variables will be removed from EGD if they are not used in the Device on Hardware or Software tabs during the instance. This can cause the need for EGD compress if instance is performed after upgrade to V04.04.
   Action: Compress EGD, build and download, if required.
   Other controllers without Dynamic Binding capability may require download because of EGD signature changes.

N. Issue: Alarm Server and Network Monitor incompatibility issues during the upgrade phase
   Applies to: ControlST V03.06, V04.00, and V04.01 upgrading to V04.02 or later
   Description: The Alarm Server stops working during the upgrade process. Due to communication protocols established in V03.06, the Network Monitor version installed with V03.06, 04.00, and 04.01 is only compatible with the same version of the Alarm Server (they use the same alarm message protocol). The alarm message protocol was changed in V04.02, which causes the Alarm Server to be unable to decode Network Monitor messages correctly when the Network Monitor and Alarm Server are running different versions.
   Action: When performing a system upgrade temporarily stop the Network Monitor, or disable the Alarm Server connection to the Network Monitor, until both the Network Monitor and Alarm Server workstations have been upgraded.

   Applies to: Any ControlST version upgrading to V04.04 or later
   Description: Prior to ControlST V04.04, the listed variables could be written to. Starting with ControlST V04.04 any attempt to write to the listed variables produces a build error.
   Action: Do not write to the listed variables. If this condition already exists, correct it.
**P. Issue:** Observe the following warning message after all I/O packs have been upgraded: *Warning, 1:55:06 PM, The IONet is set to Broadcast. To switch to Multicast, perform a Compress Distributed I/O.*

**Applies to:** Any ControlST version upgrading to V04.06 or later.

**Description:** Prior to ControlST V04.06, the controller’s I/O outputs were broadcast on the IONet. Starting with ControlST V04.06, the ToolboxST application is able to configure the controller to send multicast outputs. This can ONLY be done after all I/O packs on the IONet have been upgraded to support multicast, and a compress I/O (restart required) has been performed. This will ensure that all I/O packs are capable, and then downloaded and restarted using the multicast address scheme.

**Action:** After receiving this warning, perform the recommended compress I/O when the controllers and I/O packs can be restarted safely.

---

**Q. Issue:** Any Rate of Change analog alarm of data types other than REAL and LREAL will get a build error when upgraded to ControlST V04.06 or later

**Applies to:** Any ControlST version upgrading to V04.06 or later.

**Description:** Prior to ControlST V04.06, the Rate of Change analog alarm was allowed regardless of the data type. Starting with ControlST V04.06, the Rate of Change analog alarm is only allowed if the alarm variable type is REAL (single precision floating point) or LREAL (double precision floating point). This is to prevent possible Alarm Chattering caused by the use of other data types.

**Action:** Upon receipt of the build error (or prior to upgrading to ControlST V04.06), locate the Rate of Change analog alarm(s) using data types other than REAL or LREAL and delete or make corrections as necessary.

---

**R. Issue:** N-TRON® 508FX2 IGMP Snooping feature

**Applies to:** Any ControlST version upgrading to V04.06 or later.

**Description:** The IONet is an Ethernet communications network used between controllers and distributed I/O modules. It sends and receives broadcast and/or multicast packets. The N-TRON 508FX2 switch is a managed switch with an IGMP Snooping feature. If this switch is used with this feature enabled, it compromises the transmission of multicast packets on the IONet.

**Action:** Disable the IGMP Snooping feature. Refer to the procedure *To resolve the IONet switch issue.*
S. **Issue:** The ToolboxST application may stop working while navigating the FOUNDATION fieldbus blocks on an F809F H1 device (Windows Style 'ToolboxST has Stopped Working' APPCRASH). Exception Code: 0xC0000005

**Applies to:** Any ControlST version upgrading to V04.07.03 or later.

**Description:** Viewing live parameters from the hardware tab for the F809F device can cause the ToolboxST application to stop working and must be closed. This problem occurs when there are multiple revisions of the F809F (rev 2) and F809F-Plus (rev 3) device. The following message displays:

![ToolboxST has stopped working dialog box](image)

An application event will be logged as follows:

![Event Viewer](image)

**Action:** Delete one of the revisions of the F809F device. For example, delete all the F809F (rev2) devices and then unimport the DD files. Refer to the procedure [To delete and un-import the F809F (rev 2) device](#).
**Issue:** Excessive Alarms and Events configurations will not generate a Build error.

**Applies to:** Any ControlST version upgrading to V04.04 to V05.02.

**Description:** Beginning with ControlST V04.04 and prior to V05.04.01C, the Process Alarm and Events limits defined in the controller firmware were not aligned with the ToolboxST build rules and the controller fails to download considering the limits were exceeded. These limits in runtime were aligned with the ToolboxST build rules to produce Build errors beginning in V05.04.01C and higher.

**Action:** When upgrading to ControlST V04.04 to V05.02, check that the Build rules to ensure the controller configurations do not exceed the following limits:
- Configured Process Alarms and Holds limit = 4,096 maximum
- Configured Holds limit = 512 maximum
- Configured Events limit = 2,048 maximum

If these limits are exceeded, reduce the number of Process Alarms and Events, Holds, and Events.

➢➢ **To remove the previous installation of WorkstationST**

1. From the Start menu select Settings, click Control Panel, and double-click Add or Remove Programs.
2. Select GE WorkstationST Package and click Remove.
3. Close the Add or Remove Programs window after completion.

➢➢ **To resolve the IONet switch issue**

1. Connect a computer to the serial port on the N-TRON 508FX2 switch.

   **Model No. 508FXE2-A-SC-40**

   ![Diagram of N-TRON 508FX2 switch]

   - Front View
   - Side View
   - DB9 socketed connector
   - USB connection to computer
   - Example: Keypem® by Tripp Lite USA-19HS Hi-Speed USB Serial Adapter
   - GE Part#: 342A4931ABP2 – Straight-through DB9 socketed connector
   - Cat 5e cable
   - GE Part#: 342A4931ABP3 – Straight-through DB9 pin connector

2. From the Windows HyperTerminal utility, establish a link to the switch using this configuration:
   - 9600 baud
   - 8 bits
   - no parity
   - 1 stop bit
3. Apply power to the switch.
4. Verify that the HyperTerminal application displays as follows:
5. Press Esc to enter the Command Line Interpreter mode.

6. When prompted, enter admin for both the User Name and Password.

7. Enter the following commands:
   - Switch
   - igmp
   - disable
   - /

   **Note** The “/” command will take the user back to root.

8. Cycle power to the switch.
9. Verify that the configuration of switch is as follows:

<table>
<thead>
<tr>
<th>Configuration Parameter</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Test &amp; System Initialization Complete</td>
<td>OK!</td>
</tr>
<tr>
<td>N-TRON Industrial Ethernet Switch - Model Number</td>
<td>508FX2-A</td>
</tr>
<tr>
<td>N-Tron firmware version</td>
<td>9.53 (03)</td>
</tr>
<tr>
<td>Copyright (c) 2003-2007 N-TRON</td>
<td></td>
</tr>
<tr>
<td>MAC ADDRESS</td>
<td>00-07-AF-01-8B-67</td>
</tr>
<tr>
<td>N-View is ENABLED.</td>
<td></td>
</tr>
<tr>
<td>Trunking (Link Aggregation) is DISABLED.</td>
<td></td>
</tr>
<tr>
<td>Mirroring is DISABLED.</td>
<td></td>
</tr>
<tr>
<td>Tagged QOS is ENABLED.</td>
<td></td>
</tr>
<tr>
<td>Port QOS is DISABLED.</td>
<td></td>
</tr>
<tr>
<td>VLAN is DISABLED.</td>
<td></td>
</tr>
<tr>
<td><strong>IGMP Snooping is DISABLED.</strong></td>
<td></td>
</tr>
<tr>
<td>Aging is ENABLED.</td>
<td></td>
</tr>
<tr>
<td>Managing IGMP Snooping</td>
<td></td>
</tr>
</tbody>
</table>
➢ To delete and un-import the F809F (rev 2) device

1. Remove F809F from the list of imported devices.

   From the controller Hardware tab View menu, select FOUNDATION Fieldbus DD Manager.

   From the DD Importer, locate the F809F item, click to select the Action box, and click Remove.
From the DD Importer, the F809F item now displays as Available, but is no longer Imported.

2. From the Component Editor toolbar, click the Build icon.
3. Click the Download icon.
4. Click the Save icon.
5. Close and reopen the ToolboxST application.
12 Upgrade Rules (Version-specific)

The following table lists the upgrade rules that apply to specific products during ControlST upgrade. The Product column lists the product that has new upgrade rules. The Product Version column lists the version of the product that has new upgrade rules. The Upgrade Rule column describes the actions performed during product version upgrade.

<table>
<thead>
<tr>
<th>Product</th>
<th>Product Version</th>
<th>Upgrade Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMVP</td>
<td>Firmware V04.07.00C</td>
<td>The following I/O point changes will occur upon upgrade of the PMVP module:</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Previous I/O Point Name</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>L25 BYPASS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L25 BYPASS2</td>
</tr>
<tr>
<td>PPRA</td>
<td>Firmware V04.07.00C</td>
<td>The following I/O point changes will occur upon upgrade due to new configuration options available for the PPRA module:</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Previous I/O Point Name</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PR1A_SPEED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PR2A_SPEED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PR3A_SPEED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PR1B_SPEED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PR2B_SPEED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PR3B_SPEED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>REPEATERFLT</td>
</tr>
<tr>
<td>WETA</td>
<td>Firmware V04.07.00C</td>
<td>AnalogInput01 through AnalogInput12 I/O points have a new default configuration value as follows:</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Previous Configuration Value</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unused</td>
</tr>
<tr>
<td>PVIBH1B</td>
<td>Firmware V05.01.00C</td>
<td>Manual reconfiguration steps are required by the user during this upgrade. Refer to the Mark Vle and Mark Vle Control Systems Volume II General-purpose Applications System Guide (GEH-6721_Vol_II) for detailed upgrade instructions.</td>
</tr>
<tr>
<td>YVIBS1B</td>
<td>ControlST 6.01 or later</td>
<td>Beginning with ControlST V06.01, compatibility for the S1B version of these of these I/O packs (BPPC versions) is added. However, do not upgrade an S1A (BPPB) version) beyond firmware V04.06.03C.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Back up the ToolboxST system (.tcw) file prior to any upgrade.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All I/O packs attached to a single terminal board must be the same hardware revision.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Manual reconfiguration steps are required by the user during this upgrade. Refer to GEH-6721_Vol_II for detailed upgrade instructions.</td>
</tr>
<tr>
<td>YAICSIB, YDIAS1B, and YDOAS1B</td>
<td>ControlST 6.01 or later</td>
<td>Beginning with ControlST V06.01, compatibility for the S1B version of these of these I/O packs (BPPC versions) is added. However, do not upgrade an S1A (BPPB) version) beyond firmware V04.xx.xxC.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Back up the ToolboxST system (.twc) file prior to any upgrade.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All I/O packs attached to a single terminal board must be the same hardware revision.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to GEH-6721_Vol_II for more information.</td>
</tr>
</tbody>
</table>

13 Downgrade Considerations

Consider the following points when downgrading a ControlST system or component software or firmware:

- A project (.tcw file) is tied to a branch of ControlST
- Upgrades of ControlST projects are supported and thoroughly tested
- Downgrades of ControlST projects and/or components are not supported or tested