

LabVIEW™ Datalogging and Supervisory Control Module Run-Time System Release Notes

Version 7.0

Welcome to the LabVIEW Datalogging and Supervisory Control (DSC) Module Run-Time System. This document describes installation, new features, upgrading, and known issues for version 7.0. For recent information not included in these release notes, refer to the `dscrt_readme.txt` file.

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System Requirements

The DSC Module Run-Time System runs on any system with the following minimum specifications:

- Windows NT 4.0 or Windows 2000/XP/Me/98. If you are running Windows NT, you need service pack 6a and the 6a Security Rollup Package, which are included in the July 26, 2001 security update available at www.windowsupdate.com.
- 128 MB of RAM minimum, 256 MB recommended.
- 200 MHz or higher processor speed, 500 MHz recommended.
- 400 MB of disk space to install the DSC Module Run-Time System and have swap space available. Increasing your computer resources has a significant effect on performance of DSC Module applications.
- 800 × 600 or better monitor display.

Compatibility Issues

Citadel Database Compatibility

This version of the DSC Module Run-Time System includes Citadel 5, a new version of the historical database. The DSC Module Run-Time System version 7.0 logs to and retrieves from Citadel 5 databases only. You must convert existing databases to Citadel 5 if you want to use them with the new DSC Module Run-Time System. Refer to the [Convert Citadel Databases](#) section for information about converting your databases.

Installation

Before You Install

- Make sure that you meet the system requirements listed in the [System Requirements](#) section of this document.
- If you have a previous version of the DSC Module Run-Time System installed, either uninstall that older version or plan to install this version into a different directory.
- If you want to preserve custom settings used in your previous version of the DSC Module Run-Time System, save all `.ini` and `.cfg` files in the `LabVIEW 6.x` directory to a backup location, then copy them to the relevant location after installing version 7.0.
- If you have Microsoft SQL Server version 6.5 or earlier on your computer, you must upgrade to Microsoft SQL Server version 7.0 or later before installing the DSC Module Run-Time System.
- Under Windows Me/98, you cannot browse OPC server computers across the network unless the Remote Registry Service is installed. For more information about installing Remote Registry Service, refer to the Microsoft Web article about how to install remote administration services.

Installing the DSC Module Run-Time System

Complete the following steps to install the DSC Module Run-Time System.

1. Insert the DSC Module Run-Time System CD in your CD-ROM drive.
2. Run the installer. Run `x:\setup.exe` where `x` is the letter of your CD-ROM drive.
3. Follow the onscreen instructions.
4. Restart your computer and log on to your computer as an administrator. When you reboot, the MSDE setup might take awhile.

Additional Installations

In addition to the DSC Module Run-Time System itself, you might need to install additional drivers or data servers for use with your application software. Refer to the documentation for your application software for installation instructions.

Install the Application Software

Follow the instructions provided by the system developer for installing the application software. After installing the files, note the location of the `.scf` and `.ccdb` files.

Update Preference Files

Refer to the documentation for your application software to ensure any specific preference files for the application are placed in the correct locations. These files contain non-default settings for DSC Module utilities. You can edit these files with a simple text editor such as Notepad. Specific instructions about these preference files should be included with your application software.

Finish Server Setup

If you are using National Instruments IAS/IAK device servers, you might need to resolve the paths to the servers stored in the `.ccdb` file. Use the Server Explorer to do this. The Server Explorer is installed when you install the DSC Module Run-Time System. Start the Server Explorer from your Windows program menu or from the Tag Configuration Editor, select **File»Open**, locate the `.ccdb` file for your application software, and choose **File»Set this file as Active CCDB**.

VI-based servers (if used by your application) provide their own Server Registration VIs.

Configure LabVIEW Startup

Launch the DSC Module Run-Time System. The first time you run it, you might want to configure one or more startup VIs. These startup VIs are the user interface panels that appear when you launch the DSC Module Run-Time System. Select **Tools»DSC Module»Advanced»Startup VIs** from your application. Use the Configure Startup VIs dialog box to locate the appropriate startup VIs, as identified in your application software documentation.

If your application starts the Tag Engine when it launches, and the servers are not registered properly, you will receive error messages identifying the servers that did not start. Consult your application software documentation for more information about which servers are required, and how to register them.

Uninstalling the DSC Module Run-Time System

To uninstall this DSC Module Run-Time System, select **Start»Settings»Control Panel»Add/Remove Programs**. Select **National Instruments Software** and choose to remove the **NI LabVIEW DSC Run-Time System 7.0**.

New Features for Version 7.0

The following sections describe changes to existing features and new features available in this version of the DSC Module Run-Time System.

Citadel 5 Database

The DSC Module Run-Time System version 7.0 includes Citadel 5, a new version of the Citadel historical database. Citadel 5 introduces data access from ADO clients and improved ODBC support.

Database Names

Citadel 4 identified databases exclusively by their path; Citadel 5 now uses database names. Because of the new Citadel 5 format, the Historical Data VIs have been modified, the Tag Configuration Editor uses a new `.scf` file format, the ODBC data source setup has changed, and the Historical Data Viewer has been updated.

Conversion to Citadel 5 Format

The DSC Module Run-Time System version 7.0 logs to and retrieves from Citadel 5 databases only. You must convert existing databases to Citadel 5 if you want to use them with the new DSC Module Run-Time System. Refer to the [Convert Citadel Databases](#) section for information about converting databases.

Time Zones and Daylight Savings Time Information

As with Citadel 4, times in Citadel 5 are stored in UTC (Coordinated Universal Time). In addition to this, the DSC Module Run-Time System Tag Engine and Citadel 5 now store the time zone with every point and alarm logged, which allows you to determine the local time when the point was logged. This addresses problems of both data logged in another time zone and daylight savings time (CST and CDT are considered two different time zones in this scheme). You can get this information using extra columns in the SQL query.

Citadel 5 ODBC Data Source

As with Citadel 4, you must have an ODBC data source for Citadel 5 as described in the *LabVIEW Datalogging and Supervisory Control Module Run-Time System Help*. However, the following changes have been made to the **National Instruments Citadel ODBC Setup** dialog box:

- ODBC setup now asks for a **Database URL** instead of a database path. **Database URL** is the computer and database name where data for the source are stored, for example `\\computer_name\my_database`. **Database URL** should match the existing local or remote database you intend to access.
- The ... button allows you to browse local and remote databases.
- The **Test Connection** button allows you to test the connection you are setting up.

Expanded Access to Citadel 5 Data

The Citadel 5 ODBC driver is compliant with SQL 92 and ODBC 2.5 standards. All clients that follow these standards can retrieve data from a Citadel 5 database. ADO clients now can use the ODBC driver through the Microsoft OLE DB Provider for ODBC Drivers to access the Citadel 5 database. You can use the MS Query wizard to build queries.

Creating a Data Link for the ODBC Data Source

If you want to access Citadel data from an ADO client, you need a data link to ODBC. You might be able to create the data link from within your ADO client, but you might be required to create it multiple times. Alternatively, complete the following steps to create a data link once that can be stored anywhere on your system or network.

1. Create a Citadel 5 ODBC data source, if you have not already done so.
2. Create a new text (.txt) document.
3. Right-click the new text document and rename it to have a .udl extension, for example `data_link.udl`. A warning might appear, explaining that changing file extensions could cause files to become unusable. Disregard this warning.
4. Right-click the .udl file and select **Properties**. In the dialog box that appears, click the **Provider** tab and select **Microsoft OLE DB Provider for ODBC Drivers**.
5. Click the **Connection** tab and select your Citadel 5 ODBC data source name.
6. Click the **OK** button.

Citadel 5 Tables

Citadel 5 tables are different than Citadel 4 tables. For more information about Citadel 5 tables, refer to the [Update SQL Queries](#) section of this document.

New Version of Historical Data Viewer

The Historical Data Viewer that comes with this version of the DSC Module Run-Time System allows you to view both Citadel 4 and Citadel 5 databases in Measurement & Automation Explorer (MAX). It also allows you to convert Citadel 4 databases to the new Citadel 5 format. In addition, navigation tools have been added for easier viewing of data sets.

Revised Historical/Event Logging Configuration

Citadel 5 databases are identified by names instead of paths. So now when you select **Configure»Historical** in the Tag Configuration Editor, a **Name** field is included in the dialog box. For Citadel databases that have not been converted to the new Citadel 5 format, the DSC Module Run-Time System creates a name for the database using its path and underscores.

You must give each Citadel 5 database a unique name/path pair. For example, you can have a database named Db1 on multiple computers, but you cannot have two databases named Db1 on the same computer. Database name/path pairs are checked for conflicts whenever you configure historical or event logging and when the Tag Engine launches.

When you open a .scf file created in a previous version of the DSC Module, you are prompted to convert it and its associated databases to the new format. For more information about converting databases, refer to the [Convert Citadel Databases](#) section.

Tag Monitor Enhancements

Tag Monitor has the following additional features:

- New display columns—**Tag Name** and **Read/Write Attributes**.
- New selections available in the **Options** menu—**Type Mismatch Checking**, **XX for Bad Quality**, **Hex for Raw Data**, **Set Decimal Places**, and **Select Columns**.

Change in Bad Quality Status

The error status for application-defined quality is now a warning instead of an error. For example, a thermocouple out-of-range state from FieldPoint is now a warning and not a bad-quality error.

Changes to NI Services

This version of the DSC Module Run-Time System includes a new version of the Citadel service, which appears as **National Instruments Citadel** in Windows **Services** and `nicitd15.exe` in the Task Manager. To start and stop this or other NI services, use Windows **Services** available in the **Control Panel**.

Change to Default Source of Time Stamps

By default, time stamps logged to Citadel with this version come from the system clock of the computer running the Tag Engine instead of from the server. To have time stamps come from the server, change the `DSCEngine.ini` setting `Use Server Timestamps` to `TRUE`. Because changing this setting could result in larger Citadel databases, NI recommends keeping the default value.

Upgrading Existing DSC Module Applications to 7.0

After installing version 7.0 of LabVIEW and the DSC Module Run-Time System, follow the instructions in this section to ensure a smooth conversion of your existing DSC Module applications.

Recompile VIs

To run an application created in a previous version of the DSC Module or BridgeVIEW, the application VIs must be recompiled in order to upgrade them to version 7.0. Recompiling VIs requires development versions of both LabVIEW 7.0 and the DSC Module 7.0.

Convert .scf Files

When you use the Tag Configuration Editor to open a `.scf` file created in a previous version of the DSC Module, a conversion wizard launches and leads you through the process of converting your `.scf` file. The wizard also gives you the option of converting existing Citadel 3.x or 4 databases that are associated with that `.scf` file. If the Tag Engine attempts to access a `.scf` file that has not yet been converted, an error is returned.

The conversion wizard saves a renamed backup of the original `.scf` file to the same location as the new, converted `.scf`.

Convert Citadel Databases

The DSC Module Run-Time System version 7.0 logs to and retrieves from Citadel 5 databases only. You must convert existing databases to Citadel 5 if you want to use them with the new DSC Module Run-Time System.

Databases Associated with a .scf File

When you open a .scf file created in a previous version of the DSC Module, a conversion wizard launches. After converting the .scf, the wizard gives you the option of converting existing Citadel 3.x or 4 databases that are associated with that .scf file.



Caution NI recommends using the default conversion options. If you must save the converted database to a location other than the default path due to a shortage of hard drive space, for example, your application might not work.

If you attempt to log data from a converted application without first converting the database to Citadel 5, the DSC Module Run-Time System creates a new, empty Citadel 5 database in the same location as the Citadel 4 database and logs data to that new database. To get all the logged data back into one database after that happens, you must use the Historical Data Viewer to convert the Citadel 4 database and then merge it with the new Citadel 5 database.

Databases Not Associated with a .scf File

If you choose not to convert a Citadel database when the wizard asks you, or if you have an existing database that is not associated with a converted .scf file, you can convert the database using the Historical Data Viewer. Click the Historical Data Viewer button, shown at left, in the DSC Module Run-Time System window. In the window that opens, right-click the **Historical Data** category, select **Create New** from the shortcut menu, then choose the appropriate conversion in the dialog box that appears. If you cannot locate the database you want to convert, you might need to create a Citadel 4 version of it in Historical Data Viewer before choosing to convert it to Citadel 5.



Remote Databases

You cannot convert a database remotely, or over the network. You must convert it on the computer where it exists.

Converted Alarms

Alarm priorities logged by version 6.x of the DSC Module Run-Time System ranged from 0–10, and those values are retained when converted from Citadel 4 to Citadel 5 format. Alarm priorities logged to Citadel 5 from version 7.0 of the DSC Module Run-Time System range from 0–15.

Redirect NI HyperTrend and HTV to Citadel 5 Data

If your application uses the NI HyperTrend control, right-click the control on the front panel and select the tags to display so that data is retrieved from the converted Citadel 5 database instead of the Citadel 4 database.

If your application uses Historical Trend Viewer (HTV), launch HTV and reselect the tags to display so that data is retrieved from the converted Citadel 5 database instead of the Citadel 4 database.

Create a New ODBC Data Source

For more information about creating an ODBC data source for Citadel 5, refer to the [Citadel 5 ODBC Data Source](#) section of this document.

Update SQL Queries

If you have existing SQL queries for retrieving historical data, you must convert them for use with Citadel 5. Refer to Tables 1 and 2, which detail the difference in Citadel 4 and Citadel 5 queries.

Table 1. Changes in Citadel Tables

Citadel 5 ODBC Driver	Citadel 4.x ODBC Driver	Description
Aliases	N/A	Aliases table is used to map alias names to actual tag names.
RawData	Points	RawData table is used to retrieve the actual values logged for a tag and times they were logged. You can query only one tag at a time.
IntData	Traces	IntData table is used to retrieve interpolated values. You can query more than one tag at a time.
DS_RawData_ <i>dataset_name</i>	N/A	DS_RawData_ <i>dataset_name</i> table is used to retrieve the actual values logged for a tag, times, and particular data set where logged. You can query only one tag at a time.
DS_IntData_ <i>dataset_name</i>	N/A	DS_IntData_ <i>dataset_name</i> table is used to retrieve the interpolated values for a particular data set. You can query more than one tag at a time.

For more information about each Citadel 5 database table, refer to the *LabVIEW Datalogging and Supervisory Control Module Run-Time System Manual*, `dsc_rts.pdf`, in the LabVIEW DSC Run-Time System 7.0\manuals folder.

Citadel 5 Transform Functions

Transform functions have changed with Citadel 5, as shown in Table 2.

Table 2. Changes in Transform Functions

Citadel 5 ODBC Driver	Citadel 4.x ODBC Driver	Description
MATH_MIN(<i>tag</i> TO_DISCRETE(<i>tag</i>) TO_CONTINUOUS(<i>tag</i>))	MIN(<i>tag</i>)	Returns the minimum for <i>tag</i> across the interval.
MATH_MAX(<i>tag</i> TO_DISCRETE(<i>tag</i>) TO_CONTINUOUS(<i>tag</i>))	MAX(<i>tag</i>)	Returns the maximum for <i>tag</i> across the interval.
MATH_AVG(<i>tag</i> TO_DISCRETE(<i>tag</i>) TO_CONTINUOUS(<i>tag</i>))	AVG(<i>tag</i>)	Returns the average for <i>tag</i> across the interval.
MATH_STDEV(<i>tag</i> TO_DISCRETE(<i>tag</i>) TO_CONTINUOUS(<i>tag</i>))	STDEV(<i>tag</i>)	Returns the standard deviation for <i>tag</i> across the interval.
MATH_STARTS(<i>tag</i> TO_DISCRETE(<i>tag</i>) TO_CONTINUOUS(<i>tag</i>))	STARTS(<i>tag</i>)	Returns the number of starts (that is, the number of transitions from OFF to ON) for <i>tag</i> across the interval. For numeric points, 0.0 is interpreted as OFF, and all other numbers are treated as ON.
MATH_STOPS(<i>tag</i> TO_DISCRETE(<i>tag</i>) TO_CONTINUOUS(<i>tag</i>))	STOPS(<i>tag</i>)	Returns the number of stops (that is, the number of transitions from ON to OFF) for <i>tag</i> across the interval.
MATH_ETM(<i>tag</i> TO_DISCRETE(<i>tag</i>) TO_CONTINUOUS(<i>tag</i>))	ETM(<i>tag</i>)	Returns the amount of time <i>tag</i> was in the ON state across the interval.
MATH_QUAL(<i>tag</i> TO_DISCRETE(<i>tag</i>) TO_CONTINUOUS(<i>tag</i>))	QUAL(<i>tag</i>)	There might be gaps in the historical data traces in Citadel because of machine shutdown, Tag Engine shutdown, or similar occurrences. MATH_QUAL returns the ratio of time for which valid data exist for <i>tag</i> across the interval to the length of the interval itself. If valid data exist for only one-half of the interval, MATH_QUAL returns 0.5.

Table 2. Changes in Transform Functions (Continued)

Citadel 5 ODBC Driver	Citadel 4.x ODBC Driver	Description
TO_DISCRETE(<i>tag</i>)	N/A	Casts current <i>tag</i> type to discrete (that is, the <i>tag</i> is treated as discrete).
TO_CONTINUOUS(<i>tag</i>)	N/A	Casts current <i>tag</i> type to continuous (that is, the <i>tag</i> is treated as continuous).

Standard set functions (MIN, MAX, AVG, COUNT) are supported and you can use them on any Citadel 5 table. It is important to distinguish between set functions MIN, MAX, AVG, and Citadel 5 transform functions MATH_MIN, MATH_MAX, MATH_AVG. Set functions perform calculations on query results. Transform functions perform calculations on interpolation intervals.

Tag names are forced into an accepted format by replacing characters within the names with the characters in Table 3.

Table 3. Special Access SQL Characters

Special Character	Converted Character
period (.)	at sign (@)
forward slash (/)	backslash (\)

Long Tag Names and Aliases

Database tables and column names can be only up to 126 characters long and cannot contain some special characters. Some ODBC clients support names only up to 62 characters long. The database URL is not included in a tag or data set name. The Citadel 5 driver automatically generates alias names for tags or data sets whose names are longer than the **Maximum Column Name Length** value specified in the ODBC configuration dialog box. *Alias* names consist of a prefix and original tag or data set name substring, so the total length of the alias string is equal to the **Maximum Column Name Length** value. An alias prefix has the format ~XXXXXXXXXXXXXXXXXX_ where XXXXXXXXXXXXXXXXXXXX is 64-bit tag or data set ID.

Reimport FieldPoint Configuration

If you communicate with FieldPoint in your DSC Module application using the FieldPoint IAK server, sometimes referred to as the FieldPoint LabVIEW DSC Server or the FieldPoint VI-Based Server, complete the following steps after upgrading to version 7.0 of the DSC Module Run-Time System.

1. Uninstall FieldPoint Explorer if you are using a version earlier than 3.0.1.
2. Download and install a more recent version of FieldPoint Explorer.
 - If you install FieldPoint version 3.0.1 or 3.0.2, mass compile the FieldPoint IAK server (the contents of the <LABVIEW>_servers\FieldPoint folder), and export your configuration to the DSC Module Run-Time System by selecting **BridgeVIEW»Export to BridgeVIEW** from FieldPoint Explorer.
 - If you install FieldPoint version 4.0, save a backup of the .scf file then revise it to use the FieldPoint OPC Server, in one of two ways:
 - Use the Tag Configuration Wizard to generate a new set of tags using the National Instruments.OPCFieldPoint server.
 - Edit the configuration of each FieldPoint tag—on the **Connection** tab, change the **Server Name** to National Instruments.OPCFieldPoint. Add the tag to an **I/O Group**, and select the appropriate **Item**.

Known Issues

For recent known issues not included in these release notes, refer to the `dscrt_readme.txt` file. This version of the DSC Module Run-Time System has the following known issues.

Installation

`cwui.ocx` cannot be registered on a Windows XP computer that has Crystal Report 8 installed. Complete the following steps to work around the problem by granting the user full access to the `cwui.ocx` type library registry key and its subkeys.

1. Open the registry editor and select the `cwui.ocx` key, `HKEY_LOCAL_MACHINE\SOFTWARE\Classes\TypeLib\{D940E4E4-6079-11CE-88CB-0020AF6845F6}`.
2. Select **Edit»Permissions** and select the appropriate user.

3. Click the **Advanced** button, click the **Edit** button, make sure all permissions are set, and click the **OK** button.
4. Enable the **Replace permission entries** option and click the **Apply** button.
5. From a command prompt, run `regsvr32 cwui.ocx` to manually register `cwui.ocx`.

Data Logging and Retrieval

- Quitting the Tag Engine using the Task Manager can corrupt the Citadel database.
- Database names cannot contain certain characters. They must contain only characters A–Z, a–z, 0–9, and the underscore character (_).
- Periodically, you might see CPU usage at 100% due to Citadel and SQL services, even when there are no clients present.
- Converting a large (2 GB or more) Citadel 4 database to Citadel 5 is slow.
- In Historical Data Viewer, A&E Views might not work after a destructive database archive.
- When changing a HyperTrend y-axis **Minimum** and **Maximum**, the **Apply** button does not work; clicking the **OK** button applies the change. When changing a HyperTrend x-axis **Width**, you must right-click the HyperTrend and select **Restore X Axis Width** from the shortcut menu to apply the change.
- If a remote database connection is lost while your client computer is in hibernation mode, an NI HyperTrend display on the client computer might hang.
- If you try to configure data sets when the Tag Engine is running, you can select tags only from the `.scf` file being used by the Tag Engine.
- If the network connection is lost while performing an archive operation to a remote computer, the operation times out and is aborted instead of waiting for communication to be reestablished.
- Historical Data Viewer does not display remote alarms unless the remote computer is on the same Windows domain.

OPC

- In Server Explorer or Server Browser, browsing to remote OPC servers might not work for certain operating systems.
- Even when an OPC server has items “off scan,” the Tag Engine can connect to the items and the `.scf` file sets initial values for the items.

- The OPC Demo server might not correctly unload when the Tag Engine stops. Exit LabVIEW to unload the server.
- In Server Explorer, you might receive error 0x80080005 when trying to launch the OPC LabVIEW server.
- The Tag Engine might not shut down as expected after OPC clients are disconnected. If the OPC Server goes down, and you try to shut down the Tag Engine on the client computer, the Tag Engine might appear to hang. However, it is waiting for the timeout period and will shut down after the timeout period, which is about three minutes.
- If you get the message **Error Connecting Network Registry** when attempting to browse OPC server computers across the network under Windows Me/98, you must install the Remote Registry Service. For more information about installing Remote Registry Service, refer to the Microsoft Web article about how to install remote administration services.

Communication and Dialog Boxes

- If data is being written to the Tag Engine while an application is reading a trend with a large number of samples (100,000 or more) in a tight loop, the read might fail.
- When you attempt to start or stop the Tag Engine from the Engine Manager window, certain error messages might be placed under the Engine Manager window where they cannot be seen.
- The DSC Module Run-Time System might not correctly report bad status for disconnected or unavailable FP-1600 modules.
- Tag control values might reset to 0 instead of the LabVIEW default value, last value held, or last value logged.

Tag Monitor

In Tag Monitor, denying read privileges causes a **Quality** of access denied for write-only tags. The read/write column values also might not be accurate.

ICU License-ICU 1.8.1 and Later

The DSC Module Run-Time System uses code from the International Components for Unicode (ICU) libraries, for which the following license applies. Refer to oss.software.ibm.com/icu/ for more information about the ICU libraries.

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More Information and Updates

For information on DSC Module Run-Time System updates and changes in the future, visit ni.com/labviewdsc.

To download the newest patches and other updates, visit ni.com/downloads.



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