

LabVIEW™ Datalogging and Supervisory Control Module Release Notes

Version 7.0

Welcome to the LabVIEW Datalogging and Supervisory Control (DSC) Module, the LabVIEW solution for distributed data logging and monitoring needs. This document describes installation, known issues, new features, upgrade steps, and more for the DSC Module version 7.0. For recent information not included in these release notes, refer to the `dsc_readme.txt` file.

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System Requirements

The DSC Module 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, 256 MB recommended.
- 200 MHz or higher processor speed, 500 MHz recommended.
- 800 MB of disk space to install LabVIEW and the DSC Module 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

This version of the DSC Module requires LabVIEW version 7.0.

If you are upgrading from a previous version of LabVIEW, your existing VIs are automatically converted and compiled when you open them, and you are prompted to save. A VI saved in the DSC Module version 7.0 no longer loads in an earlier version.

Citadel Database Compatibility

This version of the DSC Module includes Citadel 5, a new version of the historical database. The DSC Module 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. Refer to the [Convert Citadel Databases](#) section for information about converting your databases.

NI-DAQ Software Compatibility

If you want to use NI-DAQ with this version of the DSC Module, you can use either Traditional NI-DAQ or NI-DAQmx, but not both at the same time. If you use Traditional NI-DAQ, you can use DAQ OPC. You cannot use NI-DAQmx with OPC. To use NI-DAQmx, you must use the DAQ VIs with memory tags. To make this process easy, you can automatically generate these memory tags from your NI-DAQmx configuration using the Tag Configuration Editor's Import DAQ Memory Tags feature.

If you have trouble with a Traditional NI-DAQ application after upgrading to this version of the DSC Module, make sure the DAQ OPC server is installed. Perform a custom installation from the NI-DAQ installation CD to install DAQ OPC; the DSC Module installation CD does not include the DAQ OPC server.

Installation

Before You Install

- Before you install the DSC Module, you must have already installed LabVIEW 7.0. If you reinstall LabVIEW 7.0 after installing the DSC Module, you must reinstall the DSC Module.
- 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 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, 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 want to preserve custom images you have stored in Image Navigator, back up your custom `.cat` files before upgrading to version 7.0 of the DSC Module.
- 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.
- 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

Complete the following steps to install the DSC Module.

1. Install LabVIEW 7.0 if you have not already done so. Refer to the LabVIEW installation instructions for help.
2. Restart your computer. You must restart after installing LabVIEW and before installing the DSC Module.
3. Insert the DSC Module CD in your CD-ROM drive.
4. Run the installer. Run `x:\setup.exe` where `x` is the letter of your CD-ROM drive.
5. Follow the onscreen instructions.
6. Restart your computer and log on to your computer as an administrator. When you reboot, the MSDE setup might take awhile.
7. (Optional) Launch LabVIEW and change the default palette view to access the DSC Module palettes: select **Tools»Options**, select **Control/Function Palettes** in the pull-down menu, and choose the **Advanced** palette view. The DSC Module palette icon is shown at left.



Uninstalling the DSC Module

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

Citadel 5 Database

The DSC Module 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 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. 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 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 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, though 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.

Revised Historical Data VIs

In this version of the DSC Module, several of the VIs on the Historical Data palette have been revised as follows:

- New time stamp type—Doubles that were formatted as **show date & time** have been replaced by the LabVIEW time stamp type.
- Read Trace and Read Traces VIs are now polymorphic for output trace type and include a new **timeout** parameter.
- Read Trace and Read Traces VIs now allow interpolation. Previously, the **interpolate through gaps** parameter for read trend VIs, if set to TRUE, removed gaps/breaks. The **interpolate data** subparameter in the **options** parameter now calculates interpolations, which can slow down data retrieval. To only remove gaps/breaks in this version, use the **option** parameter's **remove data breaks** subparameter instead.
- A **maintain trending info** option has been added for the Read Trace and Read Traces VIs. If this option is set to TRUE, the returned trace includes the first data point before **start timestamp** and the last data point after **stop timestamp**. If the option is set to FALSE, the returned trace includes only points between the start and stop time stamp.
- The new Detach Database VI allows you to programmatically remove the logical connection between the DSC Module and a Citadel database. You might want to detach a database to have the flexibility to move or rename database files without causing errors. Also, you should detach all local databases before renaming your computer. A detached database does not show up in the Citadel 5 Universe tree view in Historical Data Viewer.
- The Make Network Path VI and Split Network Database Path VI are gone from the palette, since database paths are no longer used.
- The VIs have new icons.

If you have an existing application that uses previous versions of the Historical Data VIs, you do not need to replace them unless you want to take advantage of the new functionality. However, previous Historical Data VIs are renamed automatically to `Legacy_old_VI_name.vi` when detected in version 7.0.

Table 1. Comparison of Historical Data VIs

| Version 6.x VI | Version 7.0 VI |
|------------------|-----------------|
| — | Create Database |
| — | Detach Database |
| Archive Database | Archive Traces |
| Call HTV | Call HDV |

Table 1. Comparison of Historical Data VIs (Continued)

| Version 6.x VI | Version 7.0 VI |
|--------------------------------------|----------------------------------|
| Compact Database | Compact Database |
| Decimate Historical Trend | Decimate Trace |
| Decimate Historical Trends | Decimate Traces |
| Delete Traces | Delete Traces |
| Get Historical Tag List | Get Trace List |
| Get Historical Trend Info | Get Trace Info |
| Get Trace Names | Get Trace List |
| Historical Trend Statistics | Get Trace Statistics |
| Historical Trend to Spreadsheet | Write Traces to Spreadsheet |
| Historical Trend to Spreadsheet File | Write Traces to Spreadsheet File |
| Launch MAX HDV | Call HDV |
| Make Database Network Path | — |
| Read Historical String Trend | Read Trace (String) |
| Read Historical String Trends | Read Traces (String) |
| Read Historical Trend | Read Trace |
| Read Historical Trend | Read Trace (Bit Array) |
| Read Historical Trend | Read Trace (Logical) |
| Read Historical Trend | Read Trace (Numeric) |
| Read Historical Trends | Read Traces |
| Read Historical Trends | Read Traces (Bit Array) |
| Read Historical Trends | Read Traces (Logical) |
| Read Historical Trends | Read Traces (Numeric) |
| Rename Traces | Rename Historical Data |
| Split Network Database Path | — |

Revised Historical Alarm and Event VIs

In the DSC Module version 7.0, several VIs on the **Alarm & Events** palette have been revised as follows:

- The format of returned alarms has changed to provide additional data.
- The A&E Query to Spreadsheet VI now allows either text or HTML output format and allows you to define a header, footer, and delimiter.
- The alarm and event queries support more advanced filtering.
- The Make Network Path VI and Split Network Database Path VI are gone from the palette, since database paths are no longer used.
- The VIs have new icons.

If you have an existing application that uses previous versions of the Alarms & Events VIs, you do not need to replace them unless you want to take advantage of the new functionality. HIST Alarm & Event Query and HIST Alarm & Event Query To Spreadsheet File will be renamed automatically to `Legacy_old_VI_name.vi` when detected in version 7.0.

Table 2. Comparison of Historical Alarm and Event VIs

| Version 6.x VI | Version 7.0 VI |
|--|---|
| Acknowledge Alarm | Acknowledge Alarm |
| Archive Alarms and Events | Alarm & Event Archive |
| Get Alarm Summary Status | Get Alarm Summary Status |
| HIST Alarm & Event Query | Alarm & Event Query |
| HIST Alarm & Event Query to Spreadsheet File | Alarm & Event Query to Spreadsheet File |
| Make Network Database Path | — |
| Read Alarm Summary | Read Alarm Summary |
| Read Event History | Read Event History |
| Read Tag Alarm | Read Tag Alarm |
| Split Network Database Path | — |

The legacy HIST Alarm & Event Query to Spreadsheet File VI no longer supports **timeout**, **table** or **multicolumn listbox**, or **colors** parameters. If you wire values to any of these parameters, you get a warning that the features are no longer supported. In addition, you still see any errors from the query. The new Alarm & Event Query to Spreadsheet File VI also does not support these three parameters.

Revised Data Set Logger VIs

This version of the DSC Module includes changes to the Data Set Logger VIs, as follows:

- **database path in** is now **database URL**.
- New time stamp type—Doubles are replaced by the LabVIEW time stamp type.
- New **timeout** parameter.

If you are updating an existing DSC Module application that uses Data Set VIs, you must right-click them on the block diagram and choose to replace them with the legacy version available in `legacy.llb` in the `vi.lib\lvdsc\servers\Data Set Logger` directory. The format of the legacy VIs is `legacy_old_name.vi`. These legacy VIs have the new functionality but use previous inputs and outputs.

If you are not upgrading an existing application that uses Data Set VIs, use the new Data Set VIs.

Other VI and Palette Changes



- The DSC Module controls and VIs are accessible through the new DSC Module icon, shown at left.
- In this version of the DSC Module, the Tag control is located on the **DSC Module** controls palette rather than the **I/O** controls palette.
- The **Tags** palette includes a new **Tag Name to DataSocket URL** function.
- The Get Logging Status VI on the **System** palette has a new **logging databases** parameter.

New Version of Historical Data Viewer

The Historical Data Viewer that comes with this version of the DSC Module 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 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.

Enhanced HMI Wizard for Historical Trends

When you right-click a Historical Trend and launch the HMI Wizard, you now can select tags from either a database or a `.scf` file, which is convenient if you have not yet logged data.

New Version of Image Navigator

The Image Navigator that comes with the DSC Module version 7.0 contains over 4,000 symbols. It includes many new symbols, new categories, improvements to existing graphics, broader support for various file types, and feature enhancements such as drag-and-drop.

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**.

New Examples

The DSC Module version 7.0 comes with additional examples to help you develop your application more quickly and easily. The new examples include common DSC Module tasks. All examples are accessible in the NI Example Finder tool by selecting **Help»Find Examples**.

Most examples specifically designed for use with the DSC Module make use of signal generation VIs available only in LabVIEW Advanced Analysis Libraries. These libraries are not included in the LabVIEW Base Package. Therefore, the example Demo server will not provide data for the examples when the DSC Module is installed with the LabVIEW Base Package.

Online Documentation Enhancements

The DSC Module version 7.0 comes with a Bookshelf in PDF format so that you can search National Instruments product documents installed on your computer. To access the Bookshelf PDF, select **Help»Search the DSC Module Bookshelf** in LabVIEW. You must have Adobe Acrobat Reader version 5.05 or later with Search and Accessibility to use the search functionality. Refer to the Adobe Systems Incorporated Web site at www.adobe.com to download Acrobat Reader.

The *LabVIEW Help* includes the following updates for this version of the DSC Module:

- Merged help—Use the *LabVIEW Help* to learn about the DSC Module features. You can access the *LabVIEW Help* by selecting **Help»VI, Function, & How-To Help** in LabVIEW.
- VI icon parameter links—When you click an input or output parameter in the help, the help topic jumps to the description of the parameter in the scrolling region.
- Place VIs from help—Click either the **Place on the block diagram** button or **Find on the Functions Palette** button in a VI reference topic and switch back to LabVIEW to place the VI on the block diagram.

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 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, follow the instructions in this section to ensure a smooth conversion of your existing DSC Module applications.

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 Launch Engine VI 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 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.

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. 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, you might need to make minor changes to your application.

If you attempt to log data from a converted application without first converting the database to Citadel 5, the DSC Module 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 in MAX. In LabVIEW, select **Tools»DSC Module»View Historical Data**.

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 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 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.

Check for Nondefault Conversion Issues

If you chose not to use the default values while converting a Citadel database, or if you renamed a database after conversion, verify that any VI parameters such as **Citadel path in**, **source Citadel path**, **database path**, **data directory**, **network path**, and so on, point to the new database location or name.

If you renamed or moved a `.scf` file after conversion and your application includes the Call HTV VI, verify that the **scf path** parameter of that VI points to the file correctly.

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 3 and 4, which detail the difference in Citadel 4 and Citadel 5 queries.

Table 3. 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 PDF of the *LabVIEW Datalogging and Supervisory Control Module Developer Manual*, `dsc_dev.pdf`, in the `LabVIEW 7.0\manuals` folder.

Citadel 5 Transform Functions

Transform functions have changed with Citadel 5, as shown in Table 4.

Table 4. 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. |

Table 4. Changes in Transform Functions (Continued)

| Citadel 5 ODBC driver | Citadel 4.x ODBC Driver | Description |
|--|-------------------------|--|
| 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. |
| 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 5.

Table 5. 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.

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 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**.

Special Upgrade Notes for BridgeVIEW Users

The following special topics apply when upgrading directly from BridgeVIEW to this version of the DSC Module.

Major Interface Changes

Whereas BridgeVIEW was a stand-alone software package, the DSC Module is an add-on to LabVIEW. The items on the BridgeVIEW **Project** menu now appear in the LabVIEW **Tools»DSC Module** menu. DSC Module tools are concentrated in this menu. The controls, indicators, VIs, and functions that come with the DSC Module are added to the LabVIEW controls and functions palettes. The Tag Engine, the next generation of the BridgeVIEW engine, is how the DSC Module manages data.

IAK/IAS Servers

NI recommends that instead of the old IAK (IAS) servers, you use the National Instruments Lookout Protocol Drivers OPC Server or the OPC servers for NI-DAQ, National Instruments FieldPoint, and National Instruments Foundation Fieldbus. For more information about converting your application so that it does not use IAK (IAS) servers, refer to the NI Developer Zone at ni.com/zone.

Importing Tags

Open the Tag Configuration Editor and select **File»Import Network Tags**. In the dialog box that appears, you can browse to a `.scf` file on any computer on your network and import tags from that file into your local `.scf` file.

You also can use this dialog box to import tags from a remote computer using BridgeVIEW 2.x networking. This option is provided for compatibility with BridgeVIEW 2.x networking, but NI recommends converting to the latest National Instruments Logos networking when possible.

You also can access this option in the Tag Configuration Editor with BridgeVIEW compatibility pre-selected by selecting **Configure»Network»BridgeVIEW 2.x Networking»Import Network Configuration**.

If you have enabled BridgeVIEW 2.x networking in your Tag Configuration Editor, the **Advanced** button on the **Configure Network Access** dialog box is enabled. Click this button in the dialog box to launch a **Network Settings** dialog box. These settings apply only to BridgeVIEW 2.x networking.

Converting Network Protocol

In the Tag Configuration Editor, select **Configure»Network»Convert Network Protocol** to convert the currently loaded .scf file from BridgeVIEW 2.x network tags to DSC Module Logos tags.

The DSC Module makes use of the Logos communications protocol, an internal National Instruments technology for rapid and reliable transmission of data across your network and between applications running on one computer. You will occasionally encounter the term Logos in data addressing and browsing activities, and might find the term used in URLs for data connections.

Adjusting Security Levels

BridgeVIEW offered up to 255 security levels. The DSC Module offers 11 levels, ranging from 0 to 10. The DSC Module does not depend on security levels, however, and discourages their use. Instead, NI recommends that you use access rights to configure access to controls and indicators.

Importing Security User Accounts

You can import your BridgeVIEW user accounts into the User Account Manager. If it is not already running, open the National Instruments User Account Manager by selecting **Tools»DSC Module»Security»Edit User Accounts**. Then select **User»Import BridgeVIEW User Accounts**.

A dialog box appears asking you whether the user accounts you want to import are from BridgeVIEW 1.0, 1.1 or later, a BridgeVIEW 2.0 binary export, or a BridgeVIEW text export file. Select the correct option to complete importing your user information.

When the DSC Module's User Account Manager imports user accounts from BridgeVIEW, it maps the security levels as shown in the Tables 6 and 7.

Table 6. BridgeVIEW Default Security Level Conversions

| BridgeVIEW Default Security Level | User Account Manager Security Level |
|--|--|
| 0 | 0 |
| 25 | 1 |
| 50 | 2 |
| 100 | 4 |
| 150 | 6 |
| 200 | 8 |
| 255 | 10 |

Table 7. BridgeVIEW Security Range Conversions

| BridgeVIEW Security Level Range | User Account Manager Security Level |
|--|--|
| 0 | 0 |
| 1-38 | 1 |
| 39-63 | 2 |
| 64-89 | 3 |
| 90-114 | 4 |
| 115-140 | 5 |
| 141-165 | 6 |
| 166-191 | 7 |
| 192-216 | 8 |
| 217-242 | 9 |
| 243-255 | 10 |

Known Issues

For recent known issues not included in these release notes, refer to the `dsc_readme.txt` file. This version of the DSC Module 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 an NI HyperTrend y-axis **Minimum** and **Maximum**, the **Apply** button does not work; clicking the **OK** button applies the change. When changing an NI HyperTrend x-axis **Width**, you must right-click the NI HyperTrend and select **Restore X Axis Width** from the shortcut menu to apply the change.

- If you already have a data set tag in your current `.scf` file and you create a new Data Set Logger configuration, your tag to the newly created data set might not be valid; if you look under **Connections** you might find it not connected to anything. To fix this problem, restart LabVIEW.
- 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

- You experience a hang or error when launching NI-DAQ or the DAQ OPC server. A work-around solution is described in the NI KnowledgeBase on ni.com, *Unusual Error Messages Loading, Executing, or Debugging Application When Using NI-DAQ 6.x*.
- 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 (by selecting **Tools»DSC Module»Advanced»Server Browser»Network OPC Servers**), 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.

DSC Module VIs, 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.
- With **extrapolate to now** set to TRUE and **interpolate through gaps** set to FALSE, Read Historical Trend(s) VIs extrapolate the last good value to now, even if the tag status has gone bad.
- A **Can't connect to Lookout** error occurs if the HMI Wizard is used to create a front panel DataSocket item and the VI is set to run when opened. To avoid this error, first open LabVIEW then open and run the VI.
- The DSC Module 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.
- The Tag Status Handler VI does not support positive user-defined error codes. If any user-defined error code has a positive value, the default LabVIEW error message is used.
- The polymorphic Read Trace VI might not automatically change type when you wire in a certain data type. To select the correct type, right-click the VI on the block diagram and choose **Select Type** from the shortcut menu.

Tag Monitor

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

More Information and Updates

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

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