

3 Connection to Chromatography System Lost

3.1 Reason message appears

The `Connection to Chromatography System Lost` message appears in the Message Center and in a pop-up window in Empower software because of one of the following conditions:

- The Empower Instrument Server executable file (`InstrumentServer.exe`) closes unexpectedly.
- A network problem occurs between an Empower Run Samples, QuickStart, or Walk Up application and the acquisition node that is running `InstrumentServer.exe`.

3.2 Background

`InstrumentServer.exe` is an Empower application that runs on an acquisition node, commonly referred to as a LAC/E module or acquisition client, and communicates with chromatographic instruments and other Empower nodes, such as clients, the database, and the Empower file share.

`InstrumentServer.exe` uses several types of communication, including the types listed below:

1. The chromatographic system connection, which communicates between `InstrumentServer.exe` and the following Empower applications: Run Samples, QuickStart, Configuration Manager, and Walk-Up.
2. Writing chromatographic raw data to the Empower file share. This type of communication uses Waters Service as a proxy user instead of an Empower user account because no Empower users can directly write or modify raw data on the file share.
3. The Oracle connection to the database server, which enables Empower to write acquisition metadata into the database.

The `Connection to Chromatography System Lost` message appears when there is an issue with type 1 communication. This message will display in Run Samples, QuickStart, and the Walk-Up interface as a pop-up message. The same message is posted to the Message Center. In Configuration Manager, this type of issue will cause a `COM Fatal error` pop-up message to be displayed.

When such an issue occurs, all active chromatographic systems connected to the acquisition node can be affected. There are different reasons for this occurrence, as listed in the example scenarios below. Acquisition may stop in certain circumstances; however, this occurrence does not result in the loss of data under general use conditions.

When issues prevent communication types 2 and/or 3, acquisition goes into buffering mode. A `Connection to Chromatography System Lost` message does not appear unless there is also a type 1 communication issue. During data buffering, data continues to be acquired locally on the acquisition node. Once connectivity is restored, a data recovery process automatically pushes the raw data to the Empower file share. This situation does not result in the loss of data under general use conditions. For more information on data buffering, see the Waters Acquisition Buffering Tech Note at <http://www.waters.com/waters/support.htm?lid=10168834&type=TECN>.

Example Scenarios

Root causes of errors in a particular environment require investigation and characterization of corresponding user activity, chromatographic instrument status, and network status, as well as correlation with other messages that occurred at the time.

The `Connection to Chromatography System Lost` message is not related to buffering mode, but the same network issue that causes buffering can also cause this message. A loss of connection between the client running an Empower application (Run Samples, QuickStart, and the Walk-Up interface) and the acquisition node is the cause of the connection lost message on that client. A loss of connection between the acquisition node and the database server or between the acquisition node and the file share is the cause of buffering.

The `Connection to Chromatography System Lost` message is seen on the Empower client in the following scenarios, although not exclusively:

- Network connectivity to the acquisition node is lost, or is unacceptably slow, due to severe network latency. In this scenario, the `InstrumentServer.exe` application on the acquisition node cannot communicate with Empower applications on the client and cannot move acquired data to the file share. In this scenario, the acquisition node goes into buffering mode and acquisition continues. Ultimately, the local data on the acquisition node is recovered and moved to the Empower file share once network connectivity is restored. No data is lost once recovery completes.

Note: This scenario can be demonstrated by removing the network cable on the acquisition node (the one providing network connectivity, not the one connected to the chromatographic instruments) to confirm that no data loss occurs.

- Network connectivity to the client is lost or is unacceptably slow due to severe network latency. In this scenario, the `InstrumentServer.exe` application on the acquisition node cannot communicate with Empower applications on the client, but the acquisition node continues to communicate with the Oracle database and the file share. The client cannot be used to view data that is actively being acquired; however, as long as the acquisition node is not affected, acquisition continues as usual (that is, buffering mode does not occur) and there is no risk of lost or missing data. Because the client does not have a connection to the Empower database, activities that require retrieval of data from the database (most activities) cannot be done on the client until network connectivity is restored.

Note: This scenario can be demonstrated by removing the network cable on the Empower client to confirm that no data loss occurs.

- The `InstrumentServer.exe` application closes unexpectedly due to an anomaly in the application or supporting libraries. If this situation occurs, any data acquisition currently running on that acquisition node stops. Data that has been acquired up to this point is not lost.
- Security software such as an anti-virus program running in the background identifies `InstrumentServer.exe` as an imposter file and either removes it or quarantines it. When this situation occurs, any data acquisition currently running on the acquisition node stops and cannot be restarted. Data that has been acquired up to this point is not lost.

Note: Lack of network connectivity of the Empower database or file share will not cause the `Connection to Chromatography System Lost` message.

3.3 Troubleshooting

To resolve the `Connection to Chromatography System Lost` problem, you must determine if there is a problem with network connectivity or if the `InstrumentServer.exe` application closed unexpectedly.

To determine if there is a problem with network connectivity between the acquisition node and the client, open a Command Prompt on the client, use the Windows ping utility to determine if you can reach the acquisition node on the network, and then do the following:

- If ping reports an error, contact your network administrator to determine if there is a network connectivity issue at your company.
- If ping succeeds, there is network connectivity. If the problem was caused by instrument server closing on the acquisition node, Waters Service automatically restarts the `InstrumentServer.exe` application.

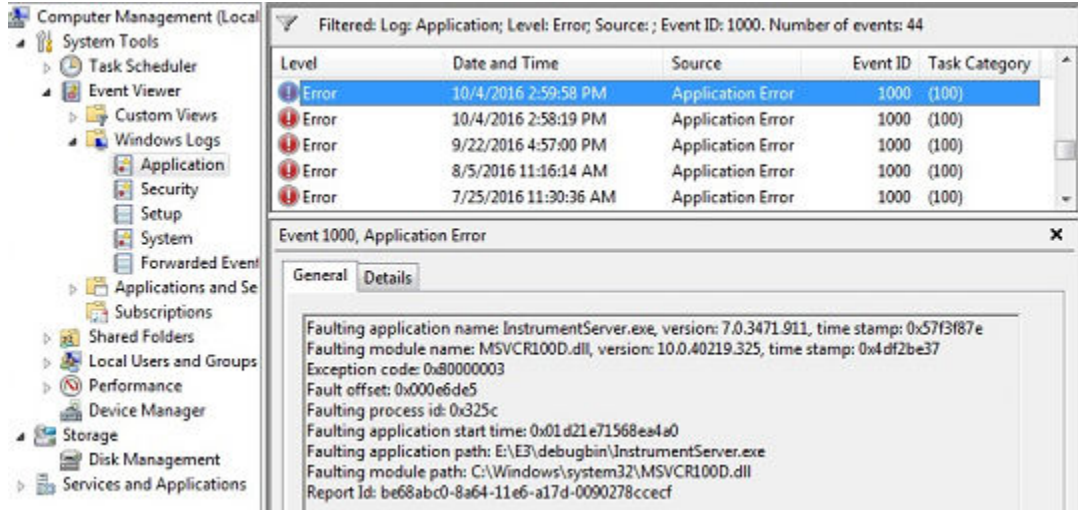
Requirement: To reestablish communication, close and then restart Empower Run Samples, QuickStart, Configuration Manager, or Walk Up (whichever Empower application was in use when `Connection to Chromatography System Lost` appeared in the Message Center).

To determine if the `InstrumentServer.exe` application closed unexpectedly, review the Windows Event Viewer Windows Logs by performing these steps:

1. On the acquisition node, right-click **Computer** and select **Manage**.
2. In Computer Management, select **Event Viewer** from the **System Tools** tree, and then select **Windows Logs > Application**.
3. In the Windows Logs, do the following:
 - Look for an error that matches the date and time the incident occurred.
 - In the Level column, the Level type is Error.
 - In the Source column, the Source is an Application Error.

- In the Event ID column, the ID is 1000.
- In the General tab, the faulting application name is `InstrumentServer.exe`.

Figure 3–1: Instrument Server Log Error



If network connectivity of the acquisition node is lost and data buffering occurs, see the data buffering `Recover.log` file described in the Waters Acquisition Buffering Tech Note at: <http://www.waters.com/waters/support.htm?lid=10168834&type=TECN>. Have your Business Technology group confirm network connectivity.