Troubleshooting Process Overview

The troubleshooting process begins as soon as any part of your system does not function as expected, an outcome varies from the expected result, or a system message is displayed. The following reference pages provide tools and resources for troubleshooting your *Cerner Millennium* system.

Troubleshooting an issue follows a step-by-step process focusing on three main steps:

1. **Identify the issue**: Describe the symptoms, obtain functional steps, determine frequency, and use critical thinking.
2. **Perform Research**: Use eService, the Reference Pages, and *uCern* groups.
3. **Perform troubleshooting steps**: After identifying the issue, troubleshoot the root cause. About 80 percent of the issues submitted to SolutionWorks are resolved without requiring a change to software. Using the Reference Pages, *uCern* Community, eService Knowledge Base, and related information available on Cerner.com to determine issue resolution. Determine the diagnostic tool to collect and analyze log files. Check out the example issues and investigative steps leading to resolution.
4. **Resolve the issue or engage Cerner for assistance**: you have identified the issue and performed the right steps to troubleshoot *Cerner Millennium*. Sometimes the issue is beyond your ability or responsibility to resolve. In these instances, you need to take the issue to the next level of support by accessing eService to log a service record (SR) with the necessary details included. Steps to log an SR, an overview of Cerner service organizations, and further escalation steps are available at this link.

> ⓘ **Note**
>
> For additional discussion on investigations techniques, see the Troubleshooting Millennium Applications *uCern Connect* group.

Right Tool for the Job

The following table displays the appropriate tool to collect log files for common *Cerner Millennium* application issues:

Issue	Tool	Rationale
Reproducible Crash	Millennium Troubleshooting Assistant (MTA) , Crash Collection Tool or Support Center	MTA is preferred over Crash Collection Tool or Support Center because it provides a recording of the workflow. You may be asked to use all of the tools to obtain log files since each method provides unique insight that assists with issue resolution.
Sporadic Crash	Crash Collection Tool or Support Center	
Hang	Issue Collector	
Run-Time Error	MTA , Crash Collection Tool, Issue Collector or Support Center	MTA is preferred over Crash Collection Tool, Issue Collector or Support Center because it provides a recording of the workflow. Crash Collection Tool may not always capture run-time errors. You can use Issue Collector to collect logging for run-time errors. You need to verify that the error still is displayed before running Issue Collector. If you click **OK** to close the error message or close the application, the log files are not collected when Issue Collector runs. You can use Support Center to collect logging, checkpoints, and memory dump files for run-time errors.
Performance	MTA, Issue Collector or Support Center	MTA is preferred over Issue Collector and Support Center because it provides a recording of the workflow. MTA has log levels such as Crash, Performance, and Workflow. The Performance log level provides valuable insight. All other log levels skew the timers and are not useful for investigating performance issues. You can use Issue Collector to collect crmtimer.mlg and system.mlg files at any time. Before you reproduce the issue, enable debug level logging and the crmtimer.mlg file. If the timer and debug logging are not enabled, Issue Collector captures the files, but the files do not contain useful information for issue resolution. You can use Support Center to collect message log (.MLG) files, checkpoints, timers and memory dump files for performance issues.

Missing Modules	Dependency Walker	

For a visual representation of this information, see the Log File Quick Reference page in the Reference Pages on *uCern Wiki*.

> ⓘ **Note**
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> CernerWorks provides remote hosting, monitoring, database administration (DBA), disaster recovery, and temporary hosting services to many of our clients. If your client site is remote-hosted by Cerner, you may not have access to the directories where the log files are located. For this scenario, contact the Immediate Response Center (IRC) pilot line at 1-866-221-8877, select **Option 2**, and then select **Option 3** to reach a CernerWorks associate who can retrieve the data files. You also can log an SR to CernerWorks to request the file be transferred to the appropriate location. You need to provide the *Citrix* server, *Citrix* user, file location, and filename.

Millennium Troubleshooting Assistant

Millennium Troubleshooting Assistant (MTA), also referred to as *Cerner Millennium* Troubleshooter, allows you to record workflows and gathers log files and request/reply information for every transaction from a *Cerner Millennium* application to the database. It automates requests for information, such as screenshots, the system.mlg and crmtimer.mlg files, details from Process View (ProcessView.exe), snapshots, and so on.
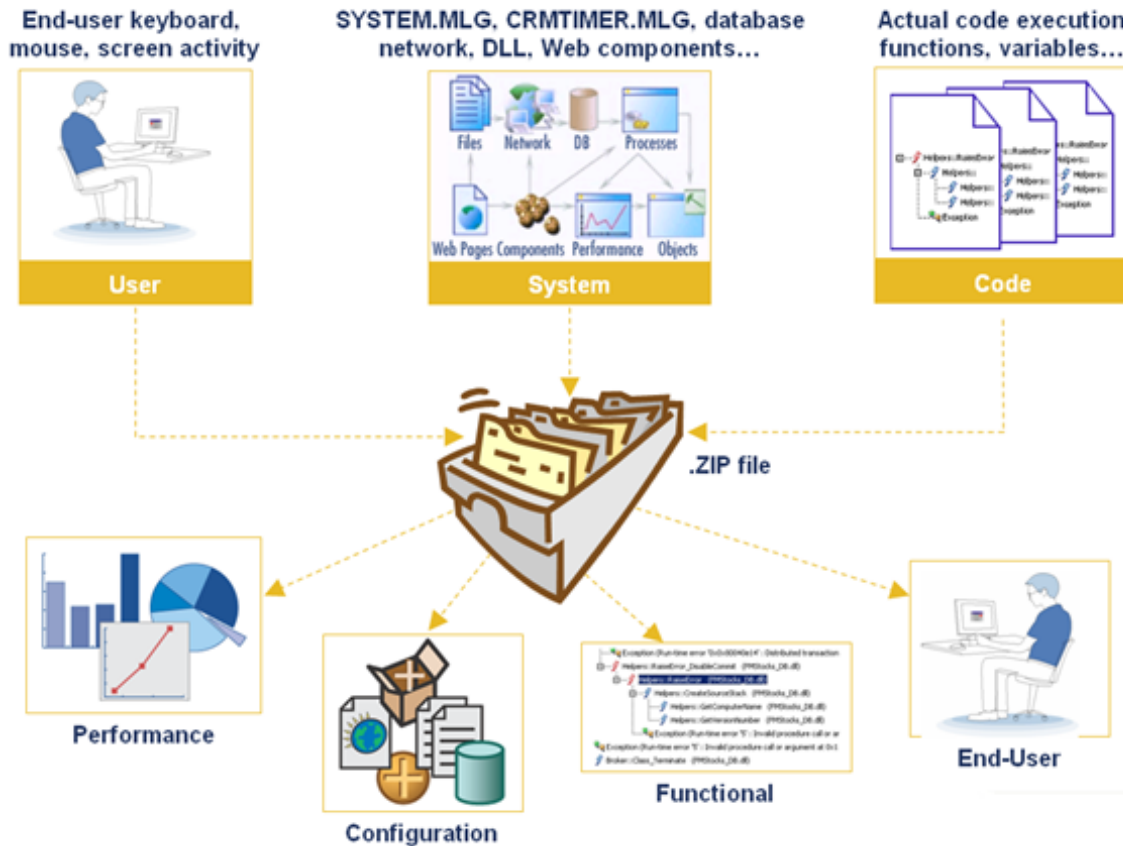
To improve the turnaround time for issue resolution, you can use MTA to gather diagnostic information. The information is saved to a .ZIP file, and you can attach that information to your service record.

Use MTA to troubleshooting the following scenarios:

* The issue is reproducible.
* To help Cerner understand a clinical workflow.
* Cerner asks for request/reply logs, screenshots, a system.mlg or crmtimer.mlg file.
* A run-time error (RTE) occurs or a *Cerner Millennium* application terminates unexpectedly with RTE or C++ errors.
* Performance issues.

You also can use MTA to resolve the following *Cerner Millennium* issues:

* Error messages.
* Data is missing or fails to be displayed in the application.
* Incorrect data is displayed, whether a value is wrong or information from the wrong patient chart is displayed after you switch patients or if you have multiple patient charts open.
* Cosmetic or painting issues. For example, a painting issue occurs if you open and then close the Result Details dialog box for a result in *PowerChart* (PowerChart.exe) and a white box continues to be displayed where the dialog box once was. Typically, refreshing the application resolves painting issues.

End-user keyboard, mouse, screen activity

SYSTEM.MLG, CRMTIMER.MLG, database network, DLL, Web components...

Actual code execution functions, variables...

Files Network DB Processes

Web Pages Components Performance Objects

User

System

Code

.ZIP file

Performance

Configuration

Functional

End-User

Issue Collector

Issue Collector (IssueCollector.exe) is a troubleshooting tool for front-end *Cerner Millennium* applications. It gathers information about running *Windows* processes and is especially suited for investigating system unresponsiveness that is difficult to reproduce.

Issue Collector is designed to require minimal user input. Issue Collector automatically scans all running processes upon execution. It produces memory dump files, captures .MLG files, takes a screen shot, and records other valuable information. The system places this information in a .ZIP file, and notifies the user of the .ZIP file's location upon completion. Cerner can retrieve this information and use it during the troubleshooting process

Use Issue Collector to troubleshoot the following scenarios:

- **System Unresponsiveness**: The *Cerner Millennium* application becomes frozen, meaning it no longer responds to user interaction through keyboard or mouse clicks. While one application is frozen, the user still can access other applications on the *Citrix* session or local PC.

- **Collecting Performance Data**: Issue Collector retrieves the crmtimer.mlg and system.mlg files, which are useful for troubleshooting performance issues as well as terminations, unresponsiveness, error messages, missing data, and other issues.

- **Run-time Errors**: An error in a *Cerner Millennium* application occurs, and a message box is displayed with a run-time error number.

Crash Collection Tool

Crash Collection Tool (formerly known as Dr. Watson Crash Collection Tool) gathers *Cerner Millennium* -specific point-in-time data to help diagnose and resolve sporadic application crashes. If Crash Collection Tool is enabled as the default system debugger, the operating system invokes it to start gathering data when a crash occurs. Crash Collection Tool gathers the dump and .MLG files and creates a list of the components the application loaded into memory.

You also can use Crash Collection Tool to diagnose reproducible application crashes. If the crash is easily reproducible, MTA is the preferred tool since it also captures workflow and request/reply dumps.

Crash Collection Tool can be configured to send crash files to Cerner on a scheduled basis. Cerner analyzes these crashes to identify the root cause and proactively provide resolution.

Support Center

The Support Center dialog box is available from the Help menu in certain Cerner Millennium applications. Support Center is able to collect numerous types of support information, including .MLG files, memory dumps, exception details, machine and process information, and user reported details. You can use Support Center to capture all this information in an Incident report when you experience application errors, slowness, or any other run-time issues.

Dependency Walker

Dependency Walker is a free utility that scans 32-bit and 64-bit *Windows* modules (.EXE, .DLL, .OCX, .SYS, and so on), and traces the dependent modules. For each module found, it lists the functions exported by that module, and which of those functions are being called by other modules. Another view displays the minimum set of required files, and detailed information about each file including a full path to the file, base address, version numbers, machine type, debug information, and so on.

Dependency Walker also is useful for troubleshooting system errors related to loading and executing modules. It can detect common application problems such as missing modules, invalid modules, import and export mismatches, circular dependency errors, mismatched machine types of modules, and module initialization failures.

This tool can help you diagnose the specified module error, an error that can occur in *Cerner Millennium* applications after you install an incompatible exception package.

PVAPP

⚠ The specified module could not be found.
: PVTASKLIST

OK
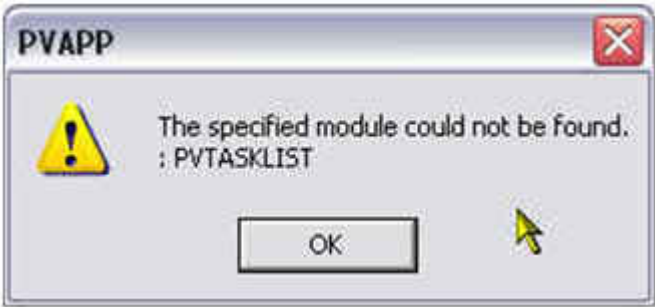
Other Tools

For additional troubleshooting and diagnostic tool information, see the following Reference Pages:

Link	What is included
File Transfer Protocol (FTP)	FTP is a method used to transfer files over the internet. Many third-party programs (known as FTP clients) make use of FTP. An example that Cerner uses is the FTP client from Reflections for UNIX, OpenVMS, and *HP-UX*. Many systems have restrictions on email size that prevent you from sending many types of files such as user.dmp files. FTP is used to send and receive these larger files. If the *Citrix* servers on a client site do not have Simple Mail Transfer Protocol (SMTP), FTP is used to transfer the files instead. This is common when you use MTA. You can use FTP to transfer files from your desktop to a Cerner back-end node or vice versa. FTP Secure is the expected method for sending files to Cerner which contain protected health information.
MsgViewWin, Crmtimer.mlg, and System.mlg Analysis	You can use MsgView for Windows (MsgViewWin.exe) to analyze system.mlg and crmtimer.mlg files. The system.mlg file can be used for troubleshooting crashes, unresponsiveness, error messages, data display, missing data, and numerous other issues. The crmtimer.mlg is used for troubleshooting performance issues such as network latency, script performance, server queuing, or helping to establish workflow.
Server Logging Basics	*Cerner Millennium* server logging is the process of storing messages about transaction activity processed by *Cerner Millennium* servers and services middleware. The messages about these transactions are stored in files specific to the server and message type. The server configuration determines the types of messages and the level of diagnostic detail those messages contain. These diagnostic log files are very helpful when troubleshooting transactions between the *Cerner Millennium* applications (front end) and *Cerner Millennium* middleware (back end).
Request/Reply Dumps	Dumping requests is an important part of investigating issues in *Cerner Millennium* applications. The *Cerner Millennium* applications display information located on the back-end tables. For example, the Patient List tab in *PowerChart* displays patient information retrieved from the PERSON table. The method of retrieving the information is by calling requests. Dumping requests to investigate is frequently necessary when an application is not displaying expected data, displays it incorrectly, or has performance problems.

Analyzing Response Time Measurement System (RTMS) Timers	RTMS is designed to capture times related to the actual user experience. There are several methods for measuring the performance of the system today. Most methods focus on a technical view, such as the crmtimer.mlg. They measure individual request/reply transaction times, server queuing, monitor system resources such as CPU and memory utilization, and so on. Although these can be a good indicator of the current capacity of the system, they do not provide information from the user's perspective. It is possible to have plenty of capacity in the system while users experience slow response times. The primary goal of RTMS is to provide a view into the user's experience. These are different from CRM timers in that RTMS provides timing from a user perspective. It does not provide technical information such as how long a request takes to run. You can review RTMS timers in *Lights On Network* or examine the raw data in other tools. Analyzing RTMS timers can help identify which users experienced performance issues. Sometimes the workflow, including which patient charts, can be discovered. This is helpful for Cerner to reproduce workflow and collect technical log files like the crmtimer.mlg file, which are helpful for investigation.
Front-End Tools	Table containing various tools for troubleshooting *Cerner Millennium* front-end issues. Describes the issue type the tool applies to, the logging information generated and analyzed, and availability to Cerner and client resources.
Back-End Tools	While preferences and privileges are manipulated in front-end tools, the actual information is stored in the back end. This table contains tools for investigating back-end and middleware issues.
Servers and Services Reference Page	Servers are the primary means by which the *Cerner Millennium* system reads and writes results to tables. This page links to many servers where you can find their purpose and troubleshooting strategies.
Java Application Servers Reference Page	Introduction and troubleshooting techniques for *Java* servers. The *Enterprise Java Server (EJS)* platform represents an evolution in server-side architecture at Cerner. This platform has allowed Cerner to exploit advancements in *Java* technology and to preserve the traditional client/server model. This platform is written primarily in *Java*, which allows *EJS* to take advantage of advanced *Java* technology concepts, like shared cache, automatic garbage collection, and code reusability. *Enterprise Java* Platform servers are completely compatible with wire protocols used by traditional C++ servers, so client applications can communicate seamlessly with either server type. When compared against traditional servers, a host of improvements can be realized by *Java* development. *Java* is a managed language, meaning the *Java* Virtual Machine (JVM) is responsible for managing memory instead of the developer. This means memory corruption and memory leaks are virtually eliminated. The *EJS* platform is integrated with existing Cerner tools and processes. This means the platform is managed in the same way as the C++ server platform using familiar tools such as the SCPView utility (scpview or SCPView.exe), the MsgView utility (msgview or MsgView.exe), and the Transaction Database Viewer utility (tdbview or TDBView.exe).
Utilities Reference Page	Various tools used to manage and troubleshoot *Cerner Millennium*.
Reference Page Home > Technical Infrastructure tab.	Common services, front-end technologies, knowledge solutions, host technologies, mid-tier technologies, system and domain management.
Data Model (tables)	See the Cerner Millennium Data Model Reports *uCern Connect* group for a list of available data model reports.