Dialogic®

Application Note

Enhanced Diagnostics Improve Performance, Configurability, and Usability

Improved Capabilities Available for Dialogic® System Release Software

Executive Summary

This application note describes new and enhanced diagnostic tools available for Dialogic® System Release Software:

- Dialogic® System Release 6.1 for Linux
- Dialogic® System Release 6.1 CompactPCI for Windows®
- Dialogic® System Release 6.0 PCI for Windows®

Table of Contents

Introduction

Enhanced Diagnostic Tools for Dialogic® Telecom Software deliver significant performance, configurability, and usability improvements for developing and deploying next-generation telephony applications quickly. Overall, the improvements found will significantly upgrade troubleshooting by:

- Merging multiple tracing utilities into common files and monitoring tools
- Simplifying error and alert monitoring and tracing control
- Improving error and alert propagation between libraries and with the application
- Enabling monitoring and tracing control from remote facilities

Standalone client software that enables remote management software without re-installing the entire system release is available for download at the same location as the full system release.

A summary of the enhanced diagnostic tools is provided in this application note. Additional details can be found in the *Dialogic® System Software Diagnostics Guide* for each release:

- System Release 6.1 for Linux: http://www.dialogic.com/manuals/sr61lin/default.htm
- System Release 6.1 CompactPCI for Windows®: http://www.dialogic.com/manuals/sr61win/default.htm
- System Release 6.0 PCI for Windows®: http://www.dialogic.com/manuals/sr60winpci/default.htm

Diagnostic Management Console

The Diagnostic Management Console (DMC) provides a convenient portal for launching all enhanced diagnostics. The DMC also locates the log files produced by Dialogic's diagnostic tools and allows the files to be viewed with appropriate software. The DMC allows for remote launch of diagnostic tools via standard remote invocation methods, including SSH and Remote Desktop. The DMC performs the following functions:

- Lists available diagnostic tools for execution
- Lists diagnostic logs available for viewing
- Launches diagnostic tools
- Launches viewers to display logged data
- Maintains the association of diagnostic log files to appropriate viewers
- Presents error messages encountered during runtime

Runtime Trace Facility 3.0

Runtime Trace Facility 3.0 (RTF 3.0) is a high-performance, low host-CPU MIPS tracing engine. It serves as the core tracing engine for system software, and allows new tracing facilities to merge easily into a single RTF. The performance advantage of RTF 3.0 provides more CPU MIPS for co-located applications on a server than previous versions of the tracing engine.

RTF 3.0 offers a client/server architecture so that disk-write activities can be offloaded to a separate system to make room for even the most CPU-intensive applications.

RTF 3.0 is configurable through the Runtime Trace Facility Manager (RTF Manager) for these tracing levels:

- Errors
- Errors plus warnings
- Deeper levels of application, network, and system software interactions

RTF 3.0 also allows an application to programmatically change tracing levels by swapping XML control files. This can be done if errors or warnings begin to appear while the system is running; the application, system software, and/or board need not be restarted.

RTF 3.0 should always be running at some level while a system release is in service.

Runtime Trace Facility Manager

Runtime Trace Facility Manager (RTF Manager) supports the functionality of the RTF 3.0 tracing engine by offering four key capabilities that can be controlled through graphical and command line user interfaces.

Configuration

RTF Manager can dynamically configure RTF 3.0 to switch among the three tracing levels listed in Runtime Trace Facility 3.0. These tracing levels can be set globally for the entire system, or can be adjusted by library (PSTN, Fax, IP, Media, Conferencing, or OA&M).

When a configuration is set, the RTF Manager creates an XML file that RTF 3.0 reads in a default location. Saving these files in a different location allows an application to swap them with the current XML file in the default location to dynamically change tracing levels.

Viewing

RTF Manager's viewing capabilities allow the sorting and filtering of RTF 3.0 log files to quickly isolate the functions of a particular channel or software function, and then copy and paste the selected information into email or support databases.

Backup

RTF Manager's storage capabilities enable customization of the backup location for RTF log files and the size and number of the rolling log files to be stored. Using these capabilities, the location of the RTF 3.0 log file can be offloaded to a separate server in order to reduce the CPU and disk usage of the primary system.

Control

The control capabilities of RTF Manager allow the RTF 3.0 tracing engine to start and stop without interrupting an application or any system release services. Alternatively, an application can start and stop RTF 3.0 and load a new XML file through currently available APIs.

RTF Manager 3.0 is available today for System Releases 6.1 Linux, 6.1 Compact PCI Windows®, and 6.0 Windows®.

PSTN Diagnostics Tool

PSTNDiag is a new Java-based GUI used to more effectively diagnose PSTN call control issues. PSTNDiag does not use Dialogic's standard call control libraries (for example, Dialogic® Global Call), so it can help determine which call control stack may have an issue.

The following functions are available with the PSTNDiag tool:

Display

PSTNDiag enables you to easily access the information about your Dialogic® boards. You can see the active boards within a system, and select from a list of installed boards to drill down to the information about a particular board that includes the board name, serial number, number of lines, number of total voice channels, and signaling type per channel.

Administration

While seeing the active line state and alarms, you can use PSTNDiag to perform functions on trunks, such as putting a trunk in or taking one out of service, generating transmit alarms, and putting a line in loopback as part of your diagnosis and management. PSTNDiag reports on saturation alarms including BPVS, CECS, and FERR among others.

Call Tracing

With PSTNDiag you can trace all call activity on a given channel and store it with timestamps. You are also able to place calls through the interface and see the current call state as the channel is being traced.

Data Collection Utility

The data collection utility provides a resource to obtain information about the system, as well as the installed system release software. The data collection utility consists of: ITS_SysInfo, Getver 2.0, and Install Checker.

ITS_SysInfo

ITS_SysInfo is a data collection utility that creates a compressed file containing the available log files and configuration data that could be useful for diagnostic purposes. The information can then be attached easily to an email and sent on to support contacts for analysis assistance.

The types of information gathered by ITS_SysInfo are:

- **General system** — Operating system versions, service packs, available memory, and processor and operating system event logs.
- **Configuration settings** — Installed hardware devices and their configuration settings, software configuration settings, logging and tracing files, and board memory dumps.

Getver 2.0

Upon execution, ITS_SysInfo calls Getver 2.0 (Get Version), which generates a report of the individual file versions that were included in the system release software installation.

Get Version provides version information for the following types of files:

- Dialogic® DM3 architecture board firmware files
- Dialogic DM3 architecture board files
- Dynamic Load Library files (for Windows® and Linux)
- Other files that support versioning formats (libraries, management systems)

Install Checker

ITS_SysInfo has an install checker that provides overview information about the system release, including the release name, service update details, build number, and packages selected that are installed on the target machine.

Application Monitor

Application Monitor (AppMon) is a tool that enables integrated, platform-wide diagnostics by launching ITS_SysInfo if a designated application stops functioning. In the event an application failure goes unnoticed, the AppMon ensures that all the necessary system release data being passed between the application and network at the time of failure are captured immediately, eliminating the chance that this data will be overwritten within the circular log files.

Status Monitor

Status Monitor (StatusMon) tracks the Telephony Service Component (TSC or B-Channel), as well as the state of bits on a robbed bit or CAS line. StatusMon can be used to troubleshoot service provider network lines that may be set up inconsistently or to monitor call states, call progress, and channel usage for administration purposes.

StatusMon has been updated to include a GUI that displays PSTN line status in near real-time by showing alarm status (red, yellow, LOS), channel state, call state, and each channel on each line of the board.

Although StatusMon has previously been available for system release, it has now been redesigned to provide command line controls and a terminal user interface for Linux.

Unified Tracing and Control

Tracing and Control has been enhanced by improving the code that detects and cleans up errors, and by including fault detections and board diagnosis snap shots in RTF logs. Messages posted from system release libraries to the RTF 3.0 tracing facility have been improved with consistent format and classification so that tracing levels are easy to work with.

Tracing Code Cleanup

Tracing messages are now classified into four distinct levels so that clear and effective tradeoff decisions can be made between diagnostic run-time data collection and overall system performance. These four tracing levels are defined as follows:

- **Errors (default)** — Severe events and C++ exceptions that cause the immediate and catastrophic failure of a system; for example, the failure of a DSP or a hung channel
- **Warnings** — Expected or unexpected conditions that do not affect the immediate operation of the software but could affect further operation or be a symptom of a problem in a related functional area
- **Program Flow** — Trace statements about internal function entry/exit points within system release libraries or further information internal to the functions of these libraries, protocol state machine transitions, and the API entry/exit points of the application. Includes the memory location of data passed at internal function or API entry/exit points, but not the data stored within those memory locations.
- **Debug** — Detailed information for tracing the code paths of internal functions. Includes memory locations and data stored within those locations for internal function and API entry/exit points.

Fault Detector

Low-level debugging logs are available through the RTF logs from the DebugAngel function when polling the DM3 boards in a system from the resources and DM3 kernel. This enables easier retrieval of fault logs through the RTF Manager.

Snap Shot

The ability to view a core dump of faults for control processor and signal processor on a board is available through the Runtime Trace Facility logs and manager. This provides information to enable improved diagnosis of failures that are easy to retrieve through the RTF Manager.

OS Event Viewer Log

This tool provides logging to the operating system of high level messages that can be used for a system administrator with limited telephony experience if errors occur with troubleshooting recommendations.

Remote Diagnostic Install

Dialogic offers a standalone program that contains only the diagnostic tools for installing on a client machine so it can use diagnostic tools for a remote platform. This install is a small footprint, enabling management remotely without installing the full application. The platform is accessed with standard mechanisms, such as SSH and remote desktop. It is available as a download from http://www.dialogic.com.

Acronyms

API	Application Programming Interface
CPU	Central Processing Unit
DMC	Diagnostic Management Console
DSP	Digital Signal Processing
GUI	Graphical User Interface
IP	Internet Protocol
LOS	Loss Of Signal
MIPS	Millions of Instructions Per Second
PSTN	Public Switch Telephone Network
RTF	Runtime Trace Facility
XML	eXtensible Markup Language

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To learn more, visit our site on the World Wide Web at **http://www.dialogic.com.**

Dialogic Corporation
9800 Cavendish Blvd., 5th Floor
Montreal, Quebec, Canada H4M 2V9

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