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Technical
White Paper

HP Insight Diagnostics Online Edition

Featuring Survey Utility and IML Viewer

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Abstract

This paper provides an overview of the technology, features, and use of Insight Diagnostics Online Edition.

Executive Summary

In today's business environment, server availability has become key to the success of many businesses that depend on the uninterrupted operation of its servers.

System administrators increasingly rely upon proactive server management tools developed to aid in optimizing the performance of the system and identifying potential problems before they affect users on the system. In the event that a problem does occur, these tools must be available to allow system administrators to resolve problems quickly, and without taking the server offline, (while the server is not in an OS session). Tools that provide online (while the system is in an OS session) serviceability increase server availability and minimize the interruption of daily business activities.

Insight Diagnostics Online Edition is a component of the ProLiant Essentials suite of management products. The ProLiant Essential Management Packs play an integral role in the Adaptive Enterprise strategy led by HP. More about the ProLiant Essentials and Adaptive Enterprise business strategy can be found at:

http://h18004.www1.hp.com/products/servers/proliantessentials/index.html

http://h71028.www7.hp.com/enterprise/cache/6842-0-0-0-121.aspx

Introduction

With the complexity of today's server applications and the critical nature of data stored on servers, maximizing server availability is a requirement for maintaining the successful operation of a business. Insight Diagnostics Online Edition is a service tool that delivers enhanced serviceability for ProLiant servers and increases overall availability.

The initial release of Insight Diagnostics Online Edition represents an enhancement to currently available service tools such as Inspect and Survey Utility. Inspect has long been used as an offline utility to capture detailed hardware configuration information such as the types of hardware devices. The Survey Utility was the traditional online utility used to gather software and critical error log information. Insight Diagnostics Online Edition replaces this capability by capturing software information in addition to the hardware elements, allowing access to and management of the Integrated Management Log, and the ability to manage and compare various Survey sessions.

Service tools, such as Insight Diagnostics Online Edition, can be invaluable in quickly resolving server problems. To streamline the service process and resolve problems quickly, it is necessary to have the right information available at the time a service call is placed. The primary information requirement and the one that provides the greatest insight into potential server issues is the configuration of the system. Insight Diagnostics Online Edition delivers this critical data, and addresses customer requirements for enhanced service tools and higher server availability through its comprehensive feature design:

Online installation and deployment—Insight Diagnostics Online Edition is easily deployed from the ProLiant Support Pack.

Operation—There is not a requirement to take the server offline or reboot the server to use Insight Diagnostics Online Edition.

Comprehensive configuration capture under a single tool—Gathers detailed hardware and operating system configuration information under a single tool.

Automatic configuration audit trail—Automatically maintains a configuration history for the server. By storing multiple configuration snapshots and highlighting changes and differences, the utility can provide a detailed record of the server history.

Integrated Management Log Viewer—Allows you to view and manage the Integrated Management Log (IML) system event entries on a local or remote system. This non-volatile log records system events and errors and can be reviewed while the system is online, thus helping system administrators to promptly identify server failures. The information displayed for each log entry includes a description of the event, the location type (class) where the event occurred, the severity of the event, the number of times this specific event has occurred, the time and date the event was last updated, and the initial time and date the event occurred, filtered by class, severity, update time, and initial time, and printed. In addition to manipulating the displayed entries, you can also make changes to the IML on a system as follows:

- Enter maintenance notes
- Mark selected entries as repaired
- Clear the IML of all entries which will delete the log from nonvolatile memory (NVRAM)

This combination of features simplifies the service process and minimizes downtime experienced by a server.

The initial version of Insight Diagnostics Online Edition is 6.3 and is first available with SmartStart 7.1. Insight Diagnostics Online Edition is supported, on Microsoft® Windows® 2000, Microsoft Windows Server 2003, and Red Hat Enterprise Linux 3.

Importance of Service Tools

Combining today's complex business environment with shrinking administration budgets and staff means not only must servers be highly available, but tools must be available to make system administrators more efficient. Effective service tools are as important as ongoing management tools in meeting this objective. Service tools ensure that if a problem occurs, it will be resolved quickly and easily so the server can continue to support users and applications.

System administrators encounter a number of challenges in managing their environments. As a result of these challenges, specific requirements have emerged in terms of improving serviceability. The primary requirements for service tools include:

- Providing online functionality to identify and resolve problems without taking the server offline

- Simplifying the process of gathering the information required to effectively resolve service cases

- Delivering automatic configuration tracking and audit trail history that are accessible on demand

Fulfilling all of these requirements results in:

- Faster problem resolution times

- Minimized administration costs and resources

- Higher server availability

The Insight Diagnostics Online Edition was designed to address these user requirements and deliver the benefits of higher availability and minimized costs.

What is the Insight Diagnostics Online Edition?

The Insight Diagnostics Online Edition is an integrated Web-enabled management agent accessible from the server's System Management Homepage. As a management agent, Version Control Repository Manager (VCRM) and Version Control Agent (VCA), allow version control of Insight Diagnostics Online Edition. VCRM integration with Systems Insight Manager provides proactive notification when the diagnostics require upgrading.

Insight Diagnostics Online Edition is a powerful troubleshooting tool for IT administrators and service providers.

Typical uses of the Insight Diagnostics Online Edition include:

- Gathering critical hardware and operating system configuration information which allows the administrator to analyze and troubleshoot an active or downed server.

- Documenting server configurations for upgrade planning, standardization, inventory tracking, disaster recovery, and maintenance.

- Comparing historical configurations on the server or another (baseline) server.

- Sending configuration information to a service center or service provider for in-depth troubleshooting during a service call.

- Automating configuration history and audit trail reporting to maintain snapshots of prior configuration information.

How Insight Diagnostics Online Edition Works

The Insight Diagnostics Online Edition agent runs on each managed server and communicates with device drivers in the system to capture detailed information. This communication, or interaction, includes capturing data from sources such as the file systems, the system BIOS, SCSI drivers, disk array drivers, the Windows Hardware Abstraction Layer (HAL), the Windows Registry, and the health driver. This enables the

Insight Diagnostics Online Edition agent to identify both hardware and operating system information within the same polling process. When a configuration snapshot is initiated, the Insight Diagnostics Online Edition agent polls all of these sources for the most up-to-date information and view of the system.

Theory of Operation

The Insight Diagnostics Online Edition captures data in sessions. A session is defined as an organized group of data describing the configured state of the system at a specific point in time. The Insight Diagnostics Online Edition maintains up to 10 distinct sessions.

For Windows and Linux systems, the session information is maintained in a file named *surveybase.xml*, located in the same directory as the executable portion of the program. This file contains all of the information captured for every session. Insight Diagnostics Online Edition XML files can be analyzed locally by Insight Diagnostics Online Edition, or sent to Customer Services or a third-party service provider for further analysis.

An on-demand session capture can be initiated from the command line. Command line options are as follows:

Syntax: hpdiags [options]

Valid options:

-l languageCode.

options: en, fr, it, de, sp, jp (Default: en)

-v [Level]

Verbosity of output where Level is an integer between 1 and 5. Level 1 is the most filtered level, Level 5 is the most verbose. The default value is set to Level 3.

-s mmhhddMMDD

Schedule automatic execution. mm=minute(0-59), hh=hour(0-23), dd=day(1-31), MM=month(1-12),DD=weekday(0-6)

If you do not wish to specify a value for a field, just place a * in the field and enclose the parameters in quotes ("). For example, -s "0023***" will cause the report to run at 11:00 pm each day.

-u

Delete scheduled survey captures.

-c FILE1 [FILE2]

Compare a file to the current output or if two files are specified, compare the files without generating a new report.

-t

Run a new Survey snapshot and output to the terminal.

NOTE: -t and -o cannot be used together.

-o FILE

Run a new Survey snapshot and output to a file. Default is formed using the current date in this format: 'surveyCCYY-MM-DD-HH-mm-ss.xml'

(CC=Century, YY=Year, MM=Month, DD=Day, HH=Hour, mm=minute, ss=second).

-f

Overwrite output file if it already exists.

NOTE: If no -o option is specified this option is ignored.

-w

Starts the HP Insight Diagnostics Web Management daemon.

-k

Kills the HP Insight Diagnostics Web Management daemon.

-? , -h

Display Help.

Online Serviceability: Configuration Capture and Online Reporting

A key benefit of the Insight Diagnostics Online Edition is that it delivers configuration capture and reporting, while the system is online. Not only can the Insight Diagnostics Online Edition collect information while the server is online, it can also be installed without having to reboot the server.

Online configuration capture is critical because, when the need for a service call arises, one of the first requests made of the customer is to provide detailed configuration information. Service personnel use this information to determine possible component interactions and to pinpoint problem sources. Without a clear understanding of the system configuration, the problem resolution process cannot move forward effectively.

The online operation of Insight Diagnostics Online Edition allows system administrators to run the tool on demand, without interruption to applications or users.

Simplified Collection Process

During a service call, a user is typically asked to complete a number of steps, such as capturing information relating to the operating system version number, the operating system parameters, operating system error log files, startup files, and so on. This information is additional to the hardware configuration information. The process of gathering information requires system administrators to generate reports from multiple sources.

Insight Diagnostics Online Edition reduces the time and effort needed to collect this information. By combining hardware and software configuration capture, Insight Diagnostics Online Edition delivers a comprehensive view of the server with the ease and simplicity of a single tool. This approach minimizes problem resolution time.

Automated Configuration History/Audit Trail Reporting

In addition to capturing and reporting the current configuration, customers need a tool to effectively track changes to the configuration. Insight Diagnostics Online Edition also satisfies this need. The audit trail feature of Insight Diagnostics Online Edition maintains a record of configurations, and has the intelligence to automatically identify and highlight where changes in the configuration have occurred. Upon an event trigger (either a reboot of the server, scheduled time interval, or user-initiated action) Insight Diagnostics Online Edition collects a snapshot of the hardware and operating system configuration, and stores the information in a file on the server.

The audit trail feature maintains multiple snapshots of the configuration in a file. Eight snapshot generations plus the initial baseline configuration and the active session, are maintained as part of the configuration audit trail. As each snapshot is taken, it is compared to the previous generation already stored in the Insight Diagnostics Online Edition file to determine whether a significant change has occurred. If a significant change is detected, then the differences are "check pointed" to automatically highlight where they have occurred. Check pointing captures the complete state of a system, restores and restart from this state at a later point of time if the system has problems. All configuration snapshots are time and date stamped so the system administrator or service provider can identify when a particular change took place.

Integration with the Remote Insight Lights-Out Edition

On Windows and Linux servers in which the optional Remote Insight Lights-Out Edition (RILOE) has been installed, the system configuration is saved in the RILOE each time the Insight Diagnostics Online Edition captures the system configuration. In instances when the server has lost power, the system administrator can browse to the RILOE board and view information that may be critical to bring the server online.

For systems running RILOE II to view the Survey information gathered by the host server, use your Web browser to log on to the RILOE board. Under System Status, click the Survey link to view the Survey file.

Collecting and Updating Insight Diagnostics Online Edition Information

Insight Diagnostics Online Edition provides flexibility in the way that the information is captured. It provides maximum assurance that the information available reflects the current state of the server and that the audit trail clearly reflects the stages of changes that have occurred. Just as several options are available for viewing and generating a report, multiple methods are used for collecting information.

- **Upon Server Reboot**—When set for periodic capture, Insight Diagnostics Online Edition automatically captures a snapshot of information each time the server is rebooted. After Insight Diagnostics Online Edition is loaded on the server, this capture process happens without administrator intervention. Since most significant configuration changes require a server reboot to be recognized, these capture points help provide maximum coverage for detecting changes. If a significant change is recognized, it will be check pointed and stored. Any configuration differences will also be recorded.

- **Scheduled Intervals**—When set for periodic capture, Insight Diagnostics Online Edition also provides a mechanism to automatically capture a configuration snapshot at a regularly scheduled time. While the default setting for this feature is once per week, the interval is configurable from the browser-based user interface or by using command line parameters. The interval can be adjusted to occur as often as once a day. This scheduled interval feature allows the configuration audit trail to capture views of the system not only upon reboot, but also capture and identify differences (as well as significant configuration changes) during regular operation of the server. The scheduled interval feature is important in capturing system difference information, such as software changes made without a required reboot.

- **User Initiated**—Insight Diagnostics Online Edition allows the administrator to initiate a new snapshot on-demand. While this feature can be used when the Insight Diagnostics Online Edition is configured for periodic capture, it is particularly useful for one-time collection.

All of the update options help to ensure that the latest information and change history is always recorded and available when needed.

Accessing and Viewing Information

The information the utility gathers can be accessed in the following three ways.

- Locally at the host server console

- Remotely or locally from a browser

- Remotely or locally using the RILOE

The available options allow the information to be parsed in several ways to provide different types and levels of information. The system administrator can request viewing of the active sessions and, because multiple configuration snapshots are stored, a report that automatically compares any two snapshots. In completing the comparison, the Insight Diagnostics Online Edition automatically matches the snapshots and highlights any differences that exist between them. This is a useful feature for enabling clear audit trail tracking. It allows the system administrator or service provider to identify the history of events and the order and point at which specific changes were made which provides significant assistance in identifying the source of server problems.

Accessing from a Browser	Insight Diagnostics online edition allows you to view information from a Web browser. Insight Diagnostics can also be invoked from the server System Management Homepage, or from Systems Insight Manager.

Browser Requirements

The requirements are TCP/IP and one of the following browsers:

- Mozilla 1.4 or higher

- Microsoft Internet Explorer 6.0 or higher

- The minimum browser requirements include support for tables, frames, Java™, JavaScript, and CSS.

IMPORTANT: You must have all of the following browser options enabled for the Web-enabled diagnostics to work properly:

- Enable Java

- Enable JavaScript

- Accept all cookies

Additional browsers, or the browsers mentioned, used with different operating systems, may or may not work correctly, depending upon the specific implementations of the required browser technologies.

Accessing from System Management Homepage	Determine the address of the target machine on which you wish to run Insight Diagnostics.

To run Insight Diagnostics locally, use the URL: https://127.0.0.1:2381/

To run Insight Diagnostics remotely, use the URL: https://machine:2381/ where machine is the IP address, or the computer name under DNS.

Enter the machine address in the URL field of the browser. The Web-Based System Management Homepage is displayed for that machine. You may select the login account link to log in as another user. Use this option if you need to perform operations that require additional access rights, such as capturing a new configuration sample.

Accessing from Systems Insight Manager	Go to the server System Page under Tools – System Information. Select Insight Diagnostics from the Links tab.

The Insight Diagnostics home page is displayed.

Logging In

For login instructions refer to the Systems Insight Manager documentation.

The Login dialog box allows you to access any of the available Web agents. To access the desired agent:

Navigate to https://devicename:2381. The first time you navigate to this link, the Security Alert dialog box is displayed asking you to indicate whether or not to trust the server.

NOTE: The Security Alert dialog box is specific to Internet Explorer.

Creating Reports

With the comparison feature, several report types are available which enable the system administrator to specify just the particular type and level of information that will be most useful in a particular case. The different report types available are:

- **Show Only Differences Report**—This feature provides a mechanism for filtering the level of information displayed when comparing two configuration snapshots (or sessions). For example, when a user requests that Insight Diagnostics Online Edition generate a comparison of sessions 3 and 5 using the Differences filter, the tool automatically compares those two sessions (which are already stored in the Survey file). It then generates a report that shows only the differences between the two sessions, such as changes in processor utilization levels or amounts of free memory. Reviewing the differences occurring between different configuration snapshots can help identify trends causing intermittent server problems, such as low memory resources or the processor running at maximum capacity.

- **Standard Report**—This feature provides a mechanism for displaying two entire reports side by side for comparison. The standard report marks the changes just as the previous report did; however, all configuration items are displayed, rather than only the changes.

- **Specific Device Report**—This feature allows the user to choose which type of device should be displayed in the report. For example if the customer is having a network problem, they can select Network on the left side of the screen and report only the network differences.

Transferring and Printing Survey Files

For Windows and Linux systems using a Web browser, the configuration history file (*surveybase.xml & surveyDATESTAMP.xml*) can be downloaded from the device to the local machine or sent to Customer Services (or third-party service provider) for further analysis. Reports can also be printed or saved from the Web browser.

Alternately, the Insight Diagnostics Online Edition output file can be accessed in its text form. With appropriate access rights, users may log in over a standard network or modem connection to view or transfer the file. Any text editor may be used to print the Insight Diagnostics Online Edition reports (*surveybase.xml & surveyDATESTAMP.xml*).

Conclusion

Insight Diagnostics Online Edition addresses customer requirements for improved serviceability and increased server availability by providing online access to the critical information required to resolve service cases quickly.

By automatically collecting and storing comprehensive hardware and software configuration snapshots, the Insight Diagnostics Online Edition removes much of the time and effort that system administrators and service providers spend collecting the relevant information for different sources. Insight Diagnostics Online Edition eliminates the need to use a combination of online and offline tools and generate multiple reports. Comprehensive hardware and operating system configuration information is required to resolve service issues quickly. With Insight Diagnostics Online Edition, all of this information is gathered and stored quickly, within a single source file.

Different report formats can be generated depending on the needs of the user. At the same time, the information can be accessed in a number of ways, making Insight Diagnostics Online Edition a flexible tool.

Specifications

HP Insight Diagnostics Online Edition Specifications	
Supported platforms	ProLiant platforms that are supported by SmartStart 6.x and later: ProLiant RBSU-based servers (most G2 models of ProLiant ML/DL 300, 500, 700 and BL servers)
	For a complete list, view the supported matrices at http://www.hp.com/servers/supportmatrices.
Supported operating systems	Microsoft Windows Server 2003
	Microsoft Windows 2000
	RedHat Enterprise Linux 3
System requirements for browsing to a device	TCP/IP protocol installed
	A supported Web browser
Accessibility	• Windows or Linux browser
	• System Management Homepage
	• HP Systems Insight Manager
	For more details, view the section above on Accessing and Viewing Information.
Web browser recommendations	Microsoft Internet Explorer 5.01 Service Pack 2, 5.5 and 6.0
	Netscape Navigator 4.73 and 6 **NOTE**: Navigator requires the JDK 1.1 patch
	The browser must have the following features supported and enabled:
	• HTML tables
	• HTML frames
	• JavaScript
	• Accept All Cookies
	• Full Java Development Kit 1.1 (JDK 1.1) support
Availability	Insight Diagnostics Online Edition is distributed on the SmartStart CD, or downloadable as a Smart Component from ProLiant Software Maintenance CD or http://www.hp.com/go/support.
	Obtain the latest software availability alerts and upcoming new feature information by subscribing to Subscriber's Choice and selecting SmartStart at the following URL http://www.hp.com/go/subscriberschoice.

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Prepared by Industry Standard Servers