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Enterprise

HPE System Healthcheck

User Guide

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Contents

Preface

This document provides a general introduction to the System Healthcheck (SHC) tool. HPE Services produce the SHC tool, which analyzes a system's configuration, performance, and security status.

Document Purpose and Audience

This document is intended for customers who use the System Healthcheck (SHC) tool.

Related Documents

For additional SHC documentation, go to:

https://h20392.www2.hpe.com/portal/swdepot/displayProductInfo.do?productNumber=SHCBASE01

Document Revision History

Date	Edition	Revision
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June 2017	v10.1.8	Windows Release version
December 2018	v10.1.8	Linux Release version
February 2019	v10.1.9	Windows Release version
June 2019	V10.1.9	Linux Release version

If you have technical issues or problems with the System Healthcheck tool, please contact your local support team.

1 Introduction

System Healthcheck (SHC) is a tool produced by HPE Services to analyze a system's configuration, performance, and security status. SHC analysis results are provided by a series of reports that highlight any problems found on a system and provide suggestions on how to resolve these problems. SHC is primarily but not exclusively focused on server platform analysis.

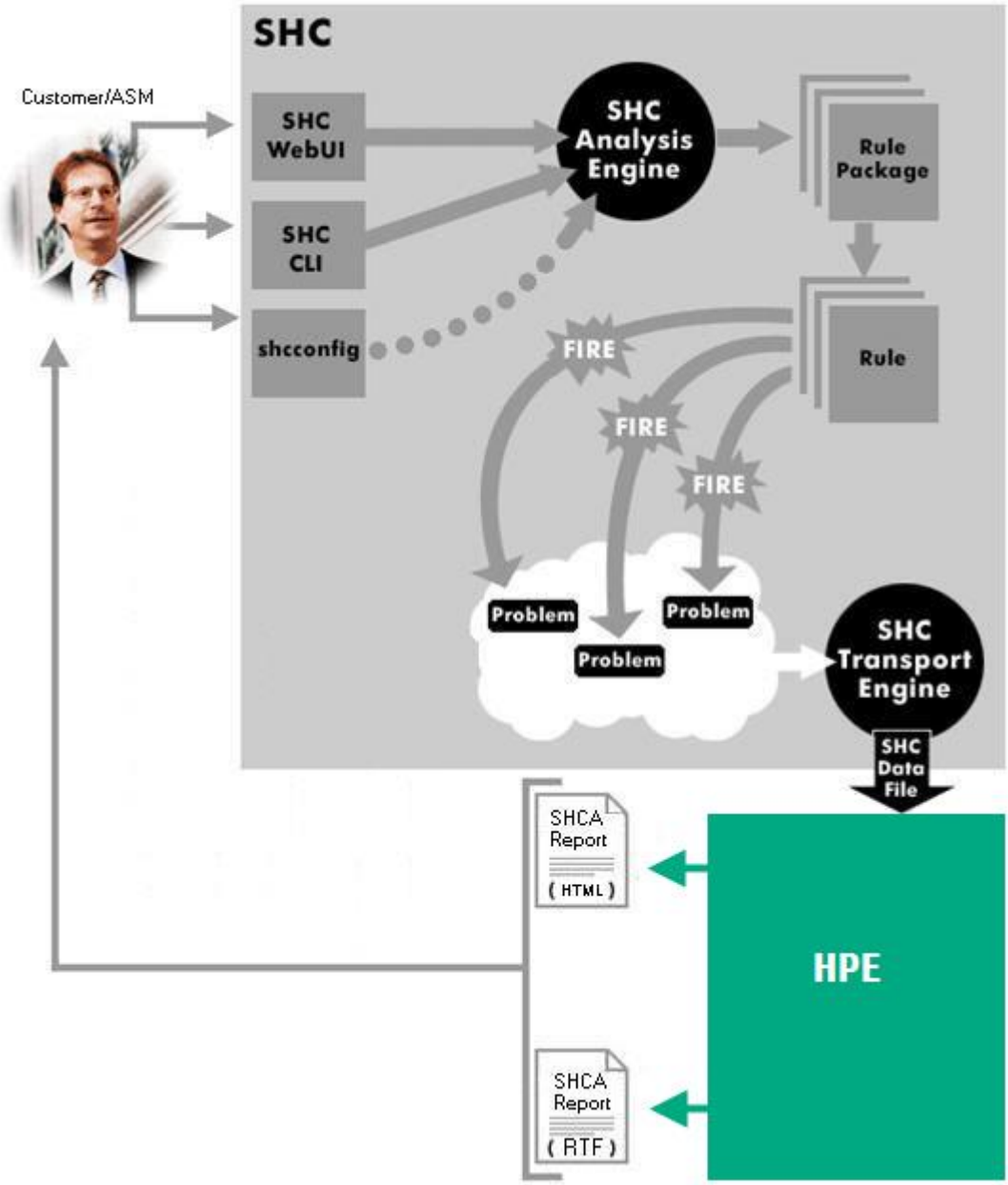
SHC is managed using either:

- A web-based interface (based on the HPE System Management Homepage Framework).
- Command line interface.

When SHC runs on a system, it performs an analysis of the system. The analysis is managed by the SHC analysis engine, which coordinates the execution of rule packages. Each rule package contains a number of individual rules. If a rule identifies a problem, the rule is said to have fired and the SHC tool generates problem data for the identified issue. When the analysis concludes, if a System Health Check Assessment (SHCA) report is required, the problem data is sent to HPE electronically. The problem data is processed by HPE Services and links to the SHCA reports emailed to the HPE Specialist, or Technical Account Manager (TAM), nominated by the user when they configured SHC. The type of reports provided by HPE depends on the SHC customer's service contract.

SHC performs analysis in two discrete phases, a dynamic phase and a static phase. The dynamic phase is intended to be run during a system's typical production cycle, analyzing dynamic aspects of system performance such as memory usage, I/O activity, and processor usage. The static phase is normally run immediately after the dynamic phase and it analyzes system parameters that do not change significantly over a typical production day. These parameters include memory subsystem configurations, installed software, security settings, and so on.

Both phases consist of a cycle of data collection and data analysis. The analysis is conducted by SHC components called rules. Each rule is a check for a specific problem or incorrect configuration. During the dynamic phase, a rule is usually checked after a certain number of data samples have been collected. These collected sample sets are known as sample windows. The actual number of samples collected varies from rule to rule and cannot be changed by the user. When a rule is checked and a problem is found, it is recorded by the SHC tool along with its details, for example, the time of the problem, its severity, and the evidence that leads the SHC tool to conclude that a problem exists. For more information, see section 2.4.1 How SHC Rules Work?.



SHC rules are contained in a series of rule packages, each of which group related rules. Each rule package relates to a specific aspect of a system, the memory package, for example, contains a series of rules that analyze the behavior of the system's memory during an SHC run. Rule packages available in SHC for each operating system are detailed in the following sections: 2.4.2 Windows Rule Package, 2.4.3 HP-UX Rule Packages and 2.4.4 Linux Rule Packages.

When both phases conclude, the SHC tool collates the rule problem data from the dynamic and static phases and generates a set of reports. The SHCA Reports (section 4.6 SHCA Reports) group rules according to categories. Rule categories provide an overview of which aspect of the system is affected by a rule. A rule can have multiple categories. Full details of the rule categories for SHC, on each operating system, are provided in section 2.4.5 Rule Categories.

2 Technical Overview

This chapter provides a technical overview of SHC.

2.1 Supported Platforms/Operating Systems

2.1.1 Microsoft Windows Systems

Table 2.1 lists the SHC kits that are available, the versions of Microsoft Windows that they run on, and their support status.

Table 2.1: Supported platforms and operating systems for Windows

Supported platforms and operating systems for Windows	Support Status
Windows 2019, for the following (x86_64) editions: Windows Server 2019 Standard Edition Windows Server 2019 Datacenter Edition Windows 2016, for the following (x86_64) editions: Windows Server 2016 Standard Edition Windows Server 2016 Datacenter Edition Windows 2012 including R2, for the following (x86_64) editions: Windows Server 2012 Standard Edition Windows Server 2012 Datacenter Edition Windows 2008 including R2 up to service pack 1, for the following (x86_64/ia64) editions: Windows Server 2008 Standard Edition Windows Server 2008 Enterprise Server Windows Server 2008 Datacenter Server Windows Server 2008 for Itanium-Based Systems Windows 2003 up to service pack 2, the following (x86/x64/ia64) editions: Windows Server 2003 Standard Edition Windows Server 2003 Enterprise Server Windows Server 2003 Datacenter Server	Fully supported

Note: SHC running on systems with Windows Server 2003 Datacenter Server does not have any kernel-touching components and does not require any hardware certification.

SHC supports analysis on systems that are part of a Microsoft cluster. However to analyze an entire cluster, you must install, configure, and run SHC on all nodes in the cluster. SHC contains a rule package that analyzes the configuration of the Microsoft Cluster Service (MSCS) on these nodes. SHC does not currently support Microsoft Windows XP/2000.

2.1.2 HP-UX Systems

Table 2.2 lists the versions of HP-UX running on supported HP Precision Architecture Reduced Instruction Set Computing (PA-RISC) systems and Itanium Processor Family (IPF) systems that SHC for HP-UX supports.

Table 2.2: SHC support for HP-UX

HP-UX Version	HP Platform	Support Status
HP-UX 11i v3.0 (B.11.31) SHC v10.1.4 supports HP-UX 11.31 to Update 13.	PA-RISC/IPF	Supported
HP-UX 11i v2.0 (B.11.23)	PA-RISC/IPF	Supported
HP-UX 11i v1.0 (B.11.11)	PA-RISC	Supported

2.1.3 Linux Systems

Table 2.3 lists the versions of Linux running on supported x86, x86_64, and ia64 systems that SHC for Linux supports.

Table 2.3: SHC support for Linux

Linux Version	Platform	Support Status
Red Hat Enterprise Linux 8.X	x86_64	Supported
Red Hat Enterprise Linux 7.X	x86_64	Supported
Red Hat Enterprise Linux 6.X SHC v10.1.3 supports RHEL to version 6.5.	x86/x86_64	Supported
Red Hat Enterprise Linux 5.X	x86/x86_64/ia64 ia64 supported up to SHC version 10.1.7	Supported
Red Hat Enterprise Linux 4.0 ES	x86/x86_64/ia64	Supported up to SHC version 10.1.7
Red Hat Enterprise Linux 4.0 AS	x86/x86_64/ia64	Supported up to SHC version 10.1.7
SUSE Enterprise Linux 11 SHC v10.1.3 supports SUSE Enterprise Linux to version11.3.	x86/x86_64/ia64 ia64 supported up to SHC version 10.1.7	Supported
SUSE Enterprise Linux 10	x86/x86_64/ia64	Supported

SUSE Enterprise Linux Server 12	x86_64	Supported
SUSE Enterprise Linux Server 15	x86_64	Supported

2.1.4 Virtual Environments

Table 2.4 lists the versions of the virtual environments that SHC for Microsoft Windows, Linux support on x86 and x86_64 guests OS and HP-UX guest OS on IA64 (V5 vPars only).

Table 2.4: SHC support for Virtual Environments

Virtual Environment	Hardware Platform	Guest OS
VMware ESXi Server 5.0	x86_64	x86/x86_64
VMware ESXi Server 5.1	x86_64	x86/x86_64
VMware ESX 5.5	x86_64	x86/x86_64
VMware ESX 6.0	x86_64	x86/x86_64

2.2 Hardware and Software Requirements

2.2.1 Microsoft Windows Systems

2.2.2 Disk Space Requirements

Disk space usage for SHC can vary depending on the configuration and complexity of a system. More complex systems, or systems on which SHC identifies a lot of problems, result in SHC generating larger data-files during the analysis. For more information, see the disk space usage entries in the SHC for Windows Impact Statement.

2.2.3 Web Browser Requirements

Any browser that supports HTML tables, HTML frames, cookies, JavaScript and HTTPS should work with the SHC web-based interface. Your browser's security settings should be set so that it accepts JavaScript and cookies from an originating website. The following browsers have been successfully tested for compatibility with the SHC web-based interface:

- Firefox 10
- Microsoft Internet Explorer 11.0
- For more information about supported browsers, see the SMH related document.

HPE System Management Homepage must be installed (see section 3.2.1.3 System Management Homepage Installation) to run the SHC web-based interface, which allows you to configure and run SHC.

If you do not want to use the web-based interface, use the command line interface instead. For more information, see section 4.1.1 Using the General CLI.

2.2.4 Security Considerations

Windows 2008, Windows 2008 R2, Windows 2012, Windows 2012 R2 have a concept of UAC (User Access Control). If this is turned on, tasks that require administrative privileges will require confirmation before they are executed. This will impact SHC as the underlying implementation relies on these privileges. We recommend that you turn this off. However it is possible to configure SHC to always run in elevated mode which can bypass the UAC restrictions.

For more information about how to do this, go to:

http://technet.microsoft.com/en-us/library/cc709691

2.2.5 HP-UX Systems

For installation purposes, SHC for HP-UX requires up to 185MB (for more information, see SHC for HP-UX Impact Statement) of free disk space on /opt and 0.5MB on /etc. This also includes the disk space required for the SD-UX installation kit.

Disk space usage for a typical SHC run amounts to about 1MB on /var, but this can vary depending on the configuration and complexity of the system. More complex systems or systems on which SHC identifies a lot of problems result in SHC generating larger data-files during the analysis. Therefore, it is recommended to have at least 20MB of free disk space on /var to perform an SHC analysis.

2.2.6 Linux Systems

For installation purposes, SHC for Linux requires up to 83MB (for more information, see SHC for Linux Impact Statement) of free disk space on /opt and 0.5MB on /etc.

Disk space usage for a typical SHC run amounts to about 1MB on /var, but this can vary depending on the configuration and complexity of the system. More complex systems, or systems on which SHC identifies a lot of problems, result in SHC generating larger data-files during the analysis. Therefore, it is recommended to have at least 20MB of free disk space on /var to perform an SHC analysis.

2.3 Performance Impact

The dynamic phase of an SHC run should be performed during a system's normal production period. It is designed to have a minimal impact on system performance.

The performance impact of the static analysis phase is slightly higher than the dynamic phase. Therefore, it is recommended that the static phase be scheduled to run during off-peak hours, for example, at the end of a typical production period. The static analysis phase runs at one priority level below the normal process priority in order to reduce its impact on system performance.

The performance figures given in the following subsections are averages and occasional bursts of activity may occur while collecting system data. However, the overall impact to the system is usually minimal.

The actual impact of SHC is highly dependent on your operating system and hardware configuration and may be higher in more complex environments.

The SHC release notes may contain details of additional performance restrictions, or usage recommendations.

2.3.1 Microsoft Windows Systems

For details of the performance impact of SHC on Windows systems, see the Performance Impact entry in the SHC for Windows Impact Statement.

2.3.2 HP-UX Systems

SHC has been profiled on a number of HP PA-RISC and IPF systems running HP-UX, including a HP 9000/785/B2600 server and an ia64 HPE rx2620 server. The following are the results:

During the dynamic phase of an SHC run with a default interval of two minutes, average CPU usage was found to range from 0.25% on the rx2620 to 0.80% on the HP 9000. Memory usage was 1.5MB on the HP 9000 and 3.5MB on the rx2620 during the dynamic phase.

During the static phase of an SHC run, average CPU usage was found to be 4%, the maximum CPU usage ranges from 4% on the rx2620 to 12% on the HP 9000. Memory usage was less than 4MB during the static phase.

The static phase typically runs for a relatively short period of time (less than 5 minutes) at the end of an SHC analysis.

The above figures are averages from SHC runs for a specific operating system and hardware configuration, as returned by the **ps(1)** command.

2.3.3 Linux Systems

SHC has been profiled on a number of x86, x86_64, and ia64 systems running Linux. The following are the results:

During the dynamic phase of an SHC run with a default interval of two minutes, average CPU usage was found to be 0.1-0.2%. Memory usage was 5.3MB during the dynamic phase.

During the static phase of an SHC run, average CPU usage was found to be 3%, the maximum CPU usage was 13%. Memory usage was less than 5.8MB during the static phase.

The static phase typically runs for a relatively short period of time (less than 1 minute) at the end of an SHC analysis.

The above figures are averages from SHC runs for a specific operating system and hardware configuration, as returned by the **ps(1)** command.

2.4 SHC Rules

2.4.1 How SHC Rules Work?

The analysis performed by SHC is governed by a set of rules. Each rule performs a specific check (or set of checks) by retrieving information from the system and comparing it against one, or more, test conditions. A test condition can be as simple as testing whether a given system parameter has a value of 0 or 1, or as complex as monitoring the averages of a number of system load parameters over a period of time and testing these averages against standard thresholds.

When a rule check proves positive, the rule creates problem data that contains details of the rule check that created the problem. These details include the following:

- Time of the failure
- Severity of the problem
- Supporting evidence to verify the existence of the problem
- A detailed description of the problem
- Documented references that identify why the condition is a problem
- Where applicable, recommendations on how to resolve the problem

2.4.2 Windows Rule Package

SHC for Windows consists of over 300 rules which provide a comprehensive analysis of system configuration, performance and security. These rules are contained in 13 rule packages. Eight of these rule packages analyze the core operating system functionality. The other five rule packages analyze applications, or other operating system features, which may or may not be installed with the operating system. Table 2.5 and Table 2.6 list the rule packages along with a brief description of the area tested.

Table 2.5: Core operating system rule packages

Rule Package	Description
Dynamic	The dynamic rule package contains all of the rules executed during the dynamic phase. The rules in this package analyze many aspects of the system's performance including memory and CPU usage, disk I/O activity, network usage, and so on.

Generic Operating System	This rule package analyzes various operating system settings such as pagefile settings, system startup settings, crash dump settings, event log settings, and so on.
Disks	This rule package analyzes disk configuration.
Network	This rule package analyzes the configuration of various network protocols such as Dynamic Host Configuration Protocol (DHCP), Routing and Remote Access Service (RRAS), and Windows Internet Name Service (WINS).
Windows Events	This rule package analyzes events in the Windows event logs.
Windows Services	This rule package analyzes the Windows services installed on a system.
Security	This rule package analyzes various system security settings such as user rights and privileges, account passwords and policies, auditing, and so on.
Users	This rule package analyzes a system's user accounts. This includes examining stale accounts, the guest account, common account names, incorrect logons, and so on.

Table 2.6: Other rule packages

Rule Package	Description
Microsoft Active Directory	This rule package analyzes the Active Directory configuration. See section 2.4.2.1 Security Context and the Active Directory Rule Package for details of the privileges needed to run this rule package.
Microsoft Domain Naming Service (DNS)	This rule package analyzes DNS client and server configuration. The DNS server configuration rules run only if SHC is installed on a system that is a DNS server.
Microsoft Cluster Service (MSCS)	This rule package analyzes the configuration of the MSCS on an individual cluster node.
Microsoft Network Load Balancing (NLB)	This rule package analyzes the configuration of NLB.
Microsoft Internet Information Services (IIS)	This rule package analyzes the configuration of the IIS service including Active Server Pages

	(ASP) and File Transfer Protocol (FTP) settings.

2.4.2.1 Security Context and the Active Directory Rule Package

The Active Directory rule package is different from other rule packages in that the information it analyzes may not reside on the system on which SHC is installed. If SHC is installed on an Active Directory domain controller, it analyzes the Active Directory configuration on that domain controller. If SHC is installed on a system that has a computer account in an Active Directory domain, the Active Directory rule package attempts to bind to a domain controller, in the same domain, to retrieve the information it needs.

This attempted bind is performed using secure authentication; that is, using the security context of the user account under which SHC is started. Whether this bind attempt succeeds depends on the privileges of this user account.

If you run SHC using its command line interface, it runs under the security context of the user account under which it started. If the user account is not a member of the Active Directory domain, then the bind fails. Therefore the bind fails, if you run SHC using the built-in local administrator account.

If you run SHC using its web-based interface, it runs under the context of the System Management Homepage authenticated user. Again, the success of the bind attempt depends on the privileges of that user account.

In addition, five Active Directory package rules (AD5505, AD5521, AD5563, AD5564, and AD5574) require Enterprise, or Domain administrator, privileges to run successfully. Additional privileges are required because these rules query either the registry, or the event logs, on multiple domain controllers. Enterprise administrator privileges may be required to run rule AD5521, if the domain controller that holds the schema Flexible Single Master Operator (FSMO) role is in a different domain from the domain of the system on which SHC is installed.

Note: AD5505 is no longer in use on Windows Server 2012/R2.

Table 2.7 provides an outline of the Active Directory rule package scenarios.

Table 2.7: Active Directory rule package scenarios

System has domain computer account?	SHC Interface	User account used to run SHC	Active Directory Rule package status
No	Command-line interface	Local administrator	Does not run
No	Web-based interface	Valid System Management Homepage Agents account	Does not run
Yes	Command-line interface	Local administrator only	Does not run
Yes	Command-line interface	Domain user (also requires local administrator privileges on the system on which SHC is installed)	Runs successfully. The rules requiring additional privileges do not run.

Yes	Web-based interface	Valid System Management Homepage account	Runs successfully. The rules requiring additional privileges only run if the user account has these privileges.
Yes	Command-line interface	Domain Administrator	Runs successfully. If rule package AD5521 requires Enterprise Administrator privileges, it does not run.
Yes	Command-line interface	Enterprise Administrator	Runs successfully.

To ensure that SHC can bind to a domain controller and run the Active Directory rule package successfully, follow these recommendations:

- If you run SHC using its command-line interface, start SHC using an account that has domain or enterprise administrative privileges, which also has administrative rights on the system on which SHC is installed.
- If you cannot use an account that has domain or enterprise administrative privileges and you intend to use the SHC command-line interface, start SHC using an account that has domain user privileges, which also has administrative rights on the system on which you are running SHC.

Note: The rules that require additional privileges do not run.

- If you run SHC using its web-based interface, the bind succeeds but the rules that require additional privileges do not run.

A warning is written to the SHC error log if the Active Directory rule packages or any of its rules do not complete successfully. The SHC error log is located at:
`C:\Program Files\hpesmc\shc\data\<hostname>\shc\<job no>\log`

2.4.3 HP-UX Rule Packages

SHC for HP-UX consists of 250 rules which provide a comprehensive analysis of system configuration, performance, and security. Table 2.8 lists the rule packages included in SHC for HP-UX along with a brief description of the area tested by each package.

Table 2.8: SHC for HP-UX rule packages

Rule Package	Description
Dynamic	This package contains all of the rules executed during the dynamic phase. The rules in this package span the problem areas of all of the other rule packages. Areas of analysis include file systems, memory, kernel, CPU, and network.
File systems	This package contains a set of static rules that analyze file-system configuration.
Memory	This package examines memory utilization, buffer cache, swap configuration, and shared memory allocation.

Network	This package contains a set of static rules that analyze the network I/O statistics, and network subsystem configuration.
Security	This package addresses security issues relating to user accounts, access permissions, and services installed on the system.
NFS	This package contains a set of static rules that analyze network file system (NFS) statistics and configuration.
JFS	This package contains a set of static rules that analyze journal file system, also known as Veritas File System (VxFS), statistics and configuration.
LVM	This package contains a set of static rules that analyze the configuration of the Logical Volume Manager (LVM) subsystem. Rules in this package analyze the configuration of various LVM areas including general setup, sub-disk configuration, and redundancy. Some rules in this package also verify the LVM configuration against striping and mirroring best practices.
Base OS	This package analyzes the crash dump mechanism and the system kernel file.
CPU	This package contains a set of static rules that examine the processor configuration and setup. In addition there are a number of CPU rules in the dynamic package that examine CPU performance over the duration of the dynamic analysis.
vPars	This package contains a set of static rules that analyze vPars environment and configuration.
VXVM	This package contains a set of static rules that analyze the configuration of Veritas Volume Manager 3.5 for HP-UX. Rules in this package analyze the configuration of various Veritas areas including general setup, configuration, and redundancy. Some rules in this package also verify the Veritas configuration against striping and mirroring best practices.
Serviceguard	This package contains a set of static rules that analyze the configuration of a HP-UX Serviceguard installation. This package is only run on systems that are configured as members of a Serviceguard cluster and contains rules that analyze areas such as cluster status and Serviceguard package configuration.

2.4.4 Linux Rule Packages

SHC for Linux consists of 180 rules which provide a comprehensive analysis of system configuration, performance, and security. Table 2.9 lists the rule packages included in SHC for Linux along with a brief description of the area tested by each package.

Table 2.9: SHC for Linux rule packages

Rule Package	Description
Dynamic	This package contains all of the rules executed during the dynamic phase. The rules in this package span the problem areas of all of the other rule packages. Areas of analysis include file systems, memory, kernel, CPU, and network.
File systems	This package contains a set of static rules that analyze file-system configuration for Ext2/3/4, XFS, ReiserFS and JFS file-systems.
Memory	This package examines memory utilization, buffer cache, swap configuration, and shared memory allocation.
Network	This package contains a set of static rules that analyze the network I/O statistics, and network subsystem configuration.
Security	This package addresses security issues relating to user accounts, access permissions, and services installed on the system.
NFS	This package contains a set of static rules that analyze network file system (NFS) statistics and configuration.
LVM	This package contains a set of static rules that analyze the configuration of the Logical Volume Manager (LVM) subsystem. Rules in this package analyze the configuration of various LVM areas including general setup, sub-disk configuration, and redundancy. Some rules in this package also verify the LVM configuration against striping and mirroring best practices.
Base OS	This package analyzes the crash dump mechanism and the system kernel file.
CPU	This package contains a set of static rules that examine the processor configuration and setup. In addition there are a number of CPU rules in the dynamic package that examine CPU performance over the duration of the dynamic analysis.
ProLiant	This package contains a set of static rules that examine various aspects of ProLiant servers.
MD	This package contains a set of static rules that examine various aspects of the Linux Software Raid subsystem.
VXVM	This package contains a set of static rules that analyze the configuration of Veritas Volume Manager for Linux. Rules in this package analyze the configuration of various Veritas areas including general setup, configuration, and redundancy. Some rules in this package also verify the Veritas configuration against striping and mirroring best practices.
Serviceguard	This package contains a set of static rules that analyze the configuration of a Linux Serviceguard installation. This package is only run on systems that are configured as members of a Serviceguard cluster and

	contains rules that analyze areas such as cluster status and Serviceguard package configuration.

2.4.5 Rule Categories

Each SHC rule belongs to at least one and at most three categories. A rule may have a high, medium, or low priority status in relation to each of its categories. When a specific rule problem in a report is being audited, these categories provide a quick overview of the affected area. The *System Health Check Scorecard* section of the SHC reports list the number of problems that are found in each category for a given SHC analysis. For more information, see section 4.6 SHCA Reports.

2.4.5.1 Windows Rule Categories

Table 2.10, Table 2.11, and Table 2.12 list the SHC rule categories for Windows. There are three major categories, that is, *Configuration, Performance, and Security.* All the other rule categories are sub-categories of these.

Table 2.10: Configuration rule category

Subcategory	Issues addressed
Services	Issues relating to which services are running and their configuration.
Disks/File-systems/Files	Issues relating to disk and file-system configuration.
Hardware/Software	Configuration issues relating to the versions of hardware and software installed on the system.
Network	Network configuration issues which may affect the functioning of network services.
Auditing/Events	Configuration issues raised by entries in the event logs.
Recovery	System recovery issues, such as recovery settings and repair information.
Active Directory	Active Directory configuration issues.

Table 2.11: Performance rule category

Subcategory	Issues addressed
Applications	Performance issues for applications, for example, identifying applications that may be impacting on a machine's performance.
Disks/File-systems/Files	Disk and file-system performance issues, including disk utilization, poor disk performance due to possible hardware failure, and performance issues related to the pagefile.
Network	Network performances issues, for example, by identifying elements of the network set-up which may be affecting performance.

System CPU/Memory/IO	Performance problems including those relating to lack of memory, faulty hardware generating too many interrupts, system tasking, and running memory intensive applications.

Table 2.12: Security rule category

Subcategory	Issues addressed
Users/Accounts/Logons	Security issues relating to user accounts, account policy, and logon settings.
Disks/File-systems/Files	Security issues relating to disks, the file systems they use, and the security settings on the directories and files they contain.
Network	Security issues relating to the network services installed on the system and their configuration.
Auditing/Events	Security issues relating to the auditing of events on the system.
Services	Security issues relating to the services installed on the system and their configuration.

2.4.5.2 HP-UX Rule Categories

Table 2.13, Table 2.14, and Table 2.15 list the SHC rule categories for HP-UX. There are three major categories; Configuration, Performance, and Security. When a specific rule problem in a report is being audited, these categories provide a quick overview of the affected area.

Table 2.13: Configuration rule category for HP-UX

Subcategory	Issues addressed
Disk/File System	Disk sub-system issues under the following criteria: • inode usage • file system usage • fstab/pass numbers • mount options
CPU/IO	Issues such as the software license database, the crash dump mechanism, backup strategy, system kernel modifications, inactive accounts, and system table's configuration.
Paging/Swapping	Examines usage of virtual/swap space. Reporting of missing and badly utilized swap space, as well as dump file and error log problems.
Network/NFS	Looks at NFS and network issues such as how file systems are mounted, NFS statistics, network statistics, and exported file systems.

Serviceguard	Addresses Serviceguard Node and Package configuration, status and resource allocation
vPars	Addresses vPars system configuration and settings.
VXVM	Addresses VERITAS VxVM configuration and settings.

Table 2.14: Performance rule category for HP-UX

Subcategory	Issues addressed
Disk/File System	Disk and file system performance issues, including load balancing, space utilization and swap space configuration.
CPU/IO	CPU load balancing, application load balancing, and buffer cache issues.
Paging/Swapping	Examines memory utilization, swapping behavior, and shared memory allocation.
Network/NFS	The network interface is checked for various options and parameters including NFS server and client set-up, and routing daemon performance bottlenecks.

Table 2.15: Security rule category for HP-UX

Subcategory	Issues addressed
Filesystem	Checks overall system security management and administration.
Users	Checks user accounts, system access permissions, passwords, SUID programs, and installed services.
Network/NFS	Addresses security issues relating to the network services installed on the system and their configuration.

2.4.5.3 Linux Rule Categories

Table 2.16, Table 2.17, and Table 2.18 list the SHC rule categories for Linux. There are three major categories; *Configuration*, *Performance*, and *Security*. When a specific rule problem in a report is being audited, these categories provide a quick overview of the affected area.

Table 2.16: Configuration rule category for Linux

Subcategory	Issues addressed
Disk/File System	Disk sub-system issues under the following criteria: • inode usage • file system usage • fstab/pass numbers • mount options
CPU/IO	Issues such as the software license database, the crash dump mechanism, backup strategy, system kernel modifications, inactive accounts, and system table's configuration.
Paging/Swapping	Examines usage of virtual/swap space. Reporting of missing and badly utilized swap space, as well as dump file and error log problems.

Network/NFS	Looks at NFS and network issues such as how file systems are mounted, NFS statistics, network statistics, and exported file systems.
Serviceguard	Addresses Serviceguard Node and Package configuration, status and resource allocation. **Note:** Serviceguard is disabled for Red Hat Enterprise Linux 7.

Table 2.17: Performance rule category for Linux

Subcategory	Issues addressed
Disk/File System	Disk and file system performance issues, including load balancing, space utilization and swap space configuration.
CPU/IO	CPU load balancing, application load balancing, and buffer cache issues.
Paging/Swapping	Examines memory utilization, swapping behavior, and shared memory allocation.
Network/NFS	The network interface is checked for various options and parameters including NFS server and client set-up, and routing daemon performance bottlenecks.

Table 2.18: Security rule category for Linux

Subcategory	Issues addressed
File-system	Checks overall system security management and administration.
Users	Checks user accounts, system access permissions, passwords, SUID programs, and installed services.
Network/NFS	Addresses security issues relating to the network services installed on the system and their configuration.

3 Installing, upgrading and configuring SHC

This chapter describes how to install, upgrade, and configure SHC.

3.1 Getting the Latest Version of SHC

The latest version of SHC is available from the HPE Software Depot. Go to:

https://h20392.www2.hpe.com/portal/swdepot/displayProductInfo.do?productNumber=SHCBASE01

You may need to complete a registration form if this is your first time downloading the SHC software.

3.2 Installing/Upgrading SHC on Windows Systems

To install or upgrade SHC, you must be logged on to the system using the built-in local administrator account or using an account which is a member of the built-in local administrators group. If you do not have administrative rights, access to the installation is denied.

3.2.1 SHC for Windows Installation Instructions

The SHC kit is provided as a self-extracting executable created using InstallShield. SHC kit names use the following format:

```
SHCNT<SHC version>.build<SHC build number>.exe
```

3.2.1.1 Installing SHC on a system for the first time

On launching the executable on a system on which SHC is not currently installed, the SHC Setup wizard guides you through the installation as follows:

1. Click **Next** in the *Welcome* dialog that displays the version of the SHC kit you are installing.
2. Read the License Agreement and click **Yes** if you accept the terms.

   The *Start Copying Files* dialog displays details of the disk space available on the destination drive and the amount of disk space required by SHC. The SHC Setup wizard terminates if less than 30MB is available on the destination drive.

3. Click **Next** to begin copying the SHC program files onto the system. A dialog displays the progress of the file copying.

   The final dialog is displayed. If the disk performance counters on the system are not enabled, a message is displayed informing you that they should be enabled. For more information, see 2.2.1 Microsoft Windows Systems.

4. Click **Finish** in the final SHC Setup wizard dialog to complete the installation of the SHC kit.

   The *SHC Configuration* utility is started. This allows you to configure your customer, service, and transport details. For more information on how to configure this information, see sections 3.6 Customer Details, 3.7 Service Details, and 3.8 Transport Details. SHC requires these details to be configured before you can perform an analysis.

5. To restart this utility whenever you want to update your configuration details, run command prompt and enter the following command:
   `C:\program files\hpesmc\shc\bin\shcconfig.exe`

   You can also configure these details using the web-based interface. For more information, see section: 3.5.2 Configuring SHC using the Web-Based Interface.

3.2.1.2 Installing on a system with an existing SHC installation

Only one installation of SHC may exist on any system. If you attempt to install SHC on a system which has an existing installation, the following occurs:

- If the installed SHC version is the same, the SHC Setup wizard warns you that SHC is already installed. Click **Finish** to exit the SHC Setup wizard.

- If the installed SHC version is newer, the SHC Setup wizard warns you that a newer version is already installed. Click **Finish** to exit the SHC Setup wizard.
- If the installed SHC version or build is older, the SHC Setup wizard performs an upgrade installation (with the exception of a pre-SHC V10 installation).

Warning: Warning: Versions of SHC older than version 10.1.6 must be removed before installing SHC V1016. Also uninstall any PAC and MC3 components.

Note: When the SHC installation wizard is comparing SHC version numbers, it uses the entire version string (including the build number). For example, SHC V10.1-250, where 10.1 is the SHC version and 250 denotes the build number.

To remove SHC versions older than v10.1.6 from a system, complete the following steps:

1. Select **Control Panel**. For Windows Server 2003, click the **Add/Remove Programs** icon. For Windows Server 2008 and 2012, click **Programs** and then **Programs and Features**.
2. Select **HP *System Healthcheck 10.1.5 ((*Remove Only**) from the list of currently installed programs.
3. Click **Remove** to launch the *SHC Setup* wizard.

   A dialog is displayed with the following question:

   Do you wish to completely remove System Healthcheck and all of its components?

4. Click **OK** to remove SHC from your system.

   The uninstall process progresses and a dialog displays the progress of the file removal. Subsequently, another dialog is displayed indicating that the uninstallation is complete.

5. If you want to also remove all stored SHC data from previous analyses, select the following checkbox:

   Delete ALL SHC reports

   If you do not select this checkbox, the SHC data remains on the system for potential re-use in the future, for example, subsequent installations of SHC can resend this data in order to generate new SHCA reports.

6. Click **Finish**.

Note: Uninstalling SHC does not remove the HP Mission Critical Common Components (MC3) from the system. It is possible to remove MC3 from a system but this is *not*recommended as other products may rely on this and may cease to function correctly.

To remove MC3, complete the following steps (ensure no other MC3 dependent products are installed):

1. Select **Control Panel**. For Windows Server 2003, click the **Add/Remove Programs** icon. For Windows Server 2008 and 2012, click **Programs** and then **Programs and Features**.
2. Select *HP Mission Critical Common Components* from the list of currently installed programs.
3. Click **Change/Remove** to launch the SHC Setup wizard.

   A dialog displays the following question.

   Are you sure you wish to remove HP Mission Critical Common Components (MC3) from your computer?

4. Click **OK** to remove MC3 from your system.

During an upgrade installation, the SHC Setup wizard guides you through the installation process as follows:

1. A *Welcome* dialog indicates the version of SHC that is currently installed and the version of the upgrade kit.
2. Click **Next** to continue.
3. Read the License Agreement and click **Yes** to accept the terms.

The *Start Copying Files* dialog displays details of the disk space available on the destination drive and the amount of disk space required by SHC. The SHC Setup wizard terminates if less than 30MB is available on the destination drive.

4. Click **Next** to begin copying the SHC program files onto the system. A dialog displays the progress of the file copying.
5. The installation progresses as follows:
    a. A dialog displays the progress of the file copying.
    b. A message box is displayed which indicates that the SHC service is being stopped (it is restarted when the upgrade installation completes).
    c. All SHC program files are overwritten with the new files. However, the following configuration details are retained from the previous SHC installation:
        - Customer, service, and transport details
        - Scheduled analysis configuration details

    A message box is displayed indicating that the SHC services are being initialized. The final dialog is displayed. If the disk performance counters on the system are not enabled, a message is displayed informing you that they should be enabled. For more information, see section 2.2.1 Microsoft Windows Systems.

6. Click **Finish** in the final SHC Setup wizard dialog to complete the installation of the SHC kit.

    The SHC Configuration utility is started. This allows you to configure your customer, service, and transport details. SHC requires these details to be configured before you can perform an analysis. For more information, see sections 3.6 Customer Details, 3.7 Service Details, and 3.8 Transport Details.

    To restart this utility whenever you want to update your configuration details, run command prompt and enter the following command: `C:\program files\hpesmc\shc\bin\shcconfig.exe`

    You can also configure these details using the web-based interface. For more information, see section 3.5.2 Configuring SHC using the Web-Based Interface.

3.2.1.3 System Management Homepage Installation

The SHC web interface is only available if the System Management Homepage (SMH) is installed. The recommended version is 6.2.1.4 or higher. Once this is installed, the SHC web interface is available from the SMH portal. For more information about installing SMH, refer to the HPE System Management Homepage Installation Guide, available from the HPE Support Center: https://support.hpe.com/hpesc/public/home

Note: We recommend reading the System Management Homepage User Guide in conjunction with the HPE System Management Homepage Installation Guide.

Note: HPE SMH is not officially supported on Itanium-based Linux. For more information on the supported OS versions, refer to the HPE SMH documentation.

Important: If the System Management Homepage is installed after System Healthcheck on Red Hat systems, to enable access through the interface, you must run the following commands to configure it:

```
/usr/sbin/usermod -a -G hpesmc hpsmh

/usr/sbin/usermod -a -G sys hpsmh
```

Then run the following script to restart it: **`/opt/hpesmc/shc/bin/restartSMH.sh`**

3.2.2 Installed Windows Services

Table 3.1 provides details on the Windows service SHC installs on the system.

Table 3.1: Windows service installed by SHC

Service Display Name	Service Key Name	Description	Startup Type	Started on Installation?
HPE System Healthcheck Scheduler	CPQSHCSCHEDULER	Handles SHC scheduling	Automatic	No. It starts when you schedule an analysis. For more information, see 4.3 Scheduling an Analysis.

3.2.3 Mass Installation and Configuration for Windows

To install SHC for Windows on multiple systems, complete the following steps:

1. Generate an answer file from a system on which SHC for Windows is currently installed and configured. This system's configuration will be reproduced on the system on which SHC is to be installed. To generate an answer file, from the SHC bin directory run the following command:

   createAnswerFile.bat C:\temp\AnswerFile.dat –o

   The –o parameter will overwrite any existing SHC settings that may exist on the remote systems.

2. To perform the mass install on the remote systems, run the **SHCNT500.build210.exe <answerFile.dat>**command, providing the answer file <answerFile.dat> as a parameter to the SHC install kit:

Important: You must include the full path to the answer file.

The mass install can be performed using a number of technologies, for example, Active Directory Software Installation, or Microsoft System Management Server.

To perform a silent mass install on the target systems provide a –s parameter to the SHC install kit, as follows:

```
SHCNT500.build210.exe C:\temp\AnswerFile.dat –s
```

Note: No dialog boxes display during a silent SHC install.

3.3 Installing and Upgrading SHC on HP-UX Systems

Note: SHC has an exrequisite on Insight Remote Support Advanced (RSA) Configuration Collector (UC-ACC). If this product is installed, SHC for HP-UX will not be installed. Use iRSA Server Performance Collection / Server Advanced Configuration Collection instead. Please do not correct the configuration of the mail server, ensure you can successfully send the email before sending PAC DATA.

SHC for HP-UX is supplied as a SD-UX product packaged within a depot file. The installation process installs two SD-UX products, MCPS-SHC (SHC), MCPS-PAC (PAC). There are two separate SHC kits for HP-UX, PA-RISC, and IPF. SHC kit names use the following format: `SHCHPUX-<PA|IPF>-<SHC version>-build<SHC build no.>.depot`

For example, SHCHPUX-PA-V1000-build51.depot.

It is important to be familiar with swinstall before attempting to install SHC on a system. More information is available on the main page (swinstall(1M)) and in the HP-UX system documentation.

3.3.1 Installing SHC on a system for the first time

To install SHC for HP-UX, complete the following steps as root:

1. Use **swinstall** to install SHC, you must specify the absolute path of the depot file (not relative path), for example:

   ```
   swinstall -s <path_to_depot_file>/file.depot MCPS-SHC
   ```

2. To configure SHC, launch the shcconfig utility by running the following command: `/opt/hpesmc/shc/bin/shcconfig`. SHC can be reconfigured at any time by re-running the `shcconfig` utility.

   For more information, see section 3.5.1 Configuring SHC using SHCCONFIG Utility.

3. You can now run SHC analyses.

SHC for HP-UX is installed to **/opt/hpesmc/shc**, **/var/opt/hpesmc/shc**, **/var/run** and **/etc/opt/hpesmc/shc**. MCPS-PAC is installed to **/opt/hpe/RemoteSupport/pac**. Static files such as the MC3/SHC binaries, documentation files, and rule packages are installed under **/opt/hpesmc**, configuration files are found under **/etc/opt/hpesmc**, while files created during normal execution of SHC are placed under **/var/opt/hpesmc**.

3.3.2 Installing on a system with an existing SHC installation

SHC products older than Version 10 have to be removed before installing SHC Version 10.1.6. This is enforced by an exrequisite dependency in the SHCv10.1.6 kit.

For SHC products from v10.1.6 see Section 3.3.1

To remove SHC versions older than v10.1.6 from a system, use swremove to remove the SHC product. For example, enter the following command: **/usr/sbin/swremove MCPS-SHC**

To remove SHC (MCPS-SHC) using the swremove GUI, enter the following command: /usr/sbin/swremove

Uninstalling SHC removes all SHC files in **/opt/hpsmc/shc**, however, SHC data files remain in **/var/opt/hpsmc/shc**.

To remove PAC from a system, use **swremove:**

/usr/sbin/swremove MCPS-PAC

Note: Uninstalling MCPS-SHC does not remove the MCPS-COMMON (MC3) and MCPS-PAC (PAC) SD-UX products from the system.

To remove MC3 from a system, use swremove to remove the MC3 product. For example, enter the following command:

/usr/sbin/swremove MCPS-COMMON

To remove PAC from a system, use swremove:

/usr/sbin/swremove MCPS-PAC

To remove MC3 (MCPS-COMMON) using the swremove GUI, enter the following command:

/usr/sbin/swremove

3.3.3 Mass Installation and Configuration for HP-UX

Software Distributor provides features for remote operations that let you move software to remote systems (targets) from the local host (controller). You can use these features interactively and monitor results of all SD-UX commands with the Job Browser or from the command line with the swjob command. For an overview of all SD commands, see the **sd(5)** man page.

SHC can be installed and configured on multiple targets from a controller using the above features of SD. A configuration file generated on the controller ("answer file") is used to configure SHC on the target systems.

3.3.3.1 Set up ACLS on Remote Systems

The following step allows root access from the controller system.

To set up access control lists (ACLs) on remote systems, as root, enter the following command on each remote system to be managed:

```
swacl -l root -M user:root@<controller>:a
```

Where `<controller>` is replaced with the name of the central system.

For more information, see the swacl(1M) man page.

3.3.3.2 Configure the controller (Central Server)

To configure the controller, complete the following steps:

1. Create one directory depot for each architecture (PA and/or IA) that you want to install on from the tape depots provided (if all the target systems and the controller have the same architecture, create only one depot):

   ```
   swcopy -s < PA_tape_depot> MCPS-SHC @ <PA_depot_directory>
   ```

   ```
   swcopy -s < IA_tape_depot> MCPS-SHC @ <IA_depot_directory>
   ```

2. Install SHC on the controller from the depot corresponding to its architecture:

   ```
   swinstall -s <depot_directory> MCPS-SHC
   ```

3. To generate an answer file, run the following commands:

   ```
   swask -s <PA_depot_directory> MCPS-SHC
   ```

   ```
   swask -s <IA_depot_directory> MCPS-SHC
   ```

   `swask` runs `shcconfig` and saves the configuration data in an answer file in the depot directory. This file is then used in subsequent steps to automatically configure SHC on the target hosts.

3.3.3.3 Mass Installation

To complete the mass installation on the controller, run the following commands:

```
swinstall -s <PA_depot_directory> MCPS-SHC @ hostA hostB
```

```
swinstall -s <IA_depot_directory> MCPS-SHC @ hostC hostD
```

This installs SHC on multiple hosts, configuring it with the answer file previously generated.

Note: If the remote hosts have different OS versions, the swinstall command must be executed separately for each group of hosts with the same OS version. For example, if hostA1 and hostB1 are HP-UX Version 11.11, and hostC1 and hostD1 are HP-UX Version 11.23, you must run the following commands:

```
swinstall -s <PA_depot_directory> MCPS-SHC @ hostA1 hostB1
```

```
swinstall -s <PA_depot_directory> MCPS-SHC @ hostC1 hostD1
```

The same applies for IA systems, install HP-UX Version 11.23 targets using separate commands.

3.3.3.4 Mass Reconfiguration

If you want to subsequently make a configuration change on the target hosts, enter the following command on the controller:

```
swconfig -x reconfigure=true -x ask=true MCPS-SHC @ hostA hostB
```

Note: The ask=`true` option determines the run of `shcconfig` and the saving of a new answer file that will be used for reconfiguring target hosts.

3.4 Installing and Upgrading SHC on Linux Systems

SHC for Linux is supplied as a self-extracting kit, with the following naming convention:

`installSHCLinux-<version>-<build>.rpm.sh`

The kit contains two products; PAC (hpepac), and SHC (hpeshc).

3.4.1 Installing SHC on a system for the first time

To install SHC for Linux, complete the following steps as `root`:

1. Run the following command:

   `installSHCLinux-<version>-<build>.rpm.sh`

2. To configure SHC, launch the `shcconfig` utility by running the following command:

   `/opt/hpesmc/shc/bin/shcconfig`

   SHC can be reconfigured at any time by re-running the `shcconfig` utility. For more information, see section 3.5.1 Configuring SHC using shcconfig utility.

3. You can now run SHC analyses on Linux.

Note: Prior to v10.1.8, on systems running Red Hat Enterprise Linux Version 4, 5 and 6, the compat-libstdc++ package must be present for the SHC installation to succeed. The package is named 'compat-libstdc++.*.rpm' and is located on disc 4 (ia64), or disc 2 (x86_64 and i386) of the Red Hat 4 distribution. On systems running Red Hat Enterprise Linux version 7 and SUSE Enterprise Server 12, x86_64 platforms only, the compat-libstdc++-33-3.2.3-61.x86_64.rpm must be downloaded and installed for the SHC installation to succeed.

Note: For Red Hat Enterprise Linux Version 4, 5, and 6, x86 and x86_64 platforms only, dmidecode rpm must be installed prior to installing SHC.

Note: For SuSE 10 and 11, x86 and x86_64 platforms only, pmtools rpm must be installed prior to installing SHC.

Note: For Red Hat Enterprise Linux Version 4 and 5 and SuSE 10 and 11 ia64 platforms only, the hpmgtbase rpm available from HPE, must be installed prior to installing SHC. This rpm is available on HPE Enablement Kit for Linux on Integrity Servers - Management CD-ROM Package. This CD-ROM package is normally delivered with HPE Integrity Linux Servers; it can also be downloaded from https://www.hpe.com/tw/en/servers/server-operating-systems.html.

Note: Please do not correct the configuration of the mail server, ensure you can successfully send the email before sending PAC DATA.

Note: The SHC application requires ABI version 5 of the ncurses library. RHEL 8 and SUSE 15 automatically install version 6.1 of ncurses, so it is necessary to install version 5 of ncurses to successfully run SHC.

SHC for Linux is installed to: `/opt/hpesmc/shc`, `/var/opt/hpesmc/shc`, `/var/run`, and `/etc/opt/hpesmc/shc`

PAC is installed to: `/opt/hpe/RemoteSupport/pac`

Static files such as the MC3/SHC binaries, documentation files, and rule packages are installed under: `/opt/hpesmc`

SHC configuration files are saved to `/etc/opt/hpesmc`, while files created during normal execution of SHC are saved to: `/var/opt/hpesmc`

3.4.2 Installing on a system with an existing SHC installation

SHC products older than Version 10 have to be removed before installing SHC Version 10.1.6. This is enforced by an exrequisite dependency in the SHC v10.1.6 kit.

For SHC products from v10.1.6 follow Section 3.3.1

To remove SHC versions older than v10.1.6 from a system, use rpm to remove the SHC product.

For example, enter the following command:

`/usr/bin/rpm –e hpshc hppac`

Uninstalling SHC removes all SHC files in **`/opt/hpsmc/shc`** and **`/opt/hp/RemoteSupport/pac`**, however, SHC data files remain in **`/var/opt/hpsmc/shc`**.

To remove PAC from a system, use rpm.

For example, enter the following command: `/usr/bin/rpm –e hppac`

Note: Uninstalling hpshc does not remove the hpmc3 (MC3) or hppac (PAC) products from the system.

To remove MC3 from a system, use **rpm** to remove the MC3 product.

For example, enter the following command: **/usr/bin/rpm –e hpmc3**

To remove PAC from a system, use rpm.

For example, enter the following command: `/usr/bin/rpm –e hppac`

3.4.3 Mass Installation and Configuration for Linux

SHC can be configured on multiple systems using an answerfile. Complete the following steps as root:

1. Install and configure SHC on one system, see section 3.4.1 Linux Installation Instructions.
2. Generate an answer-file using the following command:

   ```
   /opt/hpesmc/shc/bin/createAnswerFile.sh –o –f ./SHCAnswerFile.cfg
   ```

3. Copy the kit and the answer-file to the systems you want to install SHC, as follows:

   ```
   scp installSHCLinux-<version>-<build>.rpm.sh <system_name>:/tmp

   scp SHCAnswerFile.cfg <system_name>:/tmp
   ```

4. To perform a mass install, from the original host, run the installation on every system, as follows:

   ```
   ssh <system_name> /tmp/installSHCLinux-<version>-<build>.rpm.sh
   /tmp/SHCAnswerFile.cfg
   ```

3.5 Configuring SHC

After installing SHC, you must then configure SHC before an analysis can be performed (see section 3.2 Installing/Upgrading SHC on Windows Systems or 3.3 Installing and Upgrading SHC on HP-UX Systems or 3.4 Installing and Upgrading SHC on Linux Systems for more information). Typically, you do this using the shcconfig utility. It is also possible to configure SHC using the web-based interface and the SHC administration command line interface (Admin CLI).

To run SHC analysis, you must provide customer details using either the SHC web-based interface or the shcconfig utility. To request a SHCA report, you must provide service and transport details. Once you have provided valid information, you can perform an analysis using either the SHC web-based or command-line, interface. Configuration details can be updated at any time using the web-based interface, or the shcconfig utility.

Note: SHC shares common configuration data, such as, customer, service, and transport data with other HPE Services tools. Mission Critical Common Components (MC3) is incorporated into SHC to

reduce administration and setup overheads, and to ensure that configuration data is synchronized across installed HPE Services tools. To simplify the installation process, the SHC web-based interface and the shcconfig utility use MC3 to retrieve existing configuration data.

3.5.1 Configuring SHC using SHCCONFIG Utility

To configure SHC using the shcconfig utility, you must run the shcconfig command at the command prompt. The shcconfig command can be found in C:\program files\hpesmc\shc\bin\ (SHC for Windows) and /opt/hpesmc/shc/bin/shcconfig (SHC for HP-UX/Linux). You can reconfigure SHC at any time by re-running the shcconfig utility. See sections 3.6 Customer Details, 3.7 Service Details, and 3.8 Transport Details for details on how to complete these sections.

When you run the shcconfig utility for Windows, a tabbed dialog is displayed that allows you to access the *Customer Details*, *Service Details*, and *Transport Details* screens. When you run the shcconfig utility for HP-UX or Linux, a shcmenu screen is displayed that allows you to access the *Customer Details*, *Service Details*, and *Transport Details* screens. See sections 3.6 Customer Details, 3.7 Service Details, and 3.8 Transport Details for details of how to complete these screens.

3.5.2 Configuring SHC using the Web-based Interface

To configure SHC using the web-based interface, you must connect to the interface by pointing your web browser software to https://<system hostname>:2381/. You may be prompted for login details, see section 4.1.3 General Web-Based Interface Usage for details of how to login and proceed to the SHC interface.

Note: The SHC web-based interface is available from the SMH portal. Therefore, SMH must be installed separately in order to access SHC web-based interface, see section 3.2.1.3 System Management Homepage Installation for more details.

When you have connected to the SHC interface, complete the *Customer Details*, *Service Details*, and *Transport Details* screens available from the left menu of the SHC web-based interface, under the section titled *Configuration*. For more information on how to complete these screens, see sections 3.6 Customer Details, 3.7 Service Details, and 3.8 Transport Details.

3.6 Customer Details

The *Customer Details* page requires you to provide information about the company and person responsible for administering the system on which SHC is installed. The information you supply is subsequently displayed in the *Customer Details* section of SHC reports. If you do not configure the *Customer Details* page correctly and then attempt to run SHC, a warning is displayed informing you that the customer details are incomplete.

The *Customer Details* page consists of eight fields. All are mandatory in order to generate reports except the **Postal Code** field. SHC allows you to continue using all the configuration methods when mandatory fields have not being entered. Both SHC for Windows and HP-UX/Linux shcconfig utilities display a message (in the case of HP-UX/Linux when the details are being saved and for Windows when you click **OK** and the tool exits). Validation is performed later, that is, before the analysis output files are created to check if all necessary fields have been filled. Table 3.2 describes the *Customer Details* page fields.

Table 3.2: Customer Details fields

Field label	Description
Customer Name	Enter the name of the person who administers the system.
Company Name	Enter the company's name.
Address (Street)	Enter the street location of the company.
Address (City)	Enter the city where the company is located.

Postal Code	Enter the zip code part of the company's address. This field is not mandatory.
Country (code)	Enter the country where the company is located. The SHC web-based interface and the shcconfig utility for Windows and HP-UX/Linux display a drop-down box of country names. A complete list of countries and their corresponding codes is available in Appendix B, Country Codes of this user guide.
Customer's E-mail	Enter the e-mail address of the person entered in the Customer Name field. You must enter a valid e-mail address, that is, name@company.com. Otherwise a warning is displayed.
Telephone Number	Enter the telephone number of the person entered in the Customer Name field. You must enter a valid telephone number. The telephone number may contain a combination of the following characters: Digits: 0-9 Parentheses: ( ) Hyphens: - Periods: . If you do not enter a valid telephone number, a warning is displayed.

3.6.1 Saving Customer Details using the Web-Based Interface

To save the details that you have entered, click **Save**. If the details are saved successfully, a message is displayed in green at the top of the page.

To move to the *Service Details* page, click **Next**. If you have entered invalid data, SHC displays an error message when you click **Next**.

To undo any changes since the last time you saved your changes, click **Reset**. If the reset is successful, a message is displayed in green at the top of the page.

3.6.2 Saving Customer Details using SHC on Windows SHCCONFIG Utility

To save the details that you have entered, click **Apply**.

To move to the *Service Details* page, click the **Service** tab. If you have entered invalid data, the `shcconfig` utility displays an error message when you click the **Service** tab.

3.6.3 Saving Customer Details using SHC for HP-UX and Linux SHCCONFIG Utility

To save the customer details that you provided, select **OK** and press **ENTER** to return to the `shcmenu` page. On the `shcmenu` page, select **SAVE** and press **ENTER** to commit your changes.

3.7 Service Details

Before you can request an SHCA report, you are required to configure the service details. These details provide information about your HPE service contract. This information is displayed in the *Service Details* section of the SHC reports.

The *Service Details* page consists of five fields. The **Hostname** and **Detected serial number** fields are read-only as SHC extracts this information from your system. The mandatory **System Serial Number** field is automatically populated.

The mandatory **Specialist Email** and **Service Agreement ID** fields must both be completed in order to run SHC and to receive an email that provides a link to allow you access to the Proactive Analysis Framework (PAF) web-based interface to download SHCA Reports. If either field is not completed, it will not be possible to run SHC in order to obtain an SHCA Report.

The **Specialist Email** will receive a notification email containing a download link to the SHCA Reports (both Detailed and Management Summary reports) in PAF.

Table 3.3 describes the Service Details page fields.

Table 3.3: Service Details fields

Field	Description
Specialist E-mail	Enter the primary e-mail of your HPE Service specialist. You must enter a valid HPE e-mail address, that is, name@hpe.com. Otherwise a warning is displayed. It has to be the primary e-mail address for authentication purposes when retrieving reports. **Note:** There are two ways in which a company is entitled to use SHC: 1. As part of a service contract: When you enter into a service contract with HPE that includes a SHC service component, you are given a HPE Service specialist e-mail address to contact for all service events. If your company has such a service contract, enter this e-mail address in this field. 2. As a standalone service offering: If you purchased SHC as a standalone offering, you were given a Purchase Order number, a HPE Service specialist contact name and their e-mail address. In this case, enter the specialist's e-mail address in this field. **Note:** The HPE Service specialist e-mail address is always required. It is used to deliver a link to the completed SHCA reports once they are generated by HPE.
System Serial Number	Normally, this value is automatically populated by SHC. If SHC fails to detect the serial number, this field is blank. This can occur on older hardware and on systems where certain components have been replaced. In this case, you must source the serial number for your system (often it is located on a label that is attached to your system hardware) and enter it in this field. The required format for the serial number is between 6 and 12 alphanumeric characters.
Service Agreement ID	A service agreement ID number is given to a company when it enters into a service contract with HPE. This ID number may be called a Microsoft Authorized Support (MAS) number, a standalone Statement of Work (SOW) contract number, or a Purchase Order number, or an Obligation ID depending on the type of service contract involved. Enter your Service Agreement ID number in this field; that is, your MAS number, SOW contract number, service agreement ID, Purchase Order or an Obligation ID number as appropriate.

	Alternatively, if you have not purchased SHC as described above and you do not have an Obligation ID number, enter NONE in this field.
Hostname	This read-only field displays the system's hostname.
Detected serial number	This read-only field displays the system's serial number. If SHC fails to detect the serial number, this field is blank. The value in this field appears by default in the System Serial Number field, that is, unless you enter a different value in the System Serial Number field.

3.7.1 Saving Service Details using the Web-Based Interface

To save the details that you have entered, click **Save**. If the details are saved successfully, a message is displayed in green at the top of the page.

To move to the *Transport Details* page, click **Next**. If you have entered invalid data, SHC displays an error message when you click **Next**.

To undo any changes since the last time you saved your changes, click **Reset**. If the reset is successful, a message is displayed in green at the top of the page.

3.7.2 Saving Service Details using SHC for Windows SHCCONFIG Utility

To save the details that you have entered, click **Apply**.

To move to the *Transport Details* page, click the **Transport** tab. If you have entered invalid data, the `shcconfig` utility displays an error message when you click the **Transport** tab.

3.7.3 Saving Service Details using HP-UX and Linux SHCCONFIG Utility

To save the services details that you provided, select OK and press ENTER to return to the `shcmenu` page. On the `shcmenu` page, select SAVE and press ENTER to commit your changes.

3.8 Transport Details

To request an SHCA Report, you must return the SHC data file to HPE. The *Transport Details* page allows you to specify how the SHC data file is to be transported.

When you perform an SHC analysis, you can automatically request an SHCA Report at the end of the analysis. The transport option you specify here is used to automatically transport the SHC data file to HPE.

The *Transport Details* page provides a number of options, which allow you to choose your preferred transport option. Table 3.4 describes the *Transport Details* page fields.

Table 3.4: Transport Details fields

Option Label	Description
SMTP	Select this option if you want to transport the SHC data file using the Simple Mail Transfer Protocol (SMTP). SMTP is an Internet standard protocol used to transfer e-mail between computers. **Windows only**: Enter the fully qualified path name or Internet Protocol (IP) address of the SMTP Server in the text box. An SMTP server is a computer, connected to the Internet that manages the delivery of outgoing e-mail to its destination mail server. If necessary contact your System or Network Administrator for this information.

	To confirm that SMTP is working, connect to port 25 (this is the default port; it may be changed by your network/system administrator) on the SMTP server node, enter the helo message as follows: 1. telnet <SMTP server node address> 25 ; this command shows you the mail server banner 2. helo <your node address> ; no local echo - sends a message from the SMTP server to your node 3. quit ; ends TELNET session
No Automatic Submission	Select this option if you do not want to use the automatic transport options provided. By selecting this option, you accept the responsibility to manually return the SHC data file to HPE. To manually transfer the SHC data file, do one of the following: • Mail the SHC data file (.gpg.shc) as an attachment to rcm.data@hpe.com with the subject "PAC_DATA". You can attach multiple .gpg.shc files per email and the SHC data file extension (.gpg.shc) must not be changed. (You cannot submit a ZIP file containing the .gpg.shc files.)For more information on the SHC data file, see section 4.2 Performing an Analysis. • Copy the SHC data file (.gpg.shc) to a physical medium such as CD-ROM or diskette and return it to HPE. If you want to use this transport option, contact SHC support. See *Chapter 6,* Obtaining Support for SHC and Providing Feedback on SHC for details.

For more information on the transport options available with SHC, see section 4.5 Transporting the Data.

If you do not configure the *Transport Details* page correctly and then attempt to run SHC and request an SHCA report, the analysis completes successfully, except that the transport of the SHC data file fails. If you selected the **No Automatic Submission** option a warning is displayed in the SHC User log informing you that no SHCA Report was requested.

3.8.1 Saving Transport Details using the Web-Based Interface

To save the details that you have entered, click **Save**. If the details are saved successfully, a message is displayed in green at the top of the page. If you have entered invalid data, SHC displays an error message when you click **Save**.

To undo any changes since the last time you saved your changes, click **Reset**. If the reset is successful, a message appears in green at the top of the page.

3.8.2 Saving Transport Details using SHC for Window SHCCONFIG Utility

To save the details that you have entered, click **Apply**. If you have entered invalid data, the `shcconfig` utility displays an error message when you click **Apply**.

3.8.3 Saving Transport Details using SHC for HP-UX and Linux SHCCONFIG Utility

To save the transport details that you provided, select **OK** and press ENTER to return to the `shcmenu` page. On the `shcmenu` page, select **SAVE** and press ENTER to commit your changes.

3.9 Kit Expiry

After an SHC kit expires, you cannot use it to perform an SHC analysis. You must upgrade to the latest version of SHC.

The expiry date is included in SHC to encourage users to upgrade to the latest version. Each new version of SHC typically contains new functionality, rules and bug fixes. Newer versions of SHC are available for download before the current version expires.

To determine the expiry date for kit, complete one of the following:

- Using the command-line interface, enter the command shc -version. The version string and expiry date are displayed.
- Using the web-based interface, click on the **About SHC** link in the left menu under the *Help* section. The kit version and expiry date is displayed.

For more information on obtaining the latest versions of SHC, see section 3.1 Getting the Latest Version of SHC.

3.10 Uninstalling SHC

3.10.1 Uninstalling SHC on Windows Systems

To remove SHC from a system, complete the following steps:

1. Select **Control Panel**. For Windows Server 2003, click the **Add/Remove Programs** icon. For Windows Server 2008 and 2012, click **Programs** and then **Programs and Features**.
2. Select **HPE *System Healthcheck 10.1.6 ((*Remove Only**) from the list of currently installed programs.
3. Click **Remove** to launch the *SHC Setup* wizard.

   A dialog is displayed with the following question:

   Do you wish to completely remove System Healthcheck and all of its components?

4. Click **OK** to remove SHC from your system.

   The uninstall process progresses and a dialog displays the progress of the file removal. Subsequently, another dialog is displayed indicating that the uninstallation is complete.

5. If you want to also remove all stored SHC data from previous analyses, select the following checkbox:

   Delete ALL SHC reports

   If you do not select this checkbox, the SHC data remains on the system for potential re-use in the future, for example, subsequent installations of SHC can resend this data in order to generate new SHCA reports.

6. Click **Finish**.

3.10.2 Uninstalling SHC on HP-UX Systems

To remove SHC from a system, use swremove to remove the SHC product. For example, enter the following command: **`/usr/sbin/swremove MCPS-SHC`**

To remove SHC (MCPS-SHC) using the swremove GUI, enter the following command:
/usr/sbin/swremove

Uninstalling SHC removes all SHC files in **/opt/hpesmc/shc**, however, SHC data files remain in **/var/opt/hpesmc/shc**.

To remove PAC from a system, use swremove:

/usr/sbin/swremove MCPS-PAC

3.10.3 Uninstalling SHC on Linux Systems

To remove SHC from a system, use rpm to remove the SHC product.

For example, enter the following command:

`/usr/bin/rpm –e hpeshc hpepac`

Uninstalling SHC removes all SHC files in **/opt/hpesmc/shc** and **/opt/hpe/RemoteSupport/pac**, however, SHC data files remain in **/var/opt/hpesmc/shc**.

To remove PAC from a system, use rpm.

For example, enter the following command: `/usr/bin/rpm –e hpepac`

4 Using SHC

This chapter describes how to use SHC.

4.1 General Usage

SHC can be managed using three different interfaces:

- The SHC General command-line interface (General CLI), see section 4.1.1 Using the General CLI for details.
- The SHC Administrative command-line interface (Admin CLI), see section 4.1.2 Using the Admin CLI for details.
- A web-based user interface, see section 4.1.3 General Web-Based Interface Usage for details.

In general, the web-based user interface provides the same functionality as that available through the CLIs. For example, it is possible to perform an analysis, enable or disable rules, and generate reports using either the web-based interface or one of the CLIs. There are, however, some features that are only available through either the web-based interface or through one of the CLIs. These features are listed below as a guide to which interface is more appropriate to your needs for any given task.

Features available only through the General CLI:

- Changing the dynamic phase sample interval
- Running only the dynamic analysis phase
- Running only the static analysis phase
- Run SHC in verbose mode
- Scheduling SHC to run using the native operating-system scheduler

Features available only through the Admin CLI:

- Stop and start the scheduler service
- Add and Delete SHC schedules
- Disabling and Enabling Rules and Packages
- Displaying SHC report status

Features available only through the web-based interface:

- Checking for a more recent version of SHC
- Context-sensitive help

4.1.1 Using the General CLI

To run SHC using the General CLI on Windows, you must be logged on to the system using the built-in local administrator account, or using an account that is a member of the built-in local administrators group.

To run SHC using the General CLI on HP-UX or Linux, you must be logged on to the system as root or using an account that has super-user privileges. The General CLI is invoked by running the **shc** command.

On Windows, the **shc** command is installed in `c:\program files\hpesmc\shc\bin` and it can be invoked by:

- Run command prompt and enter the following command:

```
cd "C:\program files\hpesmc\shc\bin"
```

On HP-UX and Linux the **shc** command is installed in /opt/hpesmc/shc/bin.

For information on how to perform each of the SHC functions using the CLIs and the web-based interface, see section 4.2 Performing an Analysis, section 4.3 Scheduling an Analysis, section 4.4 Enabling/Disabling Rules and Packages and section 4.6 SHCA Reports.

Normally, the General CLI involves running the **shc** command with one or more additional options. Running the command without any options results in a SHC analysis being performed using the default settings, that is, if SHC has already been configured.

You can append additional options to the **shc** command. Table 4.1 describes the additional options.

Table 4.1: SHC General CLI; additional options

Additional Option	Description
`-h, -help, -?`	Outputs a screen of usage information on SHC.
`-k, -stop, -kill`	Instructs SHC to immediately stop any SHC analysis that may currently be running.
`-v, -verbose`	Instructs SHC to run in verbose mode.
`-q, -query, -is-running`	Instructs SHC to check if there is an SHC analysis currently running and to display a status message.
`-V, -version`	Instructs SHC to display kit version and expiry details.
Note: Switch identifiers '-' or '/' can be used with the SHC command-line interface. For example, shc -h is functionally equivalent to shc /h.	

The shc command sets an exit code of 0 on successful completion. If it fails for any reason, it returns one of the values listed in Appendix A- Exit Codes.

4.1.2 Using the Admin CLI

To configure SHC using the Admin CLI on Windows, you must be logged on to the system using the built-in local administrator account, or using an account that is a member of the built-in local administrators group.

To configure SHC using the Admin CLI on HP-UX or Linux, you must be logged on to the system as root or using an account that has super-user privileges.

The Admin CLI is invoked by running the **`shcctl`** command.

On Windows, the **`shcctl`** command is installed in `c:\program files\hpesmc\shc\bin`. To run the **`shcctl`** command on Windows, complete the following:

Run command prompt and enter the following command:

```
cd "C:\program files\hpesmc\shc\bin"
```

On HP-UX and Linux the **shcctl** command is installed in /opt/hpesmc/shc/bin.

For more information on how to perform each of the SHC functions using the CLIs and the web-based interface, see section 4.3 Scheduling an Analysis, section 4.4 Enabling/Disabling Rules and Packages and section 4.6 SHCA Reports.

In general, the Admin CLI involves running the **shcctl** command with one or more additional options. You can append additional options to the **shcctl** command. The additional options are described in Table 4.2.

Table 4.2: SHC Admin CLI; additional options

Additional Option	Description

`-h, -help, -?`	Outputs a screen of usage information on SHC.
Note: Switch identifiers '–' or '/' can be used with the Admin CLI. For example, `shcctl -h` is functionally equivalent to `shcctl /h`.	

The **`shcctl`** command sets an exit code of 0 on successful completion. If it fails for any reason, it returns one of the values listed in Appendix A, Exit Codes.

4.1.3 General Web-Based Interface Usage

The SHC web-based interface allows you to configure and run SHC from any computer with an appropriate web browser and a direct TCP/IP network connection to the system that has SHC installed.

To use the SHC web-based interface, install the separate SMH product (for more information, see section 3.2.1.3 System Management Homepage Installation) and complete the following steps:

1. Connect your browser to: https://<hostname of system running SHC>:2381/
2. Click **Yes** in the *Security Alert* dialog box that is displayed.

For more information on the System Management Homepage security settings, see the *HPE System Management Homepage* table of contents. These files are located at: https://<hostname of system running SHC>::2381/help/proxy/sys-toc.html

3. An *Account Login* screen is displayed. Log in with a valid account.
4. The System Management Homepage for the hostname in question is displayed. Proceed to the SHC web-based interface by clicking the SHC link.
5. An initial web-based interface to SHC is displayed, which provides a menu of user options through the menu bar on the left and a status page on the right.

Note: Section 4.2 Performing an Analysis, section 4.3 Scheduling an Analysis, section 4.4 Enabling/Disabling Rules and Packages and section 4.6 SHCA Reports detail how to perform each of the SHC functions using the web-based interface.

6. Return to the System Management Homepage at any stage using the menu bar on the top of the screen.
7. Log out by returning to the System Management Homepage and selecting the **Logout** link.

4.2 Performing an Analysis

To perform an SHC analysis you must run one, or more, of the rule packages on the target system. For more information on rules and rule packages, see section 2.4 SHC Rules. You can disable individual rules or rule packages in order to prevent them from being included in the analysis. For more information on disabling rules, see section 4.4 Enabling/Disabling Rules and Packages. At the end of the analysis, reports are generated that detail the problems detected on the system. For more information on the reports, see section 4.6 SHCA Reports.

When you perform an analysis, SHC generates a data directory that contains the results of the analysis. This directory is given a name that relates to the time that the analysis started, in the following format:

`yyyymmddhhmmss`

Where, yyyy is the year, mm is the month, dd is the day, hh is the hour, mm is the minute and ss is the second.

For example, for an analysis that was started at 19:11:58 on the 16th of September 2007, the following data directory would be created depending on the operating system:

- `C:\program files\hpesmc\shc\data\<hostname>\shc\20070916191158` on Windows
- `/var/opt/hpesmc/shc/data/<hostname>/shc/20070916191158` on HP-UX and Linux

The listed data directories were created on the 16th of September 2007 at 19:11:58

If the analysis completes successfully, SHC creates the SHC data file in the data directory. The name of the SHC data file is a combination of the host name and timestamp with the file extension `.gpg.shc`, for example, `<hostname>-20040916191158.gpg.shc`. This is the file that is returned to HPE in order to request an SHCA report. It is a PGP-encrypted file.

4.2.1 Performing an Analysis Using the General CLI

To perform an analysis using the General CLI, invoke the CLI by executing the shc command with the appropriate options (see Table 4.3). The syntax of these options is as follows:

```
shc [-t <duration>] [-i <interval>] [-dynamic | -static]
[-resend <directory>] [-pack <directory>] [-s]
[-profile <profile file>]
```

Table 4.3: General CLI options

Optional Command	Description
-t <duration>	Use the -**t <duration>** option to specify the duration in hours of the dynamic phase of the SHC analysis. You can specify the duration in units of hours, minutes, or seconds. The default unit of time is hours. The maximum duration is 168 hours. The minimum duration depends on the sample interval specified using the **-i** option. The dynamic phase of the analysis does not run unless a minimum of 6 samples are to be performed. Thus if the sample interval is left at the default of 120 seconds, then the minimum duration is 12 minutes. If you do not specify the **-t** option, the default of 8 hours is used. You can combine this option with the **-i**, **-dynamic**, and **-s** options. On Windows systems, if you want to specify a long run of 96 hours (four days) or more, use the default interval of 120 seconds or greater.
-i <interval>	Use the **-i <interval>** option to specify the number of seconds between sample intervals during the dynamic phase of the SHC analysis. The maximum sample interval allowed is 600 seconds. The minimum sample interval allowed is 1 second. If you do not specify the **-i** option, the default of 120 seconds is used. You can combine this option with the **-t**, -dynamic and **-s** options. On Windows systems, if you want to specify a long run of 96 hours (four days) or more, use the default interval of 120 seconds or greater. If you want to specify a short interval of less than 5 seconds, run the tool for 4 hours or less, with an interval of no less than 3 seconds.
-dynamic	Use the **-dynamic** option to run only the dynamic phase of the SHC analysis. You can combine this option with the **-t**, **-i** and **-s** options.
-static	Use the **-static** option to run only the static phase of the SHC analysis. You can combine this option with the **-s** option.
-profile <profile file>	Use the **–profile** option to run SHC against a specified profile file. Profile files are configuration files which store

	disabled rules and\or packages. There are default profile files installed with SHC (C:\program files\hpesmc\shc\shcprofile*.cfg)
-s	Use the **-s**, **-send**, or **-send-to-hpe** option to request an SHCA report by sending the generated data file to HPE. You can combine this option with the **-t**, **-i**, **-dynamic**, **-static** and **-pack** options.
-resend <directory>	Use the **-resend <directory>** option to pack up a data directory (from a previous SHC analysis) and request a SHCA report by sending the generated data file to HPE. Use this option in the following scenarios: • You perform an SHC analysis: You may not have had a valid transport option at this time. Use **-resend <directory>** to request the SHCA report at a later date when the transport option selected is available. • You perform an SHC analysis: You then change your customer, service, or transport details. Use **-resend <directory>** to request the SHCA report using the new details. The **-resend <directory>** option re-generates the SHC data file using the current customer, service, and transport details. Thus you can run an SHC analysis, then change your customer, service, or transport details and then re-generate the SHC data file to reflect the new details. For more information on these details see section 3.6 Customer Details, section 3.7 Service Details, and section 3.8 Transport Details. You can combine this option with the **-s** option. **Note:** Using the **-resend <directory>** option is the functional equivalent of using the **-pack <directory> -s** options combined. **Note:** If you use the -resend option with a path that contains program files, you must enclose the path with quotation marks (**“”**). **Note:** The full path of the data directory must be passed to the command.
-pack <directory>	Use the **-pack <directory>** option to pack up the data directory from a previous SHC analysis. The **-pack <directory>** option re-generates the SHC data file using the current customer, service, and transport details. Thus you can run an SHC analysis, then change your customer, service, or transport details and then re-generate the SHC data file to reflect your new details. For more information on these details see section 3.6 Customer Details, section 3.7 Service Details, and

	section 3.8 Transport Details. You can combine this option with the **-s** option. **Note:** If you use the -pack option with a path that contains program files, you must enclose the path with quotation marks (**“”**).

Table 4.4 provides examples of running an SHC analysis using the command-line interface.

Table 4.4: General CLI examples

General Cll Commands	Description
shc	Run an analysis specifying that the dynamic phase lasts for the default duration of 8 hours and uses the default sample interval of 120 seconds.
shc -t 24 -i 240	Run an analysis specifying that the dynamic phase lasts for 24 hours and uses a sample interval of 240 seconds.
shc –t 100m	Run an analysis specifying that the dynamic phase lasts for 100 minutes.
shc –s	Run an analysis specifying that the dynamic phase lasts for the default duration of 8 hours and uses the default sample interval of 120 seconds. Request an SHCA report at the end of the analysis.
shc –dynamic	Run an analysis specifying that you want to run the dynamic phase only. The dynamic phase lasts for the default duration of 8 hours and uses the default sample interval of 120 seconds.
shc -dynamic –s	Run an analysis specifying that you want to run the dynamic phase only. The dynamic phase lasts for the default duration of 8 hours and uses the default sample interval of 120 seconds. Request an SHCA report at the end of the analysis.
shc -dynamic –t 630m -i 60 –s	Run an analysis specifying that you want to run the dynamic phase only. The dynamic phase lasts for 630 minutes (10.5 hours) and uses a sample interval of 60 seconds. Request an SHCA report at the end of the analysis.
shc –static	Run an analysis specifying that you want to run the static phase only.
shc -static –s	Run an analysis specifying that you want to run the static phase only. Request an SHCA report at the end of the analysis.
shc –profile <profile file> -static –s	Run an analysis specifying that you want to run the static phase only for the specified profile.

	Request an SHCA report at the end of the analysis.
Windows: shc -resend “C:\program files\hpesmc\shc\data \<hostname>\shc\20040911154403” HP-UX/Linux: shc –resend /var/opt/hpesmc/shc/data /shc/<hostname>/shc/20040911154403	Pack up the data directory from the previous SHC analysis that was started on 20070911154403 and request a SHCA report. Use the current customer, service, and transport details. **Note:** The path argument shown for the Windows command is enclosed in quotation marks (**“”**) because program files is included in the path.
Windows: shc -pack “C:\program files\hpesmc\shc\data \<hostname>\shc\20040911154403” HP-UX/Linux: shc -pack /var/opt/hpesmc/shc/data /<hostname>/shc/20040911154403	Pack up the data directory from the previous SHC analysis that was started on 20040911154403. Use the current customer, service, and transport details. **Note:** The path argument shown for the Windows command is enclosed in quotation marks (**“”**) because program files is included in the path.

4.2.1.1 Running an Analysis on HP-UX and Linux as a Background Process

It is possible to run SHC for HP-UX and Linux as a background process using the General CLI. To do this, use the standard shell operator & in order to place the command in the background, for example:

```
shc -duration 8h -send &
```

The shell executes SHC in a sub-shell that remains unaffected if you logout of the command shell. Note that the SHC process continues sending the standard status messages to the command console unless this output has been redirected. The exact syntax required to redirect stdout and stderr is dependent on the shell in use, the following example shows how to redirect stdout and stderr to a log-file called shc.log when using the bash:

```
shc -duration 8h -send > shc.log 2>&1 &
```

Details of how to redirect I/O for your shell should be available in the man-page for your shell, ksh(1), sh(1), and so on.

Note: The -bp command (see section 4.3.3 Native Scheduling on Windows) argument is not used by SHC for HP-UX or Linux.

4.2.2 Performing an analysis using a web-based interface

To perform an analysis using the web-based interface, use the **Start Analysis Now** link which is located on the SHC web-based interface menu in the *Analysis* section.

To start an analysis, complete the following steps:

1. Click the **Start Analysis Now** link.
2. Specify the duration of the dynamic phase of the analysis by choosing the number of hours and minutes from the drop-down boxes.
3. To request an SHCA report at the end of the analysis, select the checkbox **Request SHCA report**.
4. Click **Start Analysis Now**.

If the analysis starts successfully the following message is displayed in green at the top of the page:

```
A System Health Check analysis is currently running.
```

The start time, duration and estimated completion time is also displayed.

5. Below the status, the **Running Log Files** are displayed – click **SHC** to view the SHC log file, or **PAC** to view the PAC log file. An up-to-date Log File for the current analysis is displayed.

Unlike the General CLI, you cannot configure the sample interval of the dynamic phase using the web-based interface. The default of 120 seconds is always used. Similarly, you cannot specify that you want to run a static or dynamic analysis only. For more information on these options, see section 4.2.1 Performing an Analysis Using the General CLI.

To stop an analysis, complete the following steps:

1. Click the **Start Analysis Now** link.

If SHC is currently running, a message stating this is displayed in green at the top of the page.

2. Click **Stop**.

If the analysis is stopped successfully, a success message is displayed in green at the top of the page.

4.3 Scheduling an Analysis

You may want to schedule SHC to run periodically, that is, when you want to receive a periodic analysis from a system so that it is effectively monitored on an ongoing basis.

SHC can be scheduled to run an analysis periodically. You can use either the scheduling facility offered by the SHC web-based interface, the Admin CLI, or the native scheduling facilities offered by the operating system. The web-based scheduler has the advantage of being more straightforward to configure. It does not require any detailed knowledge of the operating system on the part of the user. However, native scheduling facilities provide more flexibility on how an SHC analysis is to be scheduled.

4.3.1 Scheduling Using the Web-Based Interface

To schedule one or more analyses using the web-based interface, use the **Schedule an Analysis** link that is located on the SHC web-based interface menu in the *Analysis* section. The SHC web-based scheduler is managed by the SHC Scheduler Service on Windows and the SHC Scheduler daemon on UNIX. If no schedule entries are configured, this service/daemon is automatically disabled or stopped. The first time an entry is added, the service/daemon is started. Subsequently, by default, the service/daemon wakes up once per day at 00:00 (midnight) and checks for any analyses that are scheduled for that day.

- If no entries are scheduled, the service/daemon suspends itself until the next wakeup time (that is, 00:00 the following day).
- If an analysis is due to run that day, the service/daemon suspends itself until the start time of the analysis.

The *Schedule an Analysis* screen allows you to create a new schedule and view existing schedules.

To create a new schedule, complete the following:

1. Select the day that you want the analysis to be run on. The SHC web-based scheduler allows you to define a schedule to run on the first, second, third, fourth, or last day of the month, or quarter, where *day* is any day from Monday to Sunday. The default value for the day of analysis is the *1st Monday of the Month*.
2. Specify the start and duration of the dynamic phase of the SHC analysis. The start time and duration are specified in local time, in hours and minutes, using the 24-hour clock format. It is recommended that the dynamic analysis phase overlaps a typical production period as far as possible. Note that the full SHC analysis includes a static analysis phase also, which means that the full SHC analysis runs for longer than the specified duration (the length of the static analysis phase is dependent on the size and complexity of the system SHC is being run on). Static analyses on large systems with thousands of user accounts may take in excess of 100 additional minutes. The default start time is *08:00* and the default duration is *10 hours*.

3. Click **Save** to add this schedule to the list of scheduled SHC analyses - note that analyses cannot overlap. The scheduler raises an error if you attempt to define overlapping schedule entries.
4. Click **Reset** if you want to reset the defined schedule options to their default values.

A list of currently scheduled SHC analyses is available to view in the **Scheduler Entries** pane. Analyses due to run on the day that you are viewing the schedule entries are marked with a green asterisk (*).This view can be sorted by **Starts On**, **Day**, **Month/Quarter**, **Start Time**, and **Duration** by selecting any of these links from the scheduler entries pane.

To delete a scheduled analysis, select the option button for the analysis and click **Delete**.

4.3.2 Scheduling Using the Admin CLI

To schedule analyses using the Admin CLI, invoke the CLI by executing the shcctl command with appropriate scheduler options (see Table 4.5).

The syntax of these options is as follows:

```
shcctl [-scheduler] [-start-scheduler] [-stop-scheduler]
[-list-schedules]
[-add-schedule –occurs <1st, 2nd, 3rd, 4th. Last> -every <period> -start-time
<start-time_to_enter> -duration <value> <units>]
-delete-schedule <schedule-id>
```

Table 4.5: Admin CLI options

Optional Command	Description
`-scheduler`	Use the –scheduler option to check the status of the SHC scheduler service/daemon.
`-start-scheduler`	Use the –start-scheduler option to start the SHC scheduler service/daemon. **Note:** The daemon/service will only start if there are configured schedule entries.
`-stop-scheduler`	Use the –stop-scheduler option to stop the SHC scheduler service/daemon. **Note:** The daemon/service will only stop if there no configured schedule entries.
`-list-schedules`	Use the –list-schedules option to display a list of all configured SHC schedule entries.
`-add-schedule`	Use the –add-schedule option to a new schedule entry.
`-occurs <occurs-in-month>`	Use the –occurs option to specify when in a calendar month this entry should run. For example, <occurs-in-month> can be set 1st, 2nd, 3rd, 4th, or last weekday of the month.
`-weekday <day-to-enter>`	Use the –weekday option to specify on which weekday the schedule should run. The <day-to-enter> argument can be set to Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, or Sunday.

-every <frequency>	Use the –every option to specify how often this schedule should run. The <frequency> argument can be set to either month or quarter.
-start-time <start-time_to_enter>	Use the –start-time option to specify when the scheduled SHC job should start. The <start-time_to_enter> argument can be a time specified in the format 00:00 – 23:59.
-duration <value> <units>	Use the –duration option to specify the duration of the scheduled SHC job dynamic analysis phase. The <units> can be seconds, minutes, hours, or days. Maximum duration is 7 days.
-delete-schedule <schedule-id>	Use the –delete-schedule option to delete an existing schedule entry. The <schedule-id> that should be specified is the unique ID of each schedule entry as displayed when the <list-schedules> is run.

Table 4.6 provides examples of using Admin CLI to configure the SHC scheduler.

Table 4.6: Admin CLI scheduler examples

Admin CLI Command	Description
shcctl –scheduler	Display scheduler status.
shcctl –start-scheduler	Start the SHC scheduler.
shcctl –stop-scheduler	Stop the SHC scheduler.
shcctl -list-schedules	List all schedule entries.
shcctl –add-schedule –occurs 1st –weekday monday –every month –start-time 08:00 –duration 9 hours	Add an SHC schedule entry to start on the first Monday of every month beginning at 8am with a dynamic analysis having a duration of 9 hours (that is, running until 5pm the same day).
shcctl –add-schedule –occurs last –weekday friday –every quarter –start-time 00:00 –duration 24 hours	Add an SHC schedule entry to start on the last Friday of every quarter beginning at 12 midnight with a duration of 24 hours (that is, running until 12 midnight a day later).
shcctl –add-schedule –occurs last –weekday tuesday –every quarter –start-time 00:00 –duration 3 days	Add an SHC schedule entry to start on the last Tuesday of every quarter beginning at 12 midnight and running to 12 midnight 3 days later.
shcctl –delete-schedule 10900009922	Delete the SHC schedule entry that has an ID of 10900009922.

4.3.3 Native Scheduling on Windows

SHC analysis can also be scheduled using the SchTask command. For more information on using SchTasks, open a command prompt and enter the command SchTasks /?.

To schedule an SHC dynamic analysis to run daily, starting at 4:00 p.m. lasting 1 hour, open a command prompt and enter the following command:

SchTasks /Create /SC DAILY /TN "My Task" /TR "C:\Program Files\hpesmc\shc\bin\shc.exe -dynamic /s /t 1h -bp" /ST 14:00

On older windows systems SHC analysis can be scheduled using the AT command. For more information on using AT, open a command prompt and enter the command AT /?.

For example, to schedule an SHC analysis to run on the third day of every month, starting at 8:00 a.m. with the dynamic phase lasting 10 hours, open a command prompt and enter the following command:

AT 08:00 /every:3 C:\Windows\System32\cmd.exe /C "C:\Program Files\hpesmc\shc\bin\shc.exe" /s /t 10h –bp

It is important to specify the -bp option when scheduling SHC. This instructs SHC to run as a background process. This ensures that it continues to run after you log off.

Alternatively, you can use the Windows Task Scheduler. Please note that if you need to schedule an analysis with a duration exceeding three days (72 hours), ensure that the setting **Stop the task if it runs longer than** is deselected or if it is selected that the parameter's value will allow the task to run to completion. This setting is located in the **Settings** tab of the Task Scheduler for that task.

4.3.4 Native Scheduling on HP-UX and Linux

SHC can also be scheduled using the cron daemon. Full details of how to use the cron daemon are available in the cron and crontab man pages. To schedule an SHC analysis, use the standard syntax and add an entry similar to the following roots crontab:

```
44 16 28 5 * /opt/hpesmc/shc/bin/shc
```

In these examples, an SHC analysis is scheduled to run at 16:44 on the 28th day of the fifth month.

4.4 Enabling/Disabling Rules and Packages

If you want to prevent particular SHC rules from being run, you can disable these rules. When you disable a rule and subsequently run SHC, the test contained in the rule is not performed and so the problem that the rule is testing for does not appear in generated reports. For any particular run of SHC, the disabled rules are listed in the *Disabled Rules* section at the bottom of the SHC Assessment report.

When you disable a rule it remains disabled until you re-enable it. Once a rule is re-enabled its associated test is performed in any subsequent run of SHC.

A rule can be disabled by:

- Disabling the individual rule
- Disabling a rule package containing the rule

You may want to disable an individual rule, in the following circumstances:

- If the rule is firing correctly, but you do not want it to appear in the reports.
- If the rule is generating errors in the logs, or causing SHC to function incorrectly.
- If the rule is firing when it should not (that is, there is an error in the rule implementation).

You may want to disable a rule package, in the following circumstances:

- If the operating system feature, or application, that the rule package analyzes is not installed on the system (for example, Microsoft Cluster Server [MSCS]). Rule packages exit with a warning if run on such a system. Therefore, disabling the rule package removes these warnings from the logs.
- If the rule package is generating errors in the logs, or causing SHC to function incorrectly.

4.4.1 Enabling/Disabling Using the Web-Based Interface

To enable and disable rules or rule packages through the web-based interface, use the Rules and Rule Packages links that are located on the SHC web-based interface menu, under the Enable/Disable in the Analysis section.

4.4.1.1 Enabling and Disabling Individual Rules

To enable, or disable, an individual rule, complete the following steps:

1. Click the **Rules** link.
2. The *Rules* page is displayed. This page lists the rule IDs, their corresponding rule packages and categories. A checkbox associated with each rule indicates if the rule is disabled, or enabled, as follows:
   - An empty checkbox indicates that the rule is enabled.
   - A selected checkbox indicates that the rule is disabled.
   - A grayed-out checkbox indicates that the rule is disabled by virtue of its rule package being disabled. In this case, the rule package is highlighted in bold type. Rules such as this cannot be enabled, or disabled, from this page until their rule package has been again enabled.
3. To disable a rule, select its associated checkbox and click **Save**.
4. To enable a rule, deselect its associated checkbox and click **Save**. If the updated status is saved correctly, a success message displays in green at the top of the page.

To sort the rules by their rule ID, rule package, rule category, or their current status, click the appropriate **Sort By** link at the top of the page.

To undo any changes you made since the last time you saved, click **Reset**. If the reset is successful, a success message is displayed in green at the top of the page.

To enable all the rules, click **Enable All**. If all the rules are successfully enabled, a success message is displayed in green at the top of the page.

4.4.1.2 Enabling/Disabling Rule Packages

To enable, or disable, a rule package, complete the following steps:

1. Select the **Rule Packages** link.
2. The *Rule Packages* page is displayed that lists all the rule packages. A checkbox associated with each rule package indicates if the package is disabled, or enabled, as follows:
   - An empty checkbox indicates that the rule package is enabled.
   - A selected checkbox indicates that the rule package is disabled.
3. To disable a rule package, select its associated checkbox and click **Save**.
4. To enable a rule package, deselect its associated checkbox and click **Save**. If the updated status is saved correctly, a success message displays in green at the top of the page.

To view a description of the package and a list of the rules contained in the package, click on the rule package name.

To undo any changes you made since the last time you saved, click **Reset**. If the reset is successful, a success message is displayed in green at the top of the page.

To enable all the rule packages, click **Enable All**. If all the rule packages are successfully enabled, a success message is displayed in green at the top of the page.

4.4.2 Enabling/Disabling Using the Admin CLI

Table 4.7 describes options available to you to enable and disable rules or rule packages using the Admin CLI.

Table 4.7: SHC Rules, Admin CLI options

Optional Command	Description

`-lr <option>`	Use the -lr or -list-rules option to list all the rules and their current status, that is, whether they are disabled or enabled. The rule IDs are listed followed by a - character, or a + character, depending on whether the rule is disabled or enabled. The option accepted can be either “all” or “disabled”.
`-lp <option>`	Use the -lp or -list-packs option to list all the packages and their current status, that is, whether they are disabled or enabled. The packages are listed followed by a - character, or a + character, depending on whether the package is disabled or enabled. The option accepted can be either “all” or “disabled”.
`-dr <rule ID>`	Use the -dr or -disable-rules option to disable a rule. You can disable multiple rules at once by entering their rule IDs, each separated by at least one blank space. You can disable all rules by using the -dr all option.
`-dp <package>`	Use the -dp or -disable-packs option to disable a package. You can disable multiple packages at once by entering their names, each separated by at least one blank space. You can disable all packages by using the -dp all option.
`-er <rule ID>`	Use the -er or -enable-rules option to enable a rule. You can enable multiple rules at once by entering their rule IDs, each separated by at least one blank space. You can enable all rules by using the -er all option.
`-ep <package>`	Use the -ep or -enable-packs option to enable a package. You can enable multiple packages at once by entering their names, each separated by at least one blank space. You can enable all packages by using the -ep all option.

Table 4.8 provides examples of enabling and disabling SHC rules using the command-line interface.

Table 4.8: SHC Rules, Admin CLI examples

Admin CLI Command	Description
`shcctl -lr`	Lists all rules and their status
`shcctl /lr`	Lists all rules and their status
`shcctl -dr ad5500`	Disables rule ad5500
`shcctl /dr ad5500`	Disables rule ad5500
`shcctl -dr ad5500 ad5505`	Disables rules ad5500 and ad5505
`shcctl -er ad5500`	Enables rule ad5500
`shcctl /er ad5500`	Enables rule ad5500
`shcctl -er ad5500 ad5505`	Enables rules ad5500 and ad5505
`shcctl -dr all`	Disables all rules

`shcctl /dr all`	Disables all rules
`shcctl /er all`	Enables all rules
`shcctl -er all`	Enables all rules
`shcctl -lp`	Lists all rule packages and their current status
`shcctl -dp shciis`	Disables the shciis rule package
`shcctl -dp shciis shcclusters`	Disables the shciis and shcclusters rule packages
`shcctl -ep shciis`	Enables the shciis.exe rule package
`shcctl -ep shciis shcclusters`	Enables the shciis and shcclusters rule packages
`shcctl –disable-packs shcadvfsrp`	Disables the shcadvfsrp rule package
`shcctl -dp shcadvfsrp shcaserp`	Disables the shcadvfsrp and shcaserp rule packages
`shcctl -ep shcadvfsrp`	Enables the shcadvfsrp rule package
`shcctl -ep shcadvfsrp shcaserp`	Enables the shcadvfsrp and shcaserp rule packages
`shcctl -dp all`	Disables all rule packages
`shcctl -ep all`	Enables all rule packages

4.5 Transporting the Data

To generate an SHCA report, you must send the SHC analysis data to HPE. The SHC tool can be configured to do this automatically, or you can send the data manually (for example, by copying the SHC analysis data to removable media and physically sending it to HPE). The SHC analysis data is stored after each analysis in the SHC data file, in a PGP-encrypted ZIP file.

The following sub-sections detail the transport capabilities of SHC and their use.

4.5.1 Transport Methods

SHC supports two modes of automated transport. See section 3.8 Transport Details for details of how to configure SHC to use one of these methods during automated transport. Details of each method are as follows:

- **E-mail (SMTP)**
  SHC analysis data is PGP encrypted using the SHC installed public key. The encrypted data packet is uuencoded and sent to HPE using the standard SMTP mail protocol. This transport method only works on a system or network that supports the SMTP mail protocol. The address that the SHC data is sent to is:
  rcm.data@hpe.com with the subject line “PAC_DATA”.
- **No Automatic Submission**
  If you want to send data to SHC manually by e-mail, you can attach multiple .gpg.shc files per e-mail and the data-file's extension (.gpg.shc) must not be changed. (You cannot submit a ZIP file containing the .gpg.shc files.) For more information on the SHC data file, see section 4.2 Performing an Analysis.

4.5.2 Transporting the Data Using the General CLI

When running an SHC analysis using the General CLI (see section 4.2 Performing an Analysis), if the -send option is used with the shc command, the data is automatically sent to HPE using the configured transport method (see section 3.8 Transport Details for details of configuring SHC for a specific transport method).

4.5.3 Transporting the Data Using the Web-Based Interface

When running an SHC analysis using the web-based interface (see section 4.2 Performing an Analysis), if the **Request SHCA report** checkbox is enabled, the data is automatically sent to HPE using the configured transport method (see section 3.8 Transport Details for details of configuring SHC for a specific transport method).

4.6 SHCA Reports

The results of an SHC assessment are presented in two reports. Both SHCA reports are provided in HTML that can be viewed in any commonly used browser.

4.6.1 Report Types

There are currently two types of SCHA report. The reports differ in terms of their intended audience and the level of detail they provide. The types of SHCA reports are as follows:

- System Health Check Assessment - Management Summary Report
- System Health Check Assessment - Detailed Report

4.6.1.1 System Health Check Assessment- Management Summary Report

The SHCA Management Summary Report provides a high-level overview of the assessment results for each system checked. It allows for a quick review of the health level of each system and identifies areas that are in most need of attention. Table 4.9 describes the sections available in the SHCA Management Summary report.

Table 4.9: Sections provided in the SHCA Management Summary Report

Report Section	Description
Report Header	This section contains the report title and assessment version details, the customer name and address, table of contents and a list of the devices assessed.
Enterprise Overview	This section provides a general overview for all systems covered in the assessment. It includes the following information: • Overall health level • Test pass/fail level • Number of issues detected in each category and their health impact level • Summary of issues with highest priority for resolution • Overall system health risk matrix, highlighting categories/areas most likely to have an impact on system health
System Overview	This section presents a graphical summary of the assessment outcome for each system: • Summary of device attributes • Assessment metrics

	• Overall System Health rating • Breakdown of issues detected by Health Impact • Breakdown of issues detected by Category
Glossary	Explanations of terminology used throughout the report.
Copyright and legal information	Standard HPE copyright and legal information including details of how SHCA reports and software can be used.

4.6.1.2 System Health Check Assessment-Detailed Report

The SHCA Detailed Report provides full details of each SHC analysis performed and is intended for HPE Services professionals to use in analyzing and diagnosing problems on customer systems. In addition to the sections in the Management Summary report, it contains full details of each problem encountered including an explanation of the problem, references to supporting documentation, and proposals on how to resolve the problem. The SHCA Detailed Report is delivered as part of a Business Critical, Availability, or Standalone System Health Check service and is delivered to customers by their HPE Services consultant. Table 4.10 lists the additional sections contained in the SHCA Detailed Report.

Table 4.10: Additional sections available in the SHCA Detailed Report

Report Section	Description
About System Health Check Assessments	This section provides a brief introduction to SHC Assessments.
Analysis Summary	This section provides a quick overview of the assessment results for each system: • Analysis scorecard summarizing the tests performed during the SHC analysis (the tests are broken down into the major test categories), along with failure counts for each test area (categorized as high, medium, and low health impact). • One-line summaries for each problem that was found on the system including the health impact level of the problem, the number of times each problem occurred during the analysis, the area affected and a brief description of the problem.
Analysis Detailed Results	This section forms the core of an SHCA Detailed report, presenting the results of the SHC analysis for all system assessed. It consists of one section for each problem found on a system. Each problem found is described in detail complete with supporting evidence. Where applicable it provides instructions on how to verify that the problem exists, references to documentation relating to the problem, and suggestions on how to resolve the problem.
Analysis Status	This section contains the following details for each system assessed:

	• The SHC client version and analyzer version used on each system. • The dynamic analysis duration, and sampling interval (if applicable). A summary of the execution status for each individual package (see section 2.4 SHC Rules for more information about SHC rule packages), that is, whether the package executed successfully, or whether the system had the necessary prerequisites for the package to run. It also provides the run duration for each package by means of a start and end time-stamp. • A count of the total number of tests performed, number of issues found (tests fired), and number of tests skipped. • A list of SHC rules that were disabled for this analysis (if any).
Device Details	This section provides an overview of the configuration of each system assessed. It is not intended to replace the functionality of tools such as winmsd on Windows. It intends to provide a brief overview of the configuration of each system and its primary subsystems, in order to provide some context to any problems in the SHCA report. For example, if the SHCA report indicates swap as being incorrectly configured, you can quickly verify the swap configuration from the system details.
Issues Tested	This section gives a description of all tests performed for the assessment
Appendices	General information such as printing guidelines, report usage tips, health-impact determination etc. Some SHCA Detailed reports include additional appendices that contain related information.

4.6.2 Requesting SHCA Reports

The SHCA reports must be requested by submitting the SHC data file for each system to HPE. When an analysis is performed, SHC can automatically submit the data to HPE for analysis (see section 4.2 Performing an Analysis).

It is also possible to submit a previous analysis to HPE (the analysis may have originally been run without requesting the SHCA reports).

To request reports using the web-based interface, use the **View SHC Jobs** link that is located on the SHC web-based interface menu in the *Analysis* section. If you have not run any SHC analyses, this screen is not populated. If you have run previous analyses, this section provides details on how to submit a request for the SHCA reports.

To submit or resubmit an analysis to request the SHCA reports, select the checkbox next to the job to submit and click on the submit icon (). The analysis is submitted to HPE using the configured service and transport settings.

Note: For pre-V10 SHC jobs, the Status field will be set to "*obsolete*" and the request reports action will not succeed.

Requests for SHCA reports can also be submitted from the General CLI by running the shc command using the -resend <directory> option to pack up the data directory and send the data from a previous SHC analysis to HPE. Full details of the SHC command-line interface are available in section 4.1.1 Using the General CLI and section 4.2.1 Performing an Analysis Using the General CLI.

The SHC analysis data is stored in the SHC data directory in a series of time-stamped subdirectories:

- `/var/opt/hpesmc/shc/data/<hostname>/shc/` on HP-UX/Linux
- `C:\program files\hpesmc\shc\data\<hostname>\shc\` on Windows

Each subdirectory corresponds to a particular SHC analysis. To submit a request for SHCA reports, specify one of these subdirectories with shc -resend.

The -resend directory option re-generates the SHC data file using the current customer, service, and transport details and sends the data file to HPE. In this way, you can run an SHC analysis, change your customer, service, and transport details, and then re-generate the SHC data file to reflect your new details. For more information on these details see section 3.6 Customer Details, section 3.7 Service Details, and section 3.8 Transport Details.

Note: If you use the -resend option with a path argument that contains *program files*, you must enclose the path with quotation marks (""). For example, the following command uses the –resend option and includes *program files* in the path:

```
shc -resend "C:\program
files\hpesmc\shc\data\<hostname>\shc\20040911154403"
```

4.6.3 Retrieving Reports

Once an SHC run has been completed, the data is transported for analysis to the HPE Support Center using the configured transport method. The data is analyzed, reports are generated and are made available for retrieval using Proactive Analysis Framework (PAF) web-based interface.

An email is sent to the configured *Specialist email* address providing a link to the reports that can be downloaded using the PAF interface.

Reports are provided in rich text format (RTF) and HTML.

Important: Protection of Customer Data

Information contained in SHCA reports is extremely sensitive with respect to your customer's IT security. You must ensure compliance with both the HPE security policy (see https://www.hpe.com/tw/en/legal/privacy.html) and the HPE customer data privacy standard (see https://www.hpe.com/us/en/about/governance/policies.html) at all times. Delivery of the report to the customer must be done in a secure way (for example, the report cannot be sent unencrypted to the customer via e-mail. The report should not be sent by e-mail, unless specifically requested by the customer, and when it can be transmitted, you must use agreed-to encryption and authentication methods. Refer to the IT@hpe - Information Security web page (see https://www.hpe.com/us/en/services/consulting/security.html)for detailed instructions on how to send an encrypted email to an external party.

4.6.4 Viewing SHC Jobs

SHC logs and job details can be viewed locally on the system on completion of an SHC analysis. The SHCA reports are supplied to the user by their HPE Services representative.

4.6.4.1 Viewing Jobs using the Web based Interface

To view SHC logs and job details using the web-based interface, click the ***View* SHC Jobs** link that is located on the SHC web-based interface menu in the *Analysis* section. The *View System Healthcheck Jobs* screen is displayed. If you have not run any SHC analyses, this screen is not populated.

The *View System Healthcheck Jobs* screen provides the following functionality provided SHC analyses have previously been run on the system:

- The **Status** column provides access to the SHC or PAC analysis log-files. These logs provide summaries of the actions performed during an analysis and if an analysis failed for some reason, may give an indication of why it occurred.
- The **Delete Analysis data** option allows you to delete the associated data for a particular analysis. To do so, select the option **Delete Analysis data** option associated with that analysis and click the delete icon (✖).
- To submit or resubmit an analysis for a report, use the checkboxes to select whatever job/s you wish to Submit, then click the **Submit Analysis for SHCA Report** icon (). The analysis is submitted to HPE using the configured service and transport settings.

4.6.4.2 Viewing Jobs using the Admin CLI

To view job details using the Admin CLI, invoke the CLI by executing the shcctl command with appropriate job options. Each job if successful will produce appropriate data for an SHCA report. The Admin CLI can also be used to determine status of jobs that failed or were terminated, and delete SHC jobs from the system. The syntax of these options is as follows:

```
shcctl [-list-jobs] [-job-status] [-delete-job <jobid>]
```

Table 4.11: Admin CLI interface options

Optional Command	Description
`-list-jobs`	Use the –list-jobs option to list all SHC jobs that have run and the report status.
`-job-status <jobid>`	Use the –job-status to display the status of job <jobid>. If <jobid> is omitted shcctl will display the status of the currently running job (if any).
`-delete-job <jobid>`	Use the –delete-job to delete the job (<jobid>) and its contents.

4.6.4.3 Viewing SHC Jobs Using the Operating System CLI

SHC job details and logs can also be viewed from the operating system command-line. The SHC analysis details are stored in the SHC data directory in a series of time-stamped subdirectories:

- `/var/opt/hpesmc/shc/data/<hostname>/shc/` on HP-UX/Linux
- `C:\program files\hpesmc\shc\data\<hostname>\shc\` on Windows

To view job details for a particular analysis, you should change directory to one of these subdirectories. Log files are found in the \log sub-folder.

5 General Issues

This chapter describes general issues and workarounds.

5.1 HP-UX Kernal Instrumentation Data

SHC for HP-UX uses HP-UX kernel instrumentation (KI) data. Other HPE applications also use HP-UX KI data. To limit load it is advisable where possible to avoid running both concurrently.

The following are examples of KI dependent applications:

- HP OpenView Performance agent (formerly Measureware)
- HP OpenView Performance manager (formerly Perfview)
- HP OpenView Glance
- HP OpenView GlancePlus
- HP LaserRx
- HP Prospect performance tool
- Kitrace

5.2 Virtual Machine Clone

In a virtual machine clone, the system data remains the same as the original virtual machine. If you install SHC on a virtual machine and then clone this virtual machine, the system data remains the same. This may cause unexpected behavior, as SHC and PAC are dependent on this system data. To avoid any unexpected behavior, remove and reinstall SHC, PAC from the virtual machine clone. See the following sections, for information on Windows and Linux platforms.

5.2.1 Virtual Clone Machine

In a virtual machine clone, the system data remains the same as the original virtual machine. If you install SHC on a virtual machine and then clone this virtual machine, the system data remains the same. This may cause unexpected behavior, as SHC and PAC are dependent on this system data. To avoid any unexpected behavior, remove and reinstall SHC and PAC from the virtual machine clone. See the following sections, for information on Windows and Linux platforms.

5.2.2 Windows

Use the following procedure on a virtual machine clone that is cloned from a virtual machine with SHC already installed.

1. Uninstall SHC and PAC. For detailed instructions, see section 3.10 Uninstalling SHC.
2. Remove the directory: C:\Program Files \hpesmc\common\config
3. Reinstall SHC. Before you reinstall SHC, make sure the hostname of the virtual machine is unique. For detailed instructions, see section 3.2 Installing/Upgrading SHC on Windows Systems.

Warning: Before you remove MC3, check if there are any installed HPE products dependent on MC3. See the relevant user guide for more information.

Note: On Windows systems, if you want to specify a duration of 96 hours (4 days) or more, use the default interval of 120 seconds or greater. If you want to specify a short interval of less than 5 seconds, run the tool for 4 hours or less, with an interval of no less than 3 seconds.

5.2.3 Linux

Use the following procedure on a virtual machine clone that is cloned from a virtual machine with SHC already installed.

1. Uninstall SHC and PAC. For detailed instructions, see section 3.10.3 Uninstalling SHC on Linux Systems.
2. Remove the directory: /etc/opt/hpesmc/common
3. Reinstall SHC. Before you reinstall SHC, make sure the hostname of the virtual machine is unique. For detailed instructions, see section 3.4 Installing and Upgrading SHC on Linux Systems.

Warning: Before you remove MC3, check if there are any installed HPE products dependent on MC3. See the relevant user guide for more information.

6 Support and Feedback

This chapter describes how to obtain support for SHC.

6.1 Obtaining Support for SHC

If you have technical support issues or problems, please contact your local support team.

If SHC fails, you should examine the SHC error log file, which may contain errors or warnings that indicate the cause of the failure. The name of the SHC error log is shcerrlog.htm and it is contained in the data directory, for example:

- `c:\program files\hpesmc\shc\data\<hostname>\shc\20040916191158\log\shcerrlog.htm` on Windows
- `/var/opt/hpesmc/shc/data/<hostname>/shc/20040916191158/log/shcerrlog.htm` on HP-UX/Linux

If you cannot determine the cause of the failure, zip up the SHC data directory for the failed analysis and return it to the SHC Support team by completing the following steps:

1. Run the following command:

   On Windows systems:

   ```
   c:\program files\hpesmc\shc\bin\zip -r <hostname>_shc <data_directory>
   ```

   Where `<data_directory>` is the path to the directory of the SHC analysis which failed.

   For example on a system named node01, you would run the following command:

   ```
   c:\program files\hpesmc\shc\bin\zip –r node01_shc "c:\program files\hpesmc\shc\data\node01\shc\20040916191158"
   ```

   This creates the file `node01_shc.zip`

   Note: Only the path argument in this example is enclosed in quotation marks ("").

   On HP-UX, and Linux systems:

   ```
   tar cvf <hostname>_shc.tar <data_directory>

   gzip <hostname>_shc.tar
   ```

   Where `<data_directory>` is the path to the directory of the SHC analysis which failed.

   For example on a HP-UX/Linux system named node02, you would run the following command:

   ```
   tar cvf node02_shc.tar /var/opt/hpesmc/shc/data/node02/shc/20040916191158

   gzip node02_shc.tar
   ```

   This creates the file `node02_shc.tar.gz`.

2. Send the zip/tar file and a description of the SHC failure to your local support team.

This ensures that the SHC Support team receives all files needed to help solve the problem.

6.2 Providing Feedback on SHC

We appreciate feedback on all aspects of SHC and suggestions for improvement. Please submit all feedback on this page:

http://nternet.ftc.tslabs.hpecorp.net/tss_support/docs/assessments_template.htm

Appendix A-Exit Codes

This appendix outlines the SHC exit codes and it includes the following sections:

Windows Exit Codes

Code	Description	Name
0	Success	SHC_OK
1001	Access Denied	SHC_ACCESS_DENIED
1002	Bad command-line options	SHC_BAD_ARGS
1003	There is a problem with the configuration file	SHC_BAD_CONFIG_FILE
1004	The configuration file details are invalid	SHC_BAD_DETAILS
1005	File not found	SHC_FILE_NOT_FOUND
1006	Base SHC exception	SHC_BASE_EXCEPTION
1007	NT structured exception	SHC_NT_SEH
1008	Unknown exception	SHC_UNKNOWN_EXCEPTION
1009	Package received a KILL signal	SHC_KILLED
1010	Bus Error	SHC_BUS
1011	Segmentation Violation Error	SHC_SEGV
1012	Kit has expired	SHC_KIT_EXPIRED
1013	SHC package is not applicable	SHC_PACKAGE_NOT_APPLICABLE
1020	shc is already running	SHC_CLI_ALREADY_RUNNING
1021	shc is not running	SHC_CLI_NOT_RUNNING
1022	shc was killed by a user	SHC_CLI_KILLED_BY_USER
1023	Cannot create shc	SHC_CLI_CONSTRUCT_FAILURE
1024	Setup for shc failed	SHC_CLI_SETUP_FAILURE
1030	Rule package interval too short	SHC_RP_INTERVAL_TOO_SHORT
1031	Rule package interval too long	SHC_RP_INTERVAL_TOO_LONG

1032	Rule package duration too short	SHC_RP_DURATION_TOO_SHORT
1033	Rule package duration too long	SHC_RP_DURATION_TOO_LONG
1034	No rule package completed successfully	SHC_RP_NO_PACKAGE_SUCCEEDED
1035	All SHC rules have been disabled	SHC_RP_ALL_RULES_DISABLED
1040	Blat failed	SHC_TRANS_BLAT_FAILED
1041	Send failed	SHC_TRANS_SEND_FAILED
1042	Test send failed	SHC_TRANS_TEST_FAILED
1050	Bad tds file	SHC_RE_BAD_TDS
1051	Bad statistics	SHC_RE_BAD_STATISTICS
1052	Bad problem	SHC_RE_BAD_PROBLEM
1053	Report engine mismatch	SHC_RE_MISMATCH
1054	No language services to generate report	SHC_RE_NOLANGSERVICES
1070	Zip data failed	SHC_PACK_ZIP_DATA_FAILED
1071	Zip pack failed	SHC_PACK_ZIP_PACK_FAILED
1072	Unzip pack failed	SHC_PACK_UNZIP_PACK_FAILED
1080	Shell error	SHC_SHELL_ERROR
1090	Performance Data Helper DLL error	SHC_PDH_ERROR
1100	Microsoft Internet Information Services metabase is not installed on this system	SHC_IIS_NOT_INSTALLED
1110	Event log registry keys not found	SHC_EVENTLOG_REG_NOTFOUND
1120	Microsoft Cluster Service is not installed on this system	SHC_CLUSTERSERVICE_NOT_INSTALLED
1130	Attempted to process an invalid time stamp	SHC_TIMESTAMP_BAD_TIMESTAMP
1140	This system failed to bind to a domain controller running Microsoft Active Directory	SHC_ACTIVEDIRECTORY_BIND_FAILED

1141	This system bound to a domain controller whose Microsoft Active Directory service is not responding	SHC_ACTIVEDIRECTORY_NOT_RESPONDING
1142	SHC does not support Native or Interim 2003 forests. Active Directory rules may not be accurate.	SHC_ACTIVEDIRECTORY_NATIVE_FOREST_2003
1143	SHC does not support Native or Interim 2003 domains. Active Directory rules may not be accurate.	SHC_ACTIVEDIRECTORY_NATIVE_DOMAIN_2003
1190	DNS is not configured on this system or the DNS servers are not responding	SHC_NO_DNS_SERVERS

HP-UX and Linux Exit Codes

Code	Description	Name
0	Success	SHC_OK
9	Package received a KILL signal	SHC_KILLED
10	Bus Error	SHC_BUS
11	Segmentation Violation Error	SHC_SEGV
51	Access Denied	SHC_ACCESS_DENIED
52	Bad command-line options	SHC_BAD_ARGS
53	There is a problem with the configuration file	SHC_BAD_CONFIG_FILE
54	The configuration file details are invalid	SHC_BAD_DETAILS
55	File not found	SHC_FILE_NOT_FOUND
56	Base SHC exception	SHC_BASE_EXCEPTION
58	Unknown exception	SHC_UNKNOWN_EXCEPTION
62	Kit has expired	SHC_KIT_EXPIRED

63	SHC package is not applicable	SHC_PACKAGE_NOT_APPLICABLE
70	shc is already running	SHC_CLI_ALREADY_RUNNING
71	shc is not running	SHC_CLI_NOT_RUNNING
72	shc was killed by a user	SHC_CLI_KILLED_BY_USER
73	Cannot create shc	SHC_CLI_CONSTRUCT_FAILURE
74	Setup for shc failed	SHC_CLI_SETUP_FAILURE
80	Rule package interval too short	SHC_RP_INTERVAL_TOO_SHORT
81	Rule package interval too long	SHC_RP_INTERVAL_TOO_LONG
82	Rule package duration too short	SHC_RP_DURATION_TOO_SHORT
83	Rule package duration too long	SHC_RP_DURATION_TOO_LONG
84	No rule package completed successfully	SHC_RP_NO_PACKAGE_SUCCEEDED
85	All SHC rules have been disabled	SHC_RP_ALL_RULES_DISABLED
91	Send failed	SHC_TRANS_SEND_FAILED
92	Test send failed	SHC_TRANS_TEST_FAILED
100	Bad tds file	SHC_RE_BAD_TDS
101	Bad statistics	SHC_RE_BAD_STATISTICS
102	Bad problem	SHC_RE_BAD_PROBLEM
103	Report engine mismatch	SHC_RE_MISMATCH
104	No language services to generate report	SHC_RE_NOLANGSERVICES
120	Zip data failed	SHC_PACK_ZIP_DATA_FAILED
121	Zip pack failed	SHC_PACK_ZIP_PACK_FAILED
122	Unzip pack failed	SHC_PACK_UNZIP_PACK_FAILED
130	Shell error	SHC_SHELL_ERROR
180	Attempted to process an invalid time stamp	SHC_TIMESTAMP_BAD_TIMESTAMP
215	Enhanced Security installed, base security rules not applicable	SHC_C2SEC_INSTALLED

220	Serviceguard is not installed on this system. (HP-UX only)	SHC_SERVICEGUARD_NOT_INSTALLED
221	Serviceguard is not running on this system. (HP-UX only)	SHC_SERVICEGUARD_NOT_RUNNING
225	vPars is not installed on this system. (HP-UX only)	SHC_VPARS_NOT_INSTALLED
230	vPars is not supported on this system. (HP-UX only)	SHC_VPARS_NOT_SUPPORTED
235	SHC does not support vPars on this system, skipping vPars Rule Package. (HP-UX only)	SHC_VPARS_NOT_SUPPORTED_BY_SHC_ON_OS
240	Veritas is not installed on this system. (HP-UX only)	SHC_VERITAS_VXVM_NOT_INSTALLED
235	LVM is not configured on this system.	SHC_LVM_NOT_CONFIGURED

Appendix B-Country Codes

This appendix provides a list of countries and their corresponding international country codes required by the SHC for the **`shcconfig`** utility.

Country	Country Code
AFGHANISTAN	AF
ALBANIA	AL
ALGERIA	DZ
AMERICAN SAMOA	AS
ANDORRA	AD
ANGOLA	AO
ANGUILLA	AI
ANONYMOUS	AA
ANTARCTICA	AQ
ANTIGUA AND BARBUDA	AG
ARGENTINA	AR
ARMENIA	AM
ARUBA	AW
AUSTRALIA	AU
AUSTRIA	AT
AZERBAIJAN	AZ
BAHAMAS	BS
BAHRAIN	BH
BANGLADESH	BD
BARBADOS	BB
BELARUS	BY
BELGIUM	BE
BENIN	BJ
BERMUDA	BM
BHUTAN	BT
BOLIVIA	BO
BOSNIA AND HERZEGOVINA	BA
BOTSWANA	BW

BOUVET ISLAND	BV
BRAZIL	BR
BRITISH INDIAN OCEAN TERRITORY	IO
BRUNEI DARUSSALAM	BN
BULGARIA	BG
BURKINA FASO	BF
BURUNDI	BI
CAMBODIA	KH
CAMEROON	CM
CANADA	CA
CAPE VERDE	CV
CAYMAN ISLANDS	KY
CENTRAL AFRICAN REPUBLIC	CF
CHAD	TD
CHILE	CL
CHINA	CN
CHRISTMAS ISLAND	CX
COCOS (KEELING) ISLANDS	CC
COLOMBIA	CO
COMOROS	KM
CONGO	CG
CONGO, THE DEMOCRATIC REPUBLIC OF THE	CD
COOK ISLANDS	CK
COSTA RICA	CR
COTE D'IVOIRE	CI
CROATIA	HR
CUBA	CU
CYPRUS	CY
CZECH REPUBLIC	CZ
DENMARK	DK
DJIBOUTI	DJ

DOMINICA	DM
DOMINICAN REPUBLIC	DO
ECUADOR	EC
EGYPT	EG
EL SALVADOR	SV
EQUATORIAL GUINEA	GQ
ERITREA	ER
ESTONIA	EE
ETHIOPIA	ET
FALKLAND ISLANDS (MALVINAS)	FK
FAROE ISLANDS	FO
FIJI	FJ
FINLAND	FI
FRANCE	FR
FRENCH GUIANA	GF
FRENCH POLYNESIA	PF
FRENCH SOUTHERN TERRITORIES	TF
GABON	GA
GAMBIA	GM
GEORGIA	GE
GERMANY	DE
GHANA	GH
GIBRALTAR	GI
GREECE	GR
GREENLAND	GL
GRENADA	GD
GUADELOUPE	GP
GUAM	GU
GUATEMALA	GT
GUINEA	GN
GUINEA-BISSAU	GW
GUYANA	GY

HAITI	HT
HEARD ISLAND AND MCDONALD ISLANDS	HM
HOLY SEE (VATICAN CITY STATE)	VA
HONDURAS	HN
HONG KONG	HK
HUNGARY	HU
ICELAND	IS
INDIA	IN
INDONESIA	ID
IRAN, ISLAMIC REPUBLIC OF	IR
IRAQ	IQ
IRELAND	IE
ISRAEL	IL
ITALY	IT
JAMAICA	JM
JAPAN	JP
JORDAN	JO
KAZAKHSTAN	KZ
KENYA	KI
KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF	KP
KOREA, REPUBLIC OF	KR
KUWAIT	KW
KYRGYZSTAN	KG
LAO PEOPLE'S DEMOCRATIC REPUBLIC	LA
LATVIA	LV
LEBANON	LB
LESOTHO	LS
LIBERIA	LR
LIBYAN ARAB JAMAHIRIYA	LY
LIECHTENSTEIN	LI
LITHUANIA	LT

LUXEMBOURG	LU
MACAO	MO
MACEDONIA, THE FORMER YUGOSLAV REPUBLIC OF	MK
MADAGASCAR	MG
MALAWI	MW
MALAYSIA	MY
MALDIVES	MV
MALI	ML
MALTA	MT
MARSHALL ISLANDS	MH
MARTINIQUE	MQ
MAURITANIA	MR
MAURITIUS	MU
MAYOTTE	YT
MEXICO	MX
MICRONESIA, FEDERATED STATES OF	FM
MOLDOVA, REPUBLIC OF	MD
MONACO	MC
MONGOLIA	MN
MONTSERRAT	MS
MOROCCO	MA
MOZAMBIQUE	MZ
MYANMAR	MM
NAMIBIA	NA
NAURU	NR
NEPAL	NP
NETHERLANDS	NL
NETHERLANDS ANTILLES	AN
NEW CALEDONIA	NC
NEW ZEALAND	NZ
NICARAGUA	NI

NIGER	NE
NIGERIA	NG
NIUE	NU
NORFOLK ISLAND	NF
NORTHERN MARIANA ISLANDS	MP
NORWAY	NO
OMAN	OM
PAKISTAN	PK
PALAU	PW
PALESTINIAN TERRITORY, OCCUPIED	PS
PANAMA	PA
PAPUA NEW GUINEA	PG
PARAGUAY	PY
PERU	PE
PHILIPPINES	PH
PITCAIRN	PN
POLAND	PL
PORTUGAL	PT
PUERTO RICO	PR
QATAR	QA
REUNION	RE
ROMANIA	RO
RUSSIAN FEDERATION	RU
RWANDA	RW
SAINT HELENA	SH
SAINT KITTS AND NEVIS	KN
SAINT LUCIA	LC
SAINT PIERRE AND MIQUELON	PM
SAINT VINCENT AND THE GRENADINES	VC
SAMOA	WS
SAN MARINO	SM
SAO TOME AND PRINCIPE	ST

SAUDI ARABIA	SA
SENEGAL	SN
SERBIA AND MONTENEGRO	CS
SEYCHELLES	SC
SIERRA LEONE	SL
SINGAPORE	SG
SLOVAKIA	SK
SLOVENIA	SI
SOLOMON ISLANDS	SB
SOMALIA	SO
SOUTH AFRICA	ZA
SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS	GS
SPAIN	ES
SRI LANKA	LK
SUDAN	SD
SAUDI ARABIA	SA
SENEGAL	SN
SERBIA AND MONTENEGRO	CS
SEYCHELLES	SC
SIERRA LEONE	SL
SINGAPORE	SG
SLOVAKIA	SK
SLOVENIA	SI
SOLOMON ISLANDS	SB
SOMALIA	SO
SOUTH AFRICA	ZA
SOUTH GEORGIA AND THE SOUTH SANDWICH ISLANDS	GS
SPAIN	ES
SRI LANKA	LK
SUDAN	SD
SURINAME	SR

SVALBARD AND JAN MAYEN	SJ
SWAZILAND	SZ
SWEDEN	SE
SWITZERLAND	CH
SYRIAN ARAB REPUBLIC	SY
TAIWAN, PROVINCE OF CHINA	TW
TAJIKISTAN	TJ
TAIWAN, PROVINCE OF CHINA	TW
TAJIKISTAN	TJ
TANZANIA, UNITED REPUBLIC OF	TZ
THAILAND	TH
TIMOR-LESTE	TL
TOGO	TG
TOKELAU	TK
TONGA	TO
TRINIDAD AND TOBAGO	TT
TUNISIA	TN
TURKEY	TR
TURKMENISTAN	TM
TURKS AND CAICOS ISLANDS	TC
TUVALU	TV
UGANDA	UG
UKRAINE	UA
UNITED ARAB EMIRATES	AE
UNITED KINGDOM	GB
UNITED STATES	US
UNITED STATES MINOR OUTLYING ISLANDS	UM
URUGUAY	UY
UZBEKISTAN	UZ
VANUATU	VU
VENEZUELA	VE

VIETNAM	VN
VIRGIN ISLANDS, BRITISH	VG
VIRGIN ISLANDS, U.S.	VI
WALLIS AND FUTUNA	WF
WESTERN SAHARA	EH
YEMEN	YE
ZAMBIA	ZM
ZIMBABWE	ZW

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Appendix C-SHC Impact Statements

The impact statements in this appendix are also published as separate documents. This appendix includes the following sections:

SHC for HP-UX Impact Statement

SHC for HP-UX Impact Statement	
SHC Version	SHC for HP-UX V10.1.7
Supported Operating Systems	HP-UX, 11i v1 (B.11.11), 11i v2.0 (B. 11.23), 11i v3.0 (B. 11.31)
Supported Hardware	All HPE PA-RISC/IPF platforms supported by HP-UX Engineering on the versions of operating systems listed above.
Kit Components	SD-UX products MCPS-SHC, MCPS-PAC
Product Description	System Healthcheck (SHC) is a HPE Services tool for analyzing system configuration, performance and security. SHC analysis results are provided by a series of reports that highlight any problems found on a system and provide suggestions on how to resolve these problems.
Product Documentation	SHC information is available in the following documents: • *SHC Release Notes* • *SHC User Guide*
Disk Space Usage (installation)	SHC SD-UX file – 37.7MB* or 28.2MB** SHC base depot - /opt 183MB* or 93MB**, /var 0.3MB, /etc 0.5MB * IA64 HP-UX 11i v2 (B. 11.23) 11i v3 (B. 11.31) ** PA-RISC HP-UX 11i v1 (B.11.11), 11i v2 (B. 11.23) 11i v3 (B. 11.31)
Disk Space Usage (run-time)	When run with the default settings, an SHC analysis uses 0MB in /usr and 1MB in /var. This usage varies widely depending on the system's configuration, complexity, and the number of problems detected.
Performance Impact	SHC has been profiled on a number of HP PA-RISC and IPF systems running HP-UX, including a HP 9000/785/B2600 server and an ia64 HP rx2620 server. The results were as follows: During the dynamic phase of an SHC run with a default interval of two minutes, average CPU usage was found to range from 0.25% on the rx2620 to 0.8% on the HPE 9000.

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	Memory usage was 1.5MB on the HPE 9000 and 3.5MB on the rx2620 during the dynamic phase. During the static phase of an SHC run, average CPU usage was found to be 4%, the maximum CPU usage ranges from 4% on the rx2620 to 12% on the HPE 9000. Memory usage was less than 4MB during the static phase. **Note:** The static phase typically runs for a relatively short period of time (less than 5 minutes) at the end of an SHC analysis. The above figures are averages from SHC runs for a specific operating system and hardware configuration, as returned by the ps(1) command. The performance impact of SHC is dependent on your operating system and hardware configuration; it may be more significant in complex environments.
SHC output	SHC Analysis data (PGP-encrypted ZIP file)
Files modified during installation	SHC base depot: **/opt/hpesmc/ (created)** **/opt/hpe/RemoteSupport/pac/ (created)** **/var/opt/hpesmc/ (created)** **/etc/opt/hpesmc/(created)** **/var/run/(modified)**
SHC installation kit/media	SHC for HP-UX is supplied as a SD-UX depot. This file can be provided on tape, CD-ROM, or via a network download.
Installation Dependencies	SHC has an exrequisite dependency on Insight Remote Support Advanced (RSA) Configuration Collector (UC-ACC). If this product is installed, SHC for HP-UX will not be installed. Use iRSA Server Performance Collection / Server Advanced Configuration Collection instead.
How to install SHC:	**swinstall -s <path_to_depot_file>/file.depot MCPS-SHC**
How to uninstall SHC:	**swremove MCPS-SHC**
How to stop an SHC immediately:	**/opt/hpesmc/shc/bin/shc –k**
Install Destination	SHC is installed i**n /opt/hpesmc/shc, /opt/hpe/RemoteSupport/pac, /etc/opt/hpesmc/shc,** and **/var/opt/hpesmc/shc**.
Licensing	SHC does not require a license PAK or authorization code.
Privilege Requirements	SHC must be installed, run, and uninstalled by root or an account with superuser privileges.
Execute duration	Using default settings, an SHC analysis on a typical system will consist of an eight hour dynamic analysis phase and a further 0.5 hours of a static analysis phase. The duration of

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	the static analysis phase can be much longer on large or complex configurations.
Security Impact	See *SHC Security Impact Statement* /opt/hpesmc/shc/docs/SHC_security_impact_statement.doc

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SHC for Windows Impact Statement

SHC for Windows Impact Statement	
SHC Version	SHC for Windows V10.1.9
Supported Operating Systems	Microsoft Windows Server 2003 up to Service Pack 2 (x86, x86_64, and ia64 editions) (Standard, Enterprise and Datacenter Servers) Microsoft Windows Server 2008 and R2 up tp SP1 (x86_64, and ia64 editions) (Standard, Enterprise and Datacenter Servers) Microsoft Windows Server 2012 and R2 (x86_64 edition) (Standard and Datacenter Servers) Microsoft Windows Server 2016 (x86-64 edition) (Standard and Datacenter Servers) Microsoft Windows Server 2019 (x86-64 edition) (Standard and Datacenter Servers)
Supported Hardware	x86, x86_64, and ia64-based HPE systems running the operating systems listed above.
Kit Components	All kit components must be installed. There are no optional components.
Product Description	System Healthcheck (SHC) is a HPE Services tool for analyzing system configuration, performance and security. SHC analysis results are provided by a series of reports that highlight any problems found on a system and provide suggestions on how to resolve these problems. SHC provides two user interfaces, that is, a command-line interface and a web-based interface.
Product Documentation	SHC information is available in the following documents: • *SHC Release Notes* • *SHC User Guide*
Disk Space Usage (installation)	Size of SHC InstallShield self-extracting executable - ~ 55MB. Size of installed kit - 35MB. Setup will terminate if less than 60MB is available.
Disk Space Usage (runtime)	Depends on number of analyses, and so on. Ranges from 1 to 4MB per eight-hour analysis.
Performance Impact	The SHC analysis runs in two phases, a static and a dynamic phase: The dynamic phase gathers and analyzes information about the dynamic processes on the system, for example, CPU and memory usage, in order to determine the system's performance characteristics. This is achieved by recording particular performance indicators at regular intervals over a period of time. The user configures the sample interval and the data gathering duration. The default parameters are samples at two minute intervals over a period of eight hours. The dynamic phase has a minimal impact on system performance. SHC has been profiled on a number of Windows 2003 Windows Server 2008 and Windows Server 2012 systems including an HP ProLiant DL380 with an Intel Pentium III (735MHz), and HP ProLiant BL465c G1 with an x64 Dual-Core Opteron (2800MHz). During the dynamic phase of an SHC run, average CPU usage was found to be approximately 1%. Maximum memory usage was 48MB.

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	During the static phase of an SHC run, average CPU usage was 1.2% over a full static run. Memory usage ranged from 5MB to 44MB During the static phase, non-varying system and enterprise configuration information is analyzed. This phase can be CPU intensive and may have a small but noticeable impact upon certain system configurations. Where system performance is at a premium, it is advisable to run the static phase at a non-critical period of the day. To alleviate potential performance impacts, the static rule packages run at a lower priority than normal. The performance impact of SHC is dependent on your operating system and hardware configuration; it may be more significant in complex environments.
SHC output	SHC Analysis data (PGP-encrypted ZIP file)
Files modified during installation	Directory **C:\Program Files\hpesmc\shc** (created) Registry key **HKEY_LOCAL_MACHINE\SOFTWARE\HewlettPackardEnterprise\hpesmc \System Healthcheck (**created) Registry key **HKEY_LOCAL_MACHINE\SOFTWARE\HewlettPackardEnterprise\HPESMC\PAC** (created)
SHC installation kit/media	SHC for Windows is supplied as an InstallShield self-extracting executable. This file can be provided on tape, CD-ROM, or via a network download.
How to install SHC:	1. Extract SHC self-extracting executable. 2. Complete the InstallShield SHC Setup wizard.
How to uninstall SHC:	Refer to section 3.10 Uninstalling SHC.
How to stop an SHC immediately:	**C:\program files\hpesmc\shc\bin\shc -k**
Install Destination	SHC is installed in **C:\program files\hpesmc\shc** where C: is the disk drive that contains the Windows system directory, typically **C:\WINNT or C:\Windows.**
Licensing	SHC does not require a license PAK or authorization code.
Privilege Requirements	SHC must be installed, run and uninstalled by the administrator or an account with administrative privileges.
Execute duration	Using default settings, an SHC analysis on a typical system consists of an eight hour dynamic analysis phase and a further 0.5 hours (approximately) of a static analysis phase. The duration of the static analysis phase can be much longer on large or complex configurations.
Security Impact	**C:\Program Files\hpesmc\shc\docs\SHC_security_impact_statement.doc**

SHC for Linux Impact Statement

SHC for Linux Impact Statement

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SHC Version	SHC for Linux V10.1.8
Supported Operating Systems	• Red Hat Enterprise Linux 4 ES • Red Hat Enterprise Linux 4 AS • Red Hat Enterprise Linux 5 • Red Hat Enterprise Linux 6 • Red Hat Enterprise Linux 7 • Red Hat Enterprise Linux 8 • SUSE Enterprise Linux 10 • SUSE Enterprise Linux 11 • SUSE Enterprise Server 12 • SUSE Enterprise Server 15 **Note:** Red Hate Enterprise Linux 4 AS and ES are no longer supported in SHC version 10.1.8
Supported Hardware	All Intel x86 and x86_64-based systems running the operating systems listed above. **Note:** ia64-based systems are no longer supported after SHC version 10.1.8.
Kit Components	RPM
Product Description	System Healthcheck (SHC) is a HPE Services tool for analyzing system configuration, performance and security. SHC analysis results are provided by a series of reports that highlight any problems found on a system and provide suggestions on how to resolve these problems.
Product Documentation	SHC information is available in the following documents: • *SHC Release Notes* • *SHC User Guide*
Disk Space Usage (installation)	SHC kit file – 19 to 23MB, (depending on architecture) SHC - /opt 47 to 83MB (depending on architecture), /var 0.1MB, /etc 0.5MB
Disk Space Usage (run-time)	When run with the default settings, an SHC analysis uses 0MB in /usr and 1MB in /var. This usage (/var) varies widely depending on the system's configuration, complexity, and the number of problems detected.
Performance Impact	SHC has been profiled on a number of x86, x86_64, and ia64 systems running Linux, including a HP DL380 ProLiant server. The results were as follows: During the dynamic phase of an SHC run with a default interval of two minutes, average CPU usage was found to be 0.1-0.2%. Memory usage was 5.3MB during the dynamic phase. During the static phase of an SHC run, average CPU usage was found to be 3%, the maximum CPU usage was 13%. Memory usage was less than 5.8MB during the static phase. **Note:** The static phase typically runs for a relatively short period of time (less than 1 minute) at the end of an SHC analysis. The above figures are averages from SHC runs for a specific operating system and hardware configuration, as returned by the ps(1) command. The performance impact of SHC is dependent on your operating system

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	and hardware configuration; it may be more significant in complex environments.
SHC output	SHC Analysis data (PGP-encrypted ZIP file)
Files modified during installation	SHC base depot: **/opt/hpesmc/ (created)** **/opt/hpe/RemoteSupport/pac/ (created)** **/var/opt/hpesmc/ (created)** **/etc/opt/hpesmc/(created)** **/var/run/(modified)**
SHC installation kit/media	SHC for Linux is supplied as a self-extracting archive file. This file can be provided on tape, CD-ROM, or via a network download.
Installation Dependencies	**Prior to SHC version 10.1.8**, on Red Hat Enterprise Linux 4 ES and AS, the compat-libstdc++ package must be present for the SHC installation to succeed. The package is named 'compat-libstdc++.*.rpm' and is located on disc 4 (ia64), or disc 2 (x86_64 and i386) of the Red Hat 4 distribution. On Red Hat Enterprise Linux Version 7 and SUSE Enterprise Server 12, x86_64 platforms only, the compat-libstdc++-33-3.2.3-61.x86_64.rpm must be downloaded and installed for the SHC installation to succeed. This dependency has been removed in SHC version 10.1.8 and subsequent versions.
How to install SHC:	<path_to_kit>/installSHCLinux-V1.0.0-buildnnn.rpm.sh
How to uninstall SHC:	rpm -e hpeshc
How to stop an SHC immediately:	/opt/hpesmc/shc/bin/shc -k
Install Destination	SHC is installed in /opt/hpesmc/shc, /etc/opt/hpesmc/shc, and /var/opt/hpesmc/shc.
Licensing	SHC does not require a license PAK or authorization code.
Privilege Requirements	SHC must be installed, run, and uninstalled by root or an account with super-user privileges.
Execute duration	Using default settings, an SHC analysis on a typical system will consist of an eight hour dynamic analysis phase and a further 0.5 hours of a static analysis phase. The duration of the static analysis phase can be much longer on large or complex configurations.
Security Impact	See *SHC Security Impact Statement* /opt/hpesmc/shc/docs/SHC_security_impact_statement.doc

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Glossary

Glossary Term	Definition
Dynamic analysis	The dynamic analysis is the phase of the SHC analysis during which dynamic aspects of the system's performance are analyzed, for example, memory usage, I/O, and so on.
kernel instrumentation (KI)	KI is a HP-UX kernel interface used to trace a set of kernel events at the time the event occurs. Events that may be traced include context switches, system calls, and disk I/O activity. The trace information can be extracted from the kernel and processed by various tools to provide various metrics used for system management or debugging.
MC3	Mission Critical Common Components (MC3) - Common configuration data shared by HPE services tools.
PAC	Proactive Analysis Client is the analysis engine that forms part of the SHC product.
PAF	The PAF web based interface provides HPE specialists to generate RSPS assessment reports from analysis data that were submitted to the HPE Data Center on a once-off basis. The PAF also allows you to retrieve generated reports.
PGP	PGP Encryption (Pretty Good Privacy) is software that provides *cryptographic privacy* and *authentication*. SHC uses the *GNU Privacy Guard (GnuPG)* to encrypt SHC analysis data. GnuPG is the GNU project's complete and free implementation of the OpenPGP standard as defined by *RFC2440*. For more information about *cryptographics*, see: http://en.wikipedia.org/wiki/Cryptographic For more information about *privacy, see*: http://en.wikipedia.org/wiki/Privacy For more information about *authentication*, see: http://en.wikipedia.org/wiki/Authentication For more information about *GnuPG*, see: http://www.gnu.org/ For more information about the *RFC2440 standard*, see: http://www.ietf.org/rfc/rfc2440.txt
Problem	In the context of SHC, a problem is the data recorded when a rule fires

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Rule	An SHC rule is a check for a specific problem or incorrect configuration on the system. Each rule has a unique rule ID.
Sample window	The SHC dynamic rules collect a number of samples for a rule, before analyzing them. The number of samples is referred to as a sample window. Sample windows are set per-rule and cannot be changed by the user.
SHC data file	The file generated by SHC after completing a successful analysis. This file contains problem data and SHC configuration data and is used to generate the SHC reports.
SHC error log	Each SHC analysis generates an error log file, which contains all the information in the user log file as well as any errors or warnings that occurred during the analysis. The SHC Support team uses this file to troubleshoot problems with SHC.
System Health Check Assessment (SHCA) Reports	Two types of SHCA reports are generated as follows: SHCA Management Summary report THE SHCA Management Summary report provides a high-level overview of the assessment results for each system checked. SHCA Detailed report The SHCA Detailed Report provides full details of each SHC analysis performed and is intended for HPE Services professionals to use in analyzing and diagnosing problems on customer systems.
SHC user log	Each SHC analysis generates a user log file which details the rules and rule packages which are run as well as other useful information.
SMH	The HPE System Management Homepage (HPE SMH) is a Web-based interface that consolidates and simplifies single system management for HPE servers on HP-UX, Linux, and Microsoft Windows Homepage (HPE SMH) operating systems.
Static analysis	The static analysis is the phase of the SHC analysis during which static aspects of the system's configuration are analyzed, for example, security settings, and so on.

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x86_64	x86_64 is a 64-bit microprocessor architecture and corresponding instruction set designed by Advanced Micro Devices (AMD). For more information about *64-bit processors* , see: http://en.wikipedia.org/wiki/64-bit For more information about *microprocessor architecture,* see: http://en.wikipedia.org/wiki/Processor_architecture For more information about *instruction sets* , see: http://en.wikipedia.org/wiki/Instruction_set For more information about *AMD*, see: http://en.wikipedia.org/wiki/Advanced_Micro_Devices