Specification

Project Aurora

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Executive Summary

This document addresses different dependencies that the SCX Core component will have on the target platforms, together with ideas of mitigations and possibilities to reduce the final requirements.

References and Links

*See inline hyperlinks for external references.*

Revision History

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# Introduction

This document addresses dependencies the SCX agent may have on the target platforms and external components.

# Dependency verification

## Expressing dependencies

How dependencies should be stated to customers is up to PM to decide. However, it would most probably be both satisfactory and easy to state a requirement on the following combination for each target operating system:

* **Installation Profile** – i.e. the system is installed with a set of components specified by the operating system supplier (e.g. “Solaris 10 Core” or “SUSE Linux SLES Server profile”)
* **Patch Level** – i.e. the system has either been initially installed to or later been upgraded to a specified baseline (e.g. “Solaris 10 1/06” or “SUSE Linux SLES 10 sp2”)

**Decision change October 2008**  We will likely formulate our prereqs as a base level OS installation and pinpoint the patches we really need on top of base installation. If these happen to correspond to an OS level we might include that information as convenience.

## Validating dependencies

Validation of dependencies should be performed on a package level, e.g. verifying that a SUSE Linux target host has the “openssl-libraries” package of at least version 0.9.8d installed, rather than trying to validate the specific library file “libcrypt.so”.

# Overview of Dependencies

This chapter gives an overview of the different types of dependencies that has been identified.

## Installation dependencies

### Dependencies for remote installation

In order for the SCX agent to be installed remotely by Operations Manager, the remote host must be accessible using SSH. Except for supporting SSH v2 and accepting password-based logins for providing a remote shell either as root or with possibilities to “su” to root, no specific requirements exist on the SSH daemon itself.

### Installer dependencies

The remote host must provide access to the package manager tool used by SCX for installing the actual platform, e.g. “rpm” for Linux, “pkgadd” for Sun Solaris.

Within the installer packages, one or more scripts are bundled that imposes requirements primarily on binaries that must be present in order to be able to execute. The required binaries are listed in the platform specific dependence appendices.

## Runtime dependencies

### Kernel level dependencies

The SCX agent may be dependent on specific Kernel-level functionality in order to execute management requests. For example, a system call for querying the status of a disk might have errors in kernels of previous versions and therefore we must state a dependency on the kernel version.

On Linux, kernel updates are provided as RPMs and are distributed using the same mechanisms as for other packages (i.e. Red Hat “up2date” and SUSE “YOU”) which provides the necessary means for us to express dependencies in our installer. For other platforms, determining the kernel patch level and stating dependency requirements must be investigated further.

As of today, no requirements on specific kernel version have yet been identified for the target platforms so far being built for.

### Compiler runtime dependencies

The compilers used for building the SCX agent will impose specific requirements on one or more runtime libraries.

### Package and library dependencies

#### Dependencies inherited from external components

##### OpenSSL

Pegasus requires OpenSSL in order to provide SSL/TLS –based communications. See 4 External Common Components

##### PAM

OpenPegasus integrate with Linux PAM for authentication.

In order for the SCX agent to be able to authenticate users performing WS-Management requests, it will rely on and integrate with PAM. By integrating with PAM, the SCX agent will be able to fully adapt to the authentication mechanisms to be used on the host running on. I.e. if the host is configured to use LDAP for authentication and authorization, the SCX agent will automatically adapt to this and authenticate requests accordingly.

Without PAM, the agent would be required to either manage its own user database or use the default UNIX password files directly.

### Dependencies introduced by the SCX Core agent code

The dependencies that SCX Core may consider to state in order to be able to provide the required functionality is named “introduced package dependencies”.

As of today, no dependencies other than those already covered by this document have been identified. Should SCX Core need to rely on functionality available in external packages, of course already inherited dependencies should be considered the natural candidate.

## Component Availability

### Availability levels

Whether a component is available for a specific platform or not is mostly a question of which channel would be acceptable for providing the component.

Below follows a description of different levels through which components could be made available for system administrators.

#### Bundled

By “bundled” we mean either the original CD-media delivered with the operating system or a software distribution service to which access is granted as part of the licensing of the operating system. Examples of such services are:

* Red Hat Network (“RHN”)
* SUSE YaST Online Updates (“YOU”)
* SunSolve  
  <http://sunsolve.sun.com/>

#### Add-on package

Several suppliers of operating systems provide external components as add-on packages. Some suppliers require additional registration and all seem to require acceptance of a new licensing agreement.

Some examples on add-on package programs:

* HP-UX Internet Express. Contains several add on packages split into functionality-oriented bundles (e.g. bundle “security” contains OpenSSL)  
  <http://h20338.www2.hp.com/hpux11i/324414-0-0-225-121.html>
* AIX Toolbox for Linux Applications. Among other packages, OpenSSL is provided under the area “AIX Toolbox Cryptographic Content”.  
  <http://www-03.ibm.com/systems/p/os/aix/linux/download.html>

#### Third-party

There are numerous sources where third-party components can be downloaded in binary form. However, unless actually unavoidable we must not rely on components not delivered by the OS vendors. One example of forced exception is OpenSSL libraries for Solaris 8 and 9 which are not available for Sun. All such exceptions must be explicitly called out for each platform.

Some examples on third-party channels:

* Community Software for Solaris (CSW)  
  <http://www.blastwave.org/>
* Sunfreeware.com  
  <http://www.sunfreeware.com/>
* Porting and Archive Centre for HP-UX  
  <http://hpux.connect.org.uk/>

#### Unavailable

By “unavailable” we mean that there is no known way to retrieve the component in binary form. The only way to get the component installed on the platform is to build it from source code.

# SLES

## SLES 9

### Base OS Level

The SLES 9 version we have tested and that we support is patch level 4. This was formally updated for the release of ACS for OM2007 R2 where it was discovered that the syslog message format had changed.

# cat /etc/SuSE-release

SUSE LINUX Enterprise Server 9 (i586)

VERSION = 9

PATCHLEVEL = 4

andreas@scxsles9-03b:andreas> uname -a

Linux scxsles9-03b 2.6.5-7.308-smp #1 SMP Mon Dec 10 11:36:40 UTC 2007 i686 i686 i386 GNU/Linux

### Required OS Patches

|  |  |  |  |
| --- | --- | --- | --- |
| Patch | WI | Vendor Bug # | Comment |
| Libstdc++-41.rpm | 9100 (8777) | "Wide character and variable encoding filebuf work (UTF-8, Unicode)" (http://gcc.gnu.org/gcc-3.4/changes.html) | Locale-bug requiring gcc 3.4 or later. Package available on SLES9 SP4 CD, but installs nicely on a SLES 9 host. |
| libgcc-41.rpm | 9100 |  | Prereq of the above - customer must install this. |

These libraries are available on the SLES9 SP4 installation CDs.

# rpm -q libstdc++-41

libstdc++-41-4.1.2\_20070115-0.6

# rpm -q libgcc-41

libgcc-41-4.1.2\_20070115-0.6

### Compiler Versions

On SLES9 we compile with a compiler of version 4.1, provided to us directly from Novell. We need to use it to produce binaries which are compatible with the libstdc++-41 rpm listed above.

rpm -Uvh --replacepkgs \

${GCCPATH}/gcc-41.rpm \

${GCCPATH}/binutils216.rpm \

${GCCPATH}/glibc-devel.rpm \

${GCCPATH}/cpp-41.rpm \

${GCCPATH}/libmudflap-41.rpm \

${GCCPATH}/libgcc-41.rpm

rpm -Uvh --replacepkgs \

${GCCPATH}/gcc-41-c++.rpm \

${GCCPATH}/libstdc++-41-devel.rpm \

${GCCPATH}/libstdc++-41.rpm

### Package Dependencies

#### OpenSSL

The version of OpenSSL we have tested on and that is supported is the one that comes installed with the operating system.

# rpm -q openssl

openssl-0.9.7d-15.35

#### PAM

On SuSE, PAM is contained in a separate rpm package called pam. We require only the version that comes installed with the operating system.

# rpm -q pam

pam-0.77-221.11

#### INSSERV

On SuSE, the /usr/lib/lsb utilities are contained in a separate rpm package called insserv. We require only the version that comes installed with the operating system.

# rpm -q insserv

insserv-1.00.2-85.1

## SLES 10

### Base OS Level

The version of SLES 10 that we have tested and that we support is patch level 1. The requirement on patch level 1 is due to a bug in the glibc runtime, remedied sometime before 2.4-31.30, causing the process crashing randomly.

# cat /etc/SuSE-release

SUSE Linux Enterprise Server 10 (i586)

VERSION = 10

PATCHLEVEL = 1

### Required OS Patches

|  |  |  |  |
| --- | --- | --- | --- |
| Patch | WI | Vendor Bug # | Comment |
| glibc-2.4-31.30 | 3092, 2220 | 213374, 3429 | Crash during stress |

https://bugzilla.novell.com/show\_bug.cgi?format=multiple&id=213374

http://sourceware.org/bugzilla/show\_bug.cgi?id=3429

### Compiler Versions

Using the unpatched compiler delivered with the OS.

# rpm -q gcc  
gcc-4.1.0-28.4

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with GCC we are dependent on glibc. The version we have tested on and that we support is the one that comes with patch level 1.

# rpm -q glibc

glibc-2.4-31.30

#### OpenSSL

The version of OpenSSL we have tested on and that is supported is the one that comes installed with the operating system.

# rpm -q openssl

openssl-0.9.8a-18.15

#### PAM

On SuSE, PAM is contained in a separate rpm package called pam. We require only the version that comes installed with the operating system.

# rpm -q pam

pam-0.99.6.3-28.8

#### INSSERV

On SuSE, the /usr/lib/lsb utilities are contained in a separate rpm package called insserv. We require only the version that comes installed with the operating system.

# rpm -q insserv

insserv-1.04.0-20.13

## SLES 11

### Base OS Level

The version of SLES 11 that we have tested and that we support the base version.

# cat /etc/SuSE-release

SUSE Linux Enterprise Server 11 (i586)

VERSION = 11

PATCHLEVEL = 0

### Required OS Patches

### Compiler Versions

Using the unpatched compiler delivered with the OS.

# rpm -q gcc  
gcc-4.3-62.198

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with GCC we are dependent on glibc.

# rpm -q glibc

glibc-2.9-13.2

#### OpenSSL

The version of OpenSSL we have tested on and that is supported is the one that comes installed with the operating system.

# rpm -q openssl

openssl-0.9.8h-30.11

#### PAM

On SuSE, PAM is contained in a separate rpm package called pam. We require only the version that comes installed with the operating system.

# rpm -q pam

pam-1.0.2-20.1

#### INSSERV

On SuSE, the /usr/lib/lsb utilities are contained in a separate rpm package called insserv. We require only the version that comes installed with the operating system.

# rpm -q insserv

insserv-1.12.0-25.1

# RHEL

## RHEL 4

### Base OS Level

The version of RHEL 4 that we have tested and that we support is the base level.

# cat /etc/redhat-release

Red Hat Enterprise Linux ES release 4 (Nahant)

# uname -a

Linux scxcrd-rhe40-01 2.6.9-5.ELsmp #1 SMP Wed Jan 5 19:30:39 EST 2005 i686 i686 i386 GNU/Linux

# uname –a  
Linux scxcrd64-rhel40-4 2.6.9-5.ELsmp #1 SMP Wed Jan 5 19:29:47 EST 2005 x86\_64 x86\_64 x86\_64 GNU/Linux

### Required OS Patches

### Compiler Versions

Using the unpatched compiler delivered with the OS.

# rpm -q gcc  
gcc-3.4.3-9.EL4

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with GCC we are dependent on glibc. The version we have tested on and that we support is the one that comes with the operating system.

# rpm -q glibc

glibc-2.3.4-2

#### OpenSSL

The version of OpenSSL we have tested on and that is supported is the one that comes installed with the operating system.

# rpm -q openssl

openssl-0.9.7a-43.1

#### PAM

On RedHat, PAM is contained in a separate rpm package called pam. We require only the version that comes installed with the operating system.

# rpm -q pam

pam-0.77-65.1

#### INSSERV

On SuSE, the /usr/lib/lsb utilities are contained in a separate rpm package called redhat-lsb. We require only the version that comes installed with the operating system.

# rpm -q redhat-lsb

redhat-lsb-1.3-5.2

## RHEL 5

### Base OS Level

The version of RHEL 5 that we have tested and that we support is patch level 1.

# cat /etc/redhat-release

Red Hat Enterprise Linux Server release 5.1 (Tikanga)

# uname -a

Linux scxcrd-rhel50-02 2.6.18-8.el5 #1 SMP Fri Jan 26 14:15:21 EST 2007 i686 i686 i386 GNU/Linux

# uname –a  
Linux scxcrd64-rhe50-4 2.6.18-8.el5 #1 SMP Fri Jan 26 14:15:14 EST 2007 x86\_64 x86\_64 x86\_64 GNU/Linux

### Required OS Patches

### Compiler Versions

Using the unpatched compiler delivered with the OS.

# rpm -q gcc  
gcc-4.1.1-52.el5

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with GCC we are dependent on glibc. The version we have tested on and that we support is the one that comes with the operating system.

# rpm -q glibc

glibc-2.5-12

#### OpenSSL

The version of OpenSSL we have tested on and that is supported is the one that comes installed with the operating system.

# rpm -q openssl

openssl-0.9.8b-8.3.el5

#### PAM

On RedHat, PAM is contained in a separate rpm package called pam. We require only the version that comes installed with the operating system.

# rpm -q pam

pam-0.99.6.2-3.14.el5

#### INSSERV

On SuSE, the /usr/lib/lsb utilities are contained in a separate rpm package called redhat-lsb. We require only the version that comes installed with the operating system.

# rpm -q redhat-lsb

redhat-lsb-3.1-12.2

## RHEL 6

### Base OS Level

The version of RHEL 6 that we have tested and that we support is the base version, on both 32-bit and 64-bit machines.

# cat /etc/redhat-release

Red Hat Enterprise Linux Server release 6.0 (Santiago)

# uname -a

Linux scxcrd-rhel6-01 2.6.32-71.el6.i686 #1 SMP Wed Sep 1 01:26:34 EDT 2010 i686 i686 i386 GNU/Linux

# uname -a  
Linux scxcrd64-rhel6-01 2.6.32-71.el6.x86\_64 #1 SMP Wed Sep 1 01:33:01 EDT 2010 x86\_64 x86\_64 x86\_64 GNU/Linux

### Required OS Patches

### Compiler Versions

Using the unpatched compiler delivered with the OS.

# rpm -q gcc  
gcc-4.4.4-13.el6.i686 (32-bit)

gcc-4.4.4-13.el6.x86\_64 (64-bit)

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with GCC we are dependent on glibc. The version we have tested on and that we support is the one that comes with the operating system.

# rpm -q glibc

glibc-2.12-1.7.el6.i686 (32-bit)

glibc-2.12-1.7.el6.x86\_64 (64-bit)

#### OpenSSL

The version of OpenSSL we have tested on and that is supported is the one that comes installed with the operating system.

# rpm -q openssl

openssl-1.0.0-4.el6.i686 (32-bit)

openssl-1.0.0-4.el6.x86\_64 (64-bit)

#### PAM

On RedHat, PAM is contained in a separate rpm package called pam. We require only the version that comes installed with the operating system.

# rpm -q pam

pam-1.1.1-4.el6.i686 (32-bit)

pam-1.1.1-4.el6.x86\_64 (64-bit)

#### INSSERV

On SuSE, the /usr/lib/lsb utilities are contained in a separate rpm package called redhat-lsb. We require only the version that comes installed with the operating system.

# rpm -q redhat-lsb

redhat-lsb-4.0-2.1

# Ubuntu

## Ubuntu 6.06

### Base OS Level

The version of Ubuntu 6 that we have tested and that we support is the base level called 6.06.

# cat /etc/lsb-release

DISTRIB\_ID=Ubuntu

DISTRIB\_RELEASE=6.06

DISTRIB\_CODENAME=dapper

DISTRIB\_DESCRIPTION="Ubuntu 6.06 LTS"

### Required OS Patches

### Compiler Versions

Using the latest compiler supported on this version of Ubuntu using the official Ubuntu repository. The repository is available online.

# dpkg -l gcc | grep gcc  
ii gcc 4.0.3-1 The GNU C compiler

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with GCC we are dependent on libc6. The version we have tested on and that we support is the one that comes with the operating system.

# dpkg -l libc6 | grep libc6

ii libc6 2.3.6-0ubuntu20.5 GNU C Library: Shared libraries and Timezone data

#### OpenSSL

The version of OpenSSL we have tested on and that is supported is the one that comes installed with the operating system.

# dpkg -l libssl0.9.8 | grep libssl0.9.8

ii libssl0.9.8 0.9.8a-7ubuntu0.6 SSL shared libraries

#### PAM

On RedHat, PAM is contained in a separate rpm package called pam. We require only the version that comes installed with the operating system.

# dpkg -l libpam-runtime | grep pam

ii libpam-runtime 0.79-3ubuntu14 Runtime support for the PAM library

# Solaris

## Solaris 8 SPARC

### Base OS Level

The version of Solaris 8 SPARC that we have tested and that we support is 2/04 s28s\_hw4wos\_05a.

# cat /etc/release

Solaris 8 2/04 s28s\_hw4wos\_05a SPARC

Copyright 2004 Sun Microsystems, Inc. All Rights Reserved.

Assembled 08 January 2004

### Required OS Patches

|  |  |  |  |
| --- | --- | --- | --- |
| Patch | WI | Vendor Bug # | Comment |
| 108434-22 |  |  | PAM memory leak |
| 109147-44 |  |  | Prereq for the above |
| 108435-22 |  |  | 64-bit version of first one |

Strictly speaking, we should have 109147, 108434, and 108435. But 109147 is a prereq for 108434 - the patch checks for that.

Patch 108435 is corresponding patch for 64-bit - we build 32-bit. The patch list corresponds to the host install scripts as of 9/27/2011.

### Compiler Versions

bash-2.03$ pkginfo -x SPROcpl

SPROcpl Sun Studio 11 C++ Compiler

(sparc) 11.0,REV=2005.10.13

SunStudio11/SunStudio\_11.tar.gz

|  |  |  |  |
| --- | --- | --- | --- |
| Patch | Slogan | WI | Comment |
| 120760-21 | Compiler Common patch for Sun C C++ F77 F95 |  |  |
| 121017-16 | Sun Studio 11: Patch for Sun C++ 5.8 compiler |  |  |

These patches correspond to the contents of the install scripts as of 9/27/2011.

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with CC we are dependent on some packages supplied by SUN. The version we have tested on and that we support is the one that comes with the operating system.

Note that installation package just checks for existence of this package, not version.

# pkginfo -x SUNWlibC

SUNWlibC Sun Workshop Compilers Bundled libC

(sparc) 5.8,REV=99.06.09

# pkginfo -x SUNWlibms

SUNWlibms Sun WorkShop Bundled shared libm

(sparc) 5.8,REV=1999.10.21

#### OpenSSL

Sun does not provide any version of OpenSSL for Solaris 8 SPARC. We are forced to depend on a version available from Sunfreeware.

Note that installation package just checks for existence of this package, not version.

# pkginfo -x SMCossl

SMCossl openssl

(sparc) 0.9.8h

#### PAM

On Solaris, PAM is part of the core operating system components. More specifically it is contained in the SUNWcsl package.

Note that installation package just checks for existence of this package, not version.

# pkginfo -x SUNWcsl

SUNWcsl Core Solaris, (Shared Libs)

(sparc) 11.8.0,REV=2000.01.08.18.12

## Solaris 9 SPARC

### Base OS Level

The version of Solaris 9 SPARC that we have tested and that we support is 9/05 HW s9s\_u9wos\_06b.

# cat /etc/release

Solaris 9 9/05 HW s9s\_u9wos\_06b SPARC

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Assembled 25 September 2006

### Required OS Patches

|  |  |  |  |
| --- | --- | --- | --- |
| Patch | WI | Vendor Bug # | Comment |
| 112960-48 | 9298 | 4974005 | PAM memory leak |

This list is a subset of what the host setup scripts install; refer to these for master info.

### Compiler Versions

bash-2.05$ pkginfo -x SPROcpl

SPROcpl Sun Studio 12 C++ Compiler

(sparc) 12.0,REV=2007.05.03

SunStudio 12/SunStudio12ml-solaris-sparc-200709-pkg.tar.bz2

|  |  |  |  |
| --- | --- | --- | --- |
| Patch | Slogan | WI | Comment |
| 124861-07 | Compiler Common patch for Sun C C++ F77 F95 patches |  |  |
| 124863-05 | C++ 5.9 Compiler patches |  |  |

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with CC we are dependent on some packages supplied by SUN. The version we have tested on and that we support is the one that comes with the operating system.

Note that installation package just checks for existence of this package, not version.

# pkginfo -x SUNWlibC

SUNWlibC Sun Workshop Compilers Bundled libC

(sparc) 5.9,REV=2002.03.18

# pkginfo -x SUNWlibms

SUNWlibms Forte Developer Bundled shared libm

(sparc) 5.9,REV=2001.12.10

#### OpenSSL

Sun does not provide any version of OpenSSL for Solaris 9 SPARC. We are forced to depend on a version available from Sunfreeware.

Note that installation package just checks for existence of this package, not version.

# pkginfo -x SMCosslg

SMCosslg openssl

(sparc) 0.9.7g

#### PAM

On Solaris, PAM is part of the core operating system components. More specifically it is contained in the SUNWcsl package.

Note that installation package just checks for existence of this package, not version.

# pkginfo -x SUNWcsl

SUNWcsl Core Solaris, (Shared Libs)

(sparc) 11.9.0,REV=2002.04.06.15.27

## Solaris 10 SPARC

### Base OS Level

The version of Solaris 10 SPARC that we have tested and that we support is 6/06 s10s\_u2wos\_09a.

# cat /etc/release

Solaris 10 6/06 s10s\_u2wos\_09a SPARC

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Assembled 09 June 2006

### Required OS Patches

|  |  |  |  |
| --- | --- | --- | --- |
| Patch | WI | Vendor Bug # | Comment |
| 117463-05 |  | 4974005 | PAM memory leak |

Note: This list is a subset of the patches applied by the host setup scripts. Refer to those scripts for master information.

### Compiler Versions

SunStudio12/SunStudio12ml-solaris-sparc-200709-pkg.tar.bz2

-bash-3.00# pkginfo -x SPROcpl

SPROcpl Sun Studio 12 C++ Compiler

(sparc) 12.0,REV=2007.05.03

|  |  |  |  |
| --- | --- | --- | --- |
| Patch | Slogan | WI | Comment |
| 119254-34 | Install and patch utilities patches |  |  |
| 124861-07 | Compiler Common patch for Sun C C++ F77 F95 patches |  |  |
| 124863-05 | C++ 5.9 Compiler patches |  |  |

Note: This list is a subset of the patches applied by the host setup scripts. Refer to those scripts for master information.

On Solaris Sparc hosts, we also need (not needed on Solaris x86 hosts):

|  |  |  |  |
| --- | --- | --- | --- |
| Patch | Slogan | WI | Comment |
| 120011-14 | Kernel Patch | 12995 | Kernel patch; required for proper header files to use zones.h |

Note: This patch is only required for build hosts; customers do NOT need to install this kernel patch.

Note: This list is a subset of the patches applied by the host setup scripts. Refer to those scripts for master information.

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with CC we are dependent on some packages supplied by SUN. The version we have tested on and that we support is the one that comes with the operating system.

# pkginfo -x SUNWlibC

SUNWlibC Sun Workshop Compilers Bundled libC

(sparc) 5.10,REV=2004.12.22

# pkginfo -x SUNWlibms

SUNWlibms Math & Microtasking Libraries (Usr)

(sparc) 5.10,REV=2004.11.23

# pkginfo -x SUNWlibmsr

SUNWlibmsr Math & Microtasking Libraries (Root)

(sparc) 5.10,REV=2004.11.23

# pkginfo -x SUNWcslr

SUNWcslr Core Solaris Libraries (Root)

(sparc) 11.10.0,REV=2005.01.21.15.53

# pkginfo -x SUNWcsl

SUNWcsl Core Solaris, (Shared Libs)

(sparc) 11.10.0,REV=2005.01.21.15.53

#### OpenSSL

Sun provides the OpenSSL libraries for Solaris 10 SPARC. They are bundled with the operating system.

Note that installation package just checks for existence of this package, not version. For Solaris 10 it is expected that all OpenSSL versions from Sun are backwards-compatible, something that is not the case for older OS versions.

# pkginfo -x SUNWopenssl-libraries

SUNWopenssl-libraries OpenSSL Libraries (Usr)

(sparc) 11.10.0,REV=2005.01.21.15.53

#### PAM

On Solaris, PAM is part of the core operating system components. More specifically it is contained in the SUNWcsr package.

Note that installation package just checks for existence of this package, not version.

# pkginfo -x SUNWcsr

SUNWcsr Core Solaris, (Root)

(sparc) 11.10.0,REV=2005.01.21.15.53

## Solaris 10 x86

### Base OS Level

The version of Solaris 10 x86 that we have tested and that we support is 11/06 s10x\_u3wos\_10.

# cat /etc/release

Solaris 10 11/06 s10x\_u3wos\_10 X86

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Assembled 14 November 2006

### Required OS Patches

|  |  |  |  |
| --- | --- | --- | --- |
| Patch | WI | Vendor Bug # | Comment |
| 117464-04 |  |  | PAM memory leak. Patch obsoleted by 12037-15 but our prereq is this. |

### Compiler Versions

SunStudio12ml-solaris-x86-200709-pkg.tar.bz2

-bash-3.00# pkginfo -x SPROcpl

SPROcpl Sun Studio 12 C++ Compiler

(i386) 12.0,REV=2007.05.03

|  |  |  |  |
| --- | --- | --- | --- |
| Patch | Slogan | WI | Comment |
| 126498-05 | Sun Studio 12 C, C++ and F90 compiler |  |  |
| 124864-03 | Sun Studio 12\_x86: Patch for Sun C++ Compiler |  |  |

http://sunsolve.sun.com/search/advsearch.do?collection=PATCH&type=collections&max=50&language=en&queryKey5=126498&toDocument=yes

http://sunsolve.sun.com/search/advsearch.do?collection=PATCH&type=collections&max=50&language=en&queryKey5=124864&toDocument=yes

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with CC we are dependent on some packages supplied by SUN. The version we have tested on and that we support is the one that comes with the operating system.

# pkginfo -x SUNWlibC

SUNWlibC Sun Workshop Compilers Bundled libC

(i386) 5.10,REV=2004.12.20

# pkginfo -x SUNWlibmsr

SUNWlibmsr Math & Microtasking Libraries (Root)

(i386) 5.10,REV=2004.12.18

# pkginfo -x SUNWcsl

SUNWcsl Core Solaris, (Shared Libs)

(i386) 11.10.0,REV=2005.01.21.16.34

# pkginfo -x SUNWcslr

SUNWcslr Core Solaris Libraries (Root)

(i386) 11.10.0,REV=2005.01.21.16.34

#### OpenSSL

Sun provides the OpenSSL libraries for Solaris 10 x86. They are bundled with the operating system.

Note that installation package just checks for existence of this package, not version.

# pkginfo -x SUNWopenssl-libraries

SUNWopenssl-libraries OpenSSL Libraries (Usr)

(i386) 11.10.0,REV=2005.01.21.16.34

#### PAM

On Solaris, PAM is part of the core operating system components. More specifically it is contained in the SUNWcsr package.

Note that installation package just checks for existence of this package, not version.

# pkginfo -x SUNWcsr

SUNWcsr Core Solaris, (Root)

(i386) 11.10.0,REV=2005.01.21.16.34

# HP-UX

## HP-UX 11i v2 IA-64

### Base OS Level

The version of HP-UX 11i v2 IA-64 that we have tested and that we support is B.11.23.0706.

# swlist | grep HPUXBase

HPUXBaseAux B.11.23.0706 HP-UX Base OS Auxiliary

HPUXBaseOS B.11.23 HP-UX Base OS

### Compiler Versions

-bash-3.2$ aCC -V

aCC: HP C/aC++ B3910B A.06.14 [Feb 22 2007]

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with aCC we are dependent on some packages supplied by HP. The version we have tested on and that we support is the one that comes with the operating system.

# swlist | grep HPUXBaseAux

HPUXBaseAux B.11.23.0706 HP-UX Base OS Auxiliary

#### OpenSSL

HP provides the OpenSSL libraries for HP-UX 11i v2 IA-64. They are bundled with the operating system.

# swlist -l product HPUXBaseAux.openssl

# Initializing...

# Contacting target "scxhpvm01"...

#

# Target: scxhpvm01:/

#

# HPUXBaseAux B.11.23.0706 HP-UX Base OS Auxiliary

HPUXBaseAux.openssl A.00.09.07l.003 Secure Network Communications Protocol

#### PAM

On HP-UX, PAM is part of the core operating system components. More specifically it is contained in the OS-Core.UX2-CORE fileset.

# swlist -R OS-Core.UX2-CORE

# Initializing...

# Contacting target "scxhpvm01"...

#

# Target: scxhpvm01:/

#

OS-Core.MinimumRuntime.UX2-CORE B.11.23 IA64-specific Core HP-UX functionality

OS-Core.Runtime.UX2-CORE B.11.23 IA64-specific Core HP-UX functionality

## HP-UX 11i v2 PA-RISC

### Base OS Level

The version of HP-UX 11i v2 PA-RISC that we have tested and that we support is B.11.23.0706.

# swlist | grep HPUX11i-OE

HPUX11i-OE B.11.23.0706 HP-UX Foundation Operating Environment Component

### Required OS Patches

### Compiler Versions

# aCC -V

aCC: HP ANSI C++ B3910B A.03.77

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with aCC we are dependent on some packages supplied by HP. The version we have tested on and that we support is the one that comes with the operating system.

# swlist -R OS-Core.MinimumRuntime.CORE-SHLIBS

# Initializing...

# Contacting target "scxhpr7"...

#

# Target: scxhpr7:/

#

OS-Core.MinimumRuntime.CORE-SHLIBS B.11.23 32bit PA Compatible development tools libraries

#### OpenSSL

HP provides the OpenSSL libraries for HP-UX 11i v2 PA-RISC. They are bundled with the operating system.

# swlist -l product HPUXBaseAux.openssl

# Initializing...

# Contacting target "scxhpr7"...

#

# Target: scxhpr7:/

#

# HPUXBaseAux B.11.23.0706 HP-UX Base OS Auxiliary

HPUXBaseAux.openssl A.00.09.07l.003 Secure Network Communications Protocol

#### PAM

On HP-UX, PAM is part of the core operating system components. No specific dependencies are needed for this.

## HP-UX 11i v3 PA-RISC

### Base OS Level

The version of HP-UX 11i v3 PA-RISC that we have tested and that we support is B.11.31.0709

# swlist | grep HPUX11i

HPUX11i-OE B.11.31 HP-UX Foundation Operating Environment

Note: For the OM 12 release we agreed on having the same baseline on PA-RISC as for IA. Once we have access to a system of the proper version we can update the text above.

### Required OS Patches

### Compiler Versions

# aCC -V

aCC: HP ANSI C++ B3910B A.03.80

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with aCC we are dependent on some packages supplied by HP. The version we have tested on and that we support is the one that comes with the operating system.

# swlist -R OS-Core.MinimumRuntime.CORE2-SHLIBS

# Initializing...

# Contacting target "scxhpr2"...

#

# Target: scxhpr2:/

#

OS-Core.MinimumRuntime.CORE2-SHLIBS B.11.31 PA-Specific on IA emulator libraries

#### OpenSSL

HP provides the OpenSSL libraries for HP-UX 11i v3 PA-RISC. They are bundled with the operating system.

# swlist -l product OpenSSL.openssl

# Initializing...

# Contacting target "scxhpr2"...

#

# Target: scxhpr2:/

#

# OpenSSL A.00.09.08d.002 Secure Network Communications Protocol

OpenSSL.openssl A.00.09.08d.002 Secure Network Communications Protocol

#### PAM

On HP-UX, PAM is part of the core operating system components. No extra dependencies are needed for this.

## HP-UX 11i v3 IA-64

### Base OS Level

The version of HP-UX 11i v3 IA-64 that we have tested and that we support is B.11.31.0709.

# swlist | grep HPUX11i

HPUX11i-OE B.11.31.0709 HP-UX Foundation Operating Environment

### Required OS Patches

### Compiler Versions

# aCC -V

aCC: HP C/aC++ B3910B A.06.15 [May 16 2007]

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with aCC we are dependent on some packages supplied by HP. The version we have tested on and that we support is the one that comes with the operating system.

# swlist -R OS-Core.MinimumRuntime.CORE2-SHLIBS

# Initializing...

# Contacting target "scxhpi3"...

#

# Target: scxhpi3:/

#

OS-Core.MinimumRuntime.CORE2-SHLIBS B.11.31 IA64-specific IA development libraries

#### OpenSSL

HP provides the OpenSSL libraries for HP-UX 11i v3 IA-64. They are bundled with the operating system.

# swlist -l product SysMgmtMin.openssl

# Initializing...

# Contacting target "scxhpi3"...

#

# Target: scxhpi3:/

#

# SysMgmtMin B.11.31.0709 Minimum Software Deployment Tools

SysMgmtMin.openssl A.00.09.08d.002 Secure Network Communications Protocol

#### PAM

On HP-UX, PAM is part of the core operating system components. No extra dependencies are needed for this.

# AIX

## AIX 5L

### Base OS Level

The version of AIX 5L that we have tested and that we support is 5300-06-05-0806 (WI 7458)

# oslevel -s

5300-06-05-0806

This means version 5, release 3, technology level 6 patch level 5.

### Required OS Patches

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Patch | WI | Comment | Vendor Bug # | URL |
| 5300-06 Service Pack 5 | 7458, 6527 | Crashes in PAM |  |  |

### Compiler & Lib Runtime Versions

Since we compile with IBM XL C/C++ we are dependent on some packages supplied by IBM. We are dependent on the compiler runtime from version 9 (V9).

Our installation requirement is currently 9.0.0.2, but the build machine has 9.0.0.6 since the compiler patch vacpp.90.aix52-61.apr2008.ptf.tar.Z updates it to 9.0.0.6 on build and dev hosts. The patches were required to compile Pegasus properly.

Dev host:

# lslpp -l xlC.rte

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

xlC.rte 9.0.0.6 COMMITTED XL C/C++ Runtime

# lslpp -l bos.rte.libc

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

bos.rte.libc 5.3.0.65 COMMITTED libc Library

BVT host:

# lslpp -l xlC.rte

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

xlC.rte 9.0.0.2 COMMITTED XL C/C++ Runtime

# lslpp -l bos.rte.libc

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

bos.rte.libc 5.3.0.65 COMMITTED libc Library

### Package Dependencies

#### Compiler Introduced Dependencies

#### OpenSSL

IBM provides the OpenSSL libraries for AIX 5L. They are bundled with the operating system.

# lslpp -l openssl.base

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

openssl.base 0.9.8.4 COMMITTED Open Secure Socket Layer

#### PAM

On AIX, PAM is part of the core operating system components. More specifically it is contained in the bos.rte.security package.

# lslpp -l bos.rte.security

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

bos.rte.security 5.3.0.65 COMMITTED Base Security Function

## AIX 6.1

### Base OS Level

The version of AIX 6 that we have tested and that we support is 6100-01-01-0823.

# oslevel -s

6100-00-01-0823

### Required OS Patches

### Compiler Versions

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with IBM XL C/C++ we are dependent on some packages supplied by IBM. We are dependent on the compiler runtime from version 9 (V9)

-bash-3.00$ lslpp -l xlC.rte

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

xlC.rte 9.0.0.6 COMMITTED XL C/C++ Runtime

-bash-3.00$ lslpp -l bos.rte.libc

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

bos.rte.libc 6.1.1.1 COMMITTED libc Library

Path: /etc/objrepos

bos.rte.libc 6.1.1.1 COMMITTED libc Library

#### OpenSSL

IBM provides the OpenSSL libraries for AIX 5L. They are bundled with the operating system.

-bash-3.00$ lslpp -l openssl.base

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

openssl.base 0.9.8.4 COMMITTED Open Secure Socket Layer

Path: /etc/objrepos

openssl.base 0.9.8.4 COMMITTED Open Secure Socket Layer

#### PAM

On AIX, PAM is part of the core operating system components. More specifically it is contained in the bos.rte.security package.

-bash-3.00$ lslpp -l bos.rte.security

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

bos.rte.security 6.1.1.1 COMMITTED Base Security Function

Path: /etc/objrepos

bos.rte.security 6.1.1.1 COMMITTED Base Security Function

## AIX 7.1

### Base OS Level

The version of AIX 6 that we have tested and that we support is 7100-00-01-1037.

# oslevel -s

7100-00-01-1037

### Required OS Patches

### Compiler Versions

The base compiler version is: V11.1 (11.01.0000.0004). Full details:

-bash-3.2$ xlC -qversion

IBM XL C/C++ for AIX, V11.1 (5724-X13)

Version: 11.01.0000.0004

-bash-3.2$

-bash-3.2$ xlC -qversion=verbose

IBM XL C/C++ for AIX, V11.1 (5724-X13)

Version: 11.01.0000.0004

Driver Version: 11.01(C/C++) Level: 101118

C Front End Version: 11.01(C/C++) Level: 101118

C++ Front End Version: 11.01(C/C++) Level: 101118

High-Level Optimizer Version: 11.01(C/C++) and 13.01(Fortran) Level: 101216

Low-Level Optimizer Version: 11.01(C/C++) and 13.01(Fortran) Level: 101118

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with IBM XL C/C++ we are dependent on some packages supplied by IBM. We are dependent on the compiler runtime from version 11 (V11)

-bash-3.2$ lslpp -l xlC.rte

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

xlC.rte 11.1.0.1 COMMITTED XL C/C++ Runtime

-bash-3.2$ lslpp -l bos.rte.libc

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

bos.rte.libc 7.1.0.1 COMMITTED libc Library

Path: /etc/objrepos

bos.rte.libc 7.1.0.1 COMMITTED libc Library

Note that installation of the compiler installs xlC.rte 11.1.0.2. Meanwhile, our BVT systems only have xlC.rte 11.1.0.1. Testing indicates that building on a system with xlC.rte 11.1.0.2 but running on a system with xlC.rte 11.1.0.1appears to work fine. Thus, the package depends on xlC.rte 11.1.0.1.

#### OpenSSL

IBM provides the OpenSSL libraries for AIX 5L. They are bundled with the operating system.

-bash-3.2$ lslpp -l openssl.base

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

openssl.base 0.9.8.1300 COMMITTED Open Secure Socket Layer

Path: /etc/objrepos

openssl.base 0.9.8.1300 COMMITTED Open Secure Socket Layer

#### PAM

On AIX, PAM is part of the core operating system components. More specifically it is contained in the bos.rte.security package.

-bash-3.2$ lslpp -l bos.rte.security

Fileset Level State Description

----------------------------------------------------------------------------

Path: /usr/lib/objrepos

bos.rte.security 7.1.0.1 COMMITTED Base Security Function

Path: /etc/objrepos

bos.rte.security 7.1.0.1 COMMITTED Base Security Function

# MacOS

## MacOS 10.5

### Base OS Level

The version of MacOS 10.5 that we have tested and that we support is 10.5.4.

# sw\_vers

ProductName: Mac OS X Server

ProductVersion: 10.5.4

BuildVersion: 9E17

### Required OS Patches

### Compiler Versions

### Package Dependencies

#### Compiler Introduced Dependencies

Since we compile with GCC we are dependent on glibc and on MacOS this is installed with the base operating system.

#### OpenSSL

OpenSSL is part of the base operating system on MacOS.

#### PAM

On MacOS, PAM is part of the core operating system components.

1. Common components availability

This matrix provides information about the availability and version of common, not platform-specific, packages for all SCX target platforms. Each combination of platform/patch-level and package should note the availability in terms of the “channels” defined under section 4.2 Component Availability together with the component version.

Andreas: Will remove this table after verifying the information is already present elsewhere in this doc

| Platform/Arch/Profile | openssl |
| --- | --- |
| SLES 9 (base) | 0.9.7d-15.10 |
| SLES 9 sp1 |  |
| SLES 9 sp2 |  |
| SLES 9 sp3 |  |
| SLES 10 (base) |  |
| SLES 10 sp1 |  |
| SLES 10 sp2 |  |
| SLES 11 (base) | 0.9.8h(bundled) |
| RHEL 4 (2005-02-15) | 0.9.7a (bundled) |
| RHEL 4 update 1 (Q2 2005) |  |
| RHEL 4 update 2 (Q3 2005) |  |
| RHEL 4 update 3 (Q1 2006) |  |
| RHEL 4 update 4 (Q3 2006) |  |
| RHEL 5 (2007-03-14) | 0.9.8b (bundled) |
| RHEL 5.1 (2008-01-22) | 0.9.8b (bundled) |
| Ubuntu 6.06 | 0.9.8a (bundled) |
| Solaris 10 SPARC | 0.9.7 (bundled) |
| Solaris 10 SPARC 3/05 |  |
| Solaris 10 SPARC 1/06 |  |
| Solaris 10 SPARC 6/06 |  |
| Solaris 10 SPARC 11/06 |  |
| Solaris 9 SPARC |  |
| Solaris 9 SPARC 9/02 |  |
| Solaris 9 SPARC 12/02 |  |
| Solaris 9 SPARC 4/03 |  |
| Solaris 9 SPARC 8/03 |  |
| Solaris 9 SPARC 12/03 |  |
| Solaris 9 SPARC 4/04 |  |
| Solaris 9 SPARC 9/04 |  |
| Solaris 9 SPARC 9/05 | 0.9.7g (add-on) |
| Solaris 8 SPARC 2/04 | 0.9.8h (add-on) |
|  |  |
| HP-UX 11i v2 IA | 0.9.7l (bundled) |
| HP-UX 11i v2 PARISC | 0.9.7l (bundled) |
| HP-UX 11i v3 IA | 0.9.8 (add-on) |
| AIX 5.3 | 0.9.8.4 (bundled) |
| AIX 6.1 | 0.8.8.4 (bundled) |
| AIX 7.1 | 0.9.8.1300 (bundled) |
|  |  |
| MacOS 10.5 | 0.9.71 (bundled) |
|  |  |
| TBD - Complete |  |