Interested in learning more about security?

SANS Institute InfoSec Reading Room

Securing Solaris

When configuring a Solaris system for production, a balance must exist between system manageability and security. It is necessary to determine the role the system will play in order to determine what services it needs to run. The objective is to keep things simple. By dedicating separate machines for different tasks, it is expected that only one or two services will run on a host. This methodology makes it easier to isolate applications, harden, and troubleshoot. This type of minimalist approach runs only what is absol...

Securing Solaris

Angela Orebaugh

October 2, 2000

When configuring a Solaris system for production, a balance must exist between system manageability and security. It is necessary to determine the role the system will play in order to determine what services it needs to run. The objective is to keep things simple. By dedicating separate machines for different tasks, it is expected that only one or two services will run on a host. This methodology makes it easier to isolate applications, harden, and troubleshoot. This type of minimalist approach runs only what is absolutely necessary. Keeping a Solaris system secure is a daily task. This includes keeping up on exploits, patches, and reviewing log files. The following suggestions are just the beginning to securing your Solaris system. There are some additional steps that may need to be taken depending on the systems role in the organization, and some of the steps listed may not apply. Consulting the listed references for additional information is highly recommended.

1. Install the Operating System

   Securing a Solaris system starts with the installation. This consists of an "initial" install of the latest version of the Solaris operating system. With every new release, Sun incorporates improvements and additional features to enhance system security. Be sure that the system is disconnected from the network, or connected to an isolated network while performing the install and the subsequent hardening tasks. Attaching the system to a public network before it is secured can lead to a possible compromise. To get the necessary patches, use a second machine to download the files and burn them to CD-ROM, or connect to the isolated network to transfer them.

   Choosing the minimum "core" install increases security by reducing the amount of software and possible exploits. The core installation also decreases the amount of disk space needed for the install. Additional necessary packages can be added at a later time.

   The system will need to be partitioned to allocate disk space for system files, logging and applications. The four recommended partitions are /, /usr, /var and /opt. The /usr and /opt partitions are used for application installation. The size of these partitions varies according to available disk space and the size of the applications being installed. The /var partition is used for system logging and protects the root (/) partition from overfilling. The /swap partition is created automatically from the initial install.

2. Apply Patches

   Once the initial installation is complete and the system has rebooted, it is time to install the patches. Recommended Patch Clusters can be downloaded from Sun at http://www.sunsolve.sun.com. Maintenance Updates (MU) are also available to service contract customers. They should be applied before the Recommended Patch Clusters. If a patch fails with a "return code 8", then the patch applies to a package not installed on the system. A "return code 2" indicates that the patches have already been applied.

3. Secure the inetd

   The next step to securing Solaris is the removing unnecessary services from the inetd.conf file. This can be done by placing a pound sign (#) in front of the line that is not needed. It is ideal to comment out everything in the inetd.conf file and add them back as needed. Telnet and FTP will be replaced with SSH. Ideally, comment out ftp, tftp, systat, rexd, ypupdated, netstat, rstatd, rusersd, sprayd, walld, exec, talk, comsat, rquotad, name, uucp, sadmind, login, finger, chargen, echo, time, daytime, discard, telnet, imap, pop3, dtspc, fs, kcms, and all rpc services.

4. Secure the startup scripts

   The startup scripts reside in /etc/rc2.d and /etc/rc3.d. Many of the services here are not needed and pose potential security vulnerabilities. To stop a script from starting, replace the capital S with a lowercase s (or K with a lowercase k). Some example services that should be disabled are:

   Automounter /etc/rc2.d/S74autofs

   Sendmail /etc/rc2.d/S88sendmail and /etc/rc1.d/K57sendmail

   RPC /etc/rc2.d/S71rpc

   SNMP /etc/rc2.d/S76snmpdx

   NFS server */etc/rc3.d/S15nfs.server*

NFS client */etc/rc2.d/S73nfs.client*

5. Enable logging

The default Solaris system logging occurs in /var/adm. Enable additional logging by creating two additional logging files, /var/adm/sulog and /var/adm/loginlog. The sulog will log successful and unsuccessful su attempts. The loginlog will catch consecutive failed login attempts. Enable the files by:

#touch /var/adm/sulog

#touch /var/adm/loginlog

#chmod 600 /var/adm/sulog

#chmod 600 /var/adm/loginlog

#chown root /var/adm/sulog

#chown root /var/adm/loginlog

#chgrp sys /var/adm/sulog

#chgrp sys /var/adm/loginlog

Uncomment the following line in /etc/syslog.conf to log authentication messages:

#auth.notice ifdef(`LOGHOST', /var/log/authlog, @loghost)

Then perform the following to create the proper authlog file:

#touch /var/log/authlog

#chmod 600 /var/log/authlog

#chown root /var/log/authlog

6. Miscellaneous security tasks

Set the TCP initial sequence number generation parameters to protect against hijacking and spoofing.

In the file /etc/default/inetinit set TCP_STRONG_ISS=2

Protect against buffer overflow attacks by adding the following to /etc/system:

Set noexec_user_stack=1

Set noexec_user_stack_log=1

Ensure that root can only access the console by making sure the following line in /etc/default/login is not commented out:

CONSOLE=/dev/console

Remove, lock or comment out unnecessary accounts, including "sys", "uucp", "nuucp", "smtp" and "listen". The best way to disable them is to put "*LK*" in the password field of the */etc/shadow* file. The following command line options can also be used to remove or lock accounts:

Remove – #passmgmt –d *account*

Lock – #passwd –l *account*

Change the /etc/motd to contain warnings about inappropriate and unauthorized use of the system.

Remove sendmail packages – SUNWsndmr and SUNWsndmu

Remove group write permission of the /etc directory by performing the following:

```
chmod -R g-w /etc
```

Disable routing by performing the following:

```
#touch /etc/notrouter
```

Remove */etc/hosts.equiv, /.rhosts*

Disable the Stop-A abort sequence by changing the following in /etc/default/kbd:

```
KEYBOARD_ABORT=disabled
```

Enable EEPROM security:

```
#eeprom security-mode=full
```

New password: password

Retype new password: password

Do not make this password the same as root. Setting the security level to full requires a password to boot the system. "Command", instead of
"full", may be used to provide protection without the need of a boot password.

7. Installing SSH

   SSH is used for secure communications to the Solaris system. It encrypts all communications to the system. SSH has its own logging and access control, like TCP Wrapper, but is more secure since traffic cannot be sniffed. SSH can be obtained from http://www.ssh.com or http://openssh.com.

8. YASSP

   Another resource to consider using is YASSP – Yet Another Secure Solaris Package. It automates some of the changes above and incorporates additional functionality such as Tripwire, TCP Wrappers, and a version of SSH. It can be found at http://yassp.parc.xeorx.com. It is recommended to install YASSP, then perform steps 3 through 7 as a safety check.

Boran, Sean. "Hardening Solaris: Securely Installing a Firewall Bastion Host." 25 October 1999. http://securityportal.com/cover/coverstory19991025.html (25 Sept. 2000)

Carnegie Mellon University. "Installing and Securing Solaris 2.6 Servers." 14 June 2000. http://www.cert.org/security-improvement/implementations/i027.02.html (24 Sept. 2000)

Galvin, Peter. "The Solaris Security FAQ." 7 July 2000. http://www.sunworld.com/common/security-faq.html (23 Sept. 2000)

Noordergraaf, Alex and Watson, Keith. "Solaris™ Operating Environment Minimization for Security: A Simple, Reproducible and Secure Application Installation Methodology." December 1999. http://www.sun.com/blueprints/1299/minimization.pdf (23 Sept. 2000)

Noordergraaf, Alex and Watson, Keith. "Solaris™ Operating Environment Network Settings for Security." December 1999. http://www.sun.com/blueprints/1299/network.pdf (23 Sept. 2000)

Noordergraaf, Alex and Watson, Keith. "Solaris™ Operating Environment Security." January 2000. http://www.sun.com/blueprints/0100/security.pdf (23 Sept. 2000)

Spitzner, Lance. "Armoring Solaris." 27 August 2000. http://www.enteract.com/~lspitz/armoring.html (24 Sept. 2000)

Last Updated: August 19th, 2017

Upcoming SANS Training

Click Here for a full list of all Upcoming SANS Events by Location

SANS Chicago 2017	Chicago, ILUS	Aug 21, 2017 - Aug 26, 2017	Live Event
SANS Virginia Beach 2017	Virginia Beach, VAUS	Aug 21, 2017 - Sep 01, 2017	Live Event
SANS San Francisco Fall 2017	San Francisco, CAUS	Sep 05, 2017 - Sep 10, 2017	Live Event
SANS Tampa - Clearwater 2017	Clearwater, FLUS	Sep 05, 2017 - Sep 10, 2017	Live Event
SANS Network Security 2017	Las Vegas, NVUS	Sep 10, 2017 - Sep 17, 2017	Live Event
SANS Dublin 2017	Dublin, IE	Sep 11, 2017 - Sep 16, 2017	Live Event
SANS Baltimore Fall 2017	Baltimore, MDUS	Sep 25, 2017 - Sep 30, 2017	Live Event
Data Breach Summit & Training	Chicago, ILUS	Sep 25, 2017 - Oct 02, 2017	Live Event
SANS Copenhagen 2017	Copenhagen, DK	Sep 25, 2017 - Sep 30, 2017	Live Event
SANS London September 2017	London, GB	Sep 25, 2017 - Sep 30, 2017	Live Event
Rocky Mountain Fall 2017	Denver, COUS	Sep 25, 2017 - Sep 30, 2017	Live Event
SANS SEC504 at Cyber Security Week 2017	The Hague, NL	Sep 25, 2017 - Sep 30, 2017	Live Event
SANS DFIR Prague 2017	Prague, CZ	Oct 02, 2017 - Oct 08, 2017	Live Event
SANS Oslo Autumn 2017	Oslo, NO	Oct 02, 2017 - Oct 07, 2017	Live Event
SANS October Singapore 2017	Singapore, SG	Oct 09, 2017 - Oct 28, 2017	Live Event
SANS AUD507 (GSNA) @ Canberra 2017	Canberra, AU	Oct 09, 2017 - Oct 14, 2017	Live Event
SANS Phoenix-Mesa 2017	Mesa, AZUS	Oct 09, 2017 - Oct 14, 2017	Live Event
Secure DevOps Summit & Training	Denver, COUS	Oct 10, 2017 - Oct 17, 2017	Live Event
SANS Tysons Corner Fall 2017	McLean, VAUS	Oct 14, 2017 - Oct 21, 2017	Live Event
SANS Brussels Autumn 2017	Brussels, BE	Oct 16, 2017 - Oct 21, 2017	Live Event
SANS Tokyo Autumn 2017	Tokyo, JP	Oct 16, 2017 - Oct 28, 2017	Live Event
SANS Berlin 2017	Berlin, DE	Oct 23, 2017 - Oct 28, 2017	Live Event
SANS Seattle 2017	Seattle, WAUS	Oct 30, 2017 - Nov 04, 2017	Live Event
SANS San Diego 2017	San Diego, CAUS	Oct 30, 2017 - Nov 04, 2017	Live Event
SANS Gulf Region 2017	Dubai, AE	Nov 04, 2017 - Nov 16, 2017	Live Event
SANS Miami 2017	Miami, FLUS	Nov 06, 2017 - Nov 11, 2017	Live Event
SANS Amsterdam 2017	Amsterdam, NL	Nov 06, 2017 - Nov 11, 2017	Live Event
SANS Milan November 2017	Milan, IT	Nov 06, 2017 - Nov 11, 2017	Live Event
SANS Sydney 2017	Sydney, AU	Nov 13, 2017 - Nov 25, 2017	Live Event
Pen Test Hackfest Summit & Training 2017	Bethesda, MDUS	Nov 13, 2017 - Nov 20, 2017	Live Event
SANS Paris November 2017	Paris, FR	Nov 13, 2017 - Nov 18, 2017	Live Event
SANS Adelaide 2017	OnlineAU	Aug 21, 2017 - Aug 26, 2017	Live Event
SANS OnDemand	Books & MP3s OnlyUS	Anytime	Self Paced