



by Daniel E.
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ToolMan Meets PatchReport

sWarning: This issue's ToolMan is highly platform specific and hard-core sysadmin. If you don't run and maintain Sun Solaris systems, you might wish to move on.

Boring Technical Stuff

OK, now that everyone else has gone away, we can get down to business. As you know, one of the very tedious aspects of maintaining computer systems is keeping them up to date via application of OS patches. This process breaks down into basically three phases: (1) identifying patches that are needed, (2) downloading patches, and (3) installing patches. You know how much fun this isn't. The process is tedious, time-consuming, error prone, and boring. But I'll show you a program that can accomplish all of this and more in one single, solitary command line.

Background

In our department, a medium-sized site, we have (among other systems) about 150 computers running Sparc and X86 Solaris (SunOS 5.5, 5.5.1, and 5.6). These all need occasional patch updates, either to fix some identifiable problems or because, well, it's just that time. Sun makes these rueful patch update tasks more bearable in a few ways. (1) They supply a nice Web site from which most patches can be downloaded – whether or not you have a support contract (though if you have the contract, you get a few extra bennies). (2) They also supply a handy program, `patchdiag`, which will analyze your system and tell you which patches could be applied. And (3) They supply some useful tools for applying and maintaining patches on your system, namely, `installpatch`, `showrev`, and, for Solaris 2.6, `patchadd`.

But there are some problems with going through this procedure. One is the use of the `patchdiag` program. You must connect to the SunSolve site (<<http://sunsolve.sun.com>> or <<ftp://sunsolve.sun.com>>) using your support ID and password, and download the latest copy of the `patchdiag.xref` patch database file and possibly a current copy of the `patchdiag` program. Then there are some deficiencies with the `patchdiag` output (see Listing 1).

Program: PatchReport

Abstract: analyze system, download and install patches

Platforms: Solaris 2.x (SunOS 5.x)

Language: Perl 5.002+, with
modules: libnet, Data-Dumper, MD5, and IO

Author: Joe Shamblin <wjs@cs.duke.edu>

Availability: <<http://www.cs.duke.edu/~wjs/pr.html>>
<<ftp://x86.cs.duke.edu/pub/PatchReport/index.html>>

Features are still being added, so check for updates!

Listing 1: Excerpt from the output of a run of patchdiag.

```
% patchdiag -x patchdiag.xref
```

```
=====
System Name: turkey SunOS Vers: 5.5.1 Arch: sparc
Cross Reference File Date: 30/Sep/97
PatchDiag Version: 1.0.1
=====
```

Report Note:

Recommended patches are considered the most important and highly recommended patches that avoid the most critical system, user, or security related bugs which have been reported and fixed to date. A patch not listed on the recommended list does not imply that it should not be used if needed. Some patches listed in this report may have certain platform specific or application specific dependencies and thus may not be applicable to your system. It is important to carefully review the README file of each patch to fully determine the applicability of any patch with your system.

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INSTALLED PATCHES

Patch ID	Installed Revision	Latest Revision	Synopsis
103582	01	15	SunOS 5.5.1: /kernel/drv/tcp and /usr/bin/netstat patch
103630	01	09	SunOS 5.5.1: ip ifconfig arp udp icmp patch
103663	01	08	SunOS 5.5.1: libresolv, in.named, named-xfer, nslookup & nstest pa
103690	03	05	SunOS 5.5.1: cron/crontab/at/atq/atrm patch
104433	03	04	SunOS 5.5.1: pam security patch

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UNINSTALLED RECOMMENDED PATCHES

Patch ID	Installed Revision	Latest Revision	Synopsis
103558	N/A	10	SunOS 5.5.1: admintool/launcher fixes plus various swmtool fixes
103594	N/A	10	SunOS 5.5.1: /usr/lib/sendmail fixes
103600	N/A	18	SunOS 5.5.1: nfs, tlimod and rpcmod patch
103612	N/A	33	SunOS 5.5.1: libc, libnsl, libucb, nis_cachemgr and rpc.nisd patch
103640	N/A	12	SunOS 5.5.1: kernel patch
103680	N/A	01	SunOS 5.5.1: nscd/nscd_nischeck rebuild for BIND 4.9.3
103686	N/A	02	SunOS 5.5.1: rpc.nisd_resolv patch
103696	N/A	02	SunOS 5.5.1: /sbin/su and /usr/bin/su patch
[... 29 lines deleted ...]			
103901	N/A	08	OpenWindows 3.5.1: Xview Patch
104338	N/A	02	OpenWindows 3.5.1: libXt patch
105251	N/A	01	OpenWindows 3.5.1: libXt Binary Compatibility Patch

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UNINSTALLED SECURITY PATCHES

NOTE: This list includes the Security patches that are also Recommended

Patch ID	Installed Revision	Latest Revision	Synopsis
103558	N/A	10	SunOS 5.5.1: admintool/launcher fixes plus various swmtool fixes
103594	N/A	10	SunOS 5.5.1: /usr/lib/sendmail fixes
103612	N/A	33	SunOS 5.5.1: libc, libnsl, libucb, nis_cachemgr and rpc.nisd patch
103640	N/A	12	SunOS 5.5.1: kernel patch
103680	N/A	01	SunOS 5.5.1: nscd/nscd_nischeck rebuild for BIND 4.9.3
103686	N/A	02	SunOS 5.5.1: rpc.nisd_resolv patch
103696	N/A	02	SunOS 5.5.1: /sbin/su and /usr/bin/su patch
[... 22 lines deleted ...]			
103901	N/A	08	OpenWindows 3.5.1: Xview Patch
104338	N/A	02	OpenWindows 3.5.1: libXt patch
105251	N/A	01	OpenWindows 3.5.1: libXt Binary Compatibility Patch

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Got a tool that's useful, unique, way cool? ToolMan will make you famous! Please send a description of your intellectual property to <ToolMan@usenix.org>.

As you can see, the patches are listed in three sections: Installed, Recommended, and Security. This layout is not very clear in that there is overlap between the Recommended and Security sections that makes it difficult to decide which patches to install. You cannot easily see, for instance, which patches are both Recommended *and* Security without doing a lot of tedious cross-referencing. Additionally, if a patch is already installed and an update is available (Installed section), there is no indication as to whether such a patch is Recommended or Security or both. And even if these were not problems, you still have to go through the rigamarole of downloading the patches and running the installations. If you need to do this for multiple OS releases for multiple hardware architectures, it becomes easy to let this slip down to a lower spot on your priority list. This is quite unfortunate in a scenario, for example, of Internet-connected computers needing security patches!

A Break in the Clouds

One of my co-workers, Joe Shamblin, is our OS and security guru and is generally the one burdened with the chore of keeping our systems up-to-date with the latest patches. He has brilliantly automated and simplified this odious task.

Joe created – and regularly employs – a not-so-trivial Perl script called `PatchReport`, so named because in its initial incarnation its sole function was to produce a report à la `patchdiag`, but with two improvements: it automatically downloaded the `xref` file, and it provided a more usable, consolidated report. The table produced by `PatchReport` combines the information from all three sections of the `patchdiag` report, indicating in a single line for each patch if it is Recommended, Security, and/or if a prior version is already installed. This makes it much easier to scan the list and decide which patches are appropriate for your system.

But `PatchReport` has evolved into a full-fledged patch analyzer (the report), downloader, *and* installer. As noted earlier, it can accomplish all of this and leave a Solaris system completely up to date via a single command. Invoked with appropriate options specified, `PatchReport` will: connect to the SunSolve site, download the `patchdiag.xref` and `CHECKSUMS` files, analyze patches on your system and produce a report, download selected patches, check the `md5` checksums, and install the patches. You can even tell it to shut down and reboot the system when it's done! Listing 2 shows an example of a `PatchReport` run.

By the way, if `PatchReport` finds that your system is completely up to date, well, you'll just have to find out for yourself what happens.

You can also use `PatchReport` in conjunction with Sun's JumpStart suite (used to install new systems). `PatchReport` can download appropriate patches to a directory. Then JumpStart can be configured to install these patches to the OS during the initial installation. Alternatively, JumpStart could be configured to call `PatchReport` directly.

`PatchReport` is written for Solaris and not extended to other operating systems because Sun has a very open and well-documented patch system that makes programs like `patchdiag` and `PatchReport` possible. Other vendors, please take note.

Closing Remarks

To paraphrase someone who was paraphrasing Dave Barry, systems administration consumes time like Dave Barry's dog gobbles taco chips. If your job involves installing, maintaining, and updating Solaris-based systems, here's a power tool that can save you hours at a pop. But you better hurry and pick up a copy before SprintNet goes down again! To paraphrase another sage, "you snooze, you looze."

Listing 2: Excerpt from the output of a run of PatchReport

PatchReport -Ari

Please provide the account and password in the form "ID/passwd"

account/passwd? *****/*****

Analyzing needed patches on your machine, this might take a minute or two depending on the options you chose, and/or your net connection.

Patch-ID	Security	Recommended	ID	Description
103558-10	Security	Recommended		SunOS 5.5.1: admintool/launcher fixes plus various swmtool
103582-15	Security	Recommended	01	SunOS 5.5.1: /kernel/drv/tcp and /usr/bin/netstat patch
103594-10	Security	Recommended		SunOS 5.5.1: /usr/lib/sendmail fixes
103600-18	N/A	Recommended		SunOS 5.5.1: nfs, tlimod and rpcmod patch
103612-33	Security	Recommended		SunOS 5.5.1: libc, libnsl, libucb, nis_cachemgr and rpc.ni
103630-09	Security	Recommended	01	SunOS 5.5.1: ip ifconfig arp udp icmp patch
103663-08	Security	Recommended	01	SunOS 5.5.1: libresolv, in.named, named-xfer, nslookup & n...
103680-01	Security	Recommended		SunOS 5.5.1: nscd/nscd_nischeck rebuild for BIND 4.9.3
103686-02	Security	Recommended		SunOS 5.5.1: rpc.nisd_resolv patch
103690-05	Security	Recommended	03	SunOS 5.5.1: cron/crontab/at/atq/atrm patch
[... 21 lines deleted ...]				
103901-08	Security	Recommended		OpenWindows 3.5.1: Xview Patch
104338-02	Security	Recommended		OpenWindows 3.5.1: libXt patch
105251-01	Security	Recommended		OpenWindows 3.5.1: libXt Binary Compatibility Patch

Retrieving Patches

Patch-ID	Checksum status	Description
103558-10	checksum match	SunOS 5.5.1: admintool/launcher fixes plus various swmtool
103582-15	checksum match	SunOS 5.5.1: /kernel/drv/tcp and /usr/bin/netstat patch
103594-10	checksum match	SunOS 5.5.1: /usr/lib/sendmail fixes
103600-18	checksum match	SunOS 5.5.1: nfs, tlimod and rpcmod patch
103612-33	checksum match	SunOS 5.5.1: libc, libnsl, libucb, nis_cachemgr and rpc.ni
103630-09	checksum match	SunOS 5.5.1: ip ifconfig arp udp icmp patch
103663-08	checksum match	SunOS 5.5.1: libresolv, in.named, named-xfer, nslookup & n...
103680-01	checksum match	SunOS 5.5.1: nscd/nscd_nischeck rebuild for BIND 4.9.3
103686-02	checksum match	SunOS 5.5.1: rpc.nisd_resolv patch
[... 22 lines deleted ...]		
103901-08	checksum match	OpenWindows 3.5.1: Xview Patch
104338-02	checksum match	OpenWindows 3.5.1: libXt patch
105251-01	checksum match	OpenWindows 3.5.1: libXt Binary Compatibility Patch

** Installing all patches without checking them first **
 ** can have negative consequences. I am assuming that **
 ** you know this, and think that all of these patches **
 ** are a good idea. Using the -F option will turn off **
 ** this message. **

Which patches do you want to install (all/none/list of patches) **all**

Installing Patches (this can take a while)

Patch-ID	Install status	Description
103558-10	Patch installed	SunOS 5.5.1: admintool/launcher fixes plus various swmtool
103582-15	Patch installed	SunOS 5.5.1: /kernel/drv/tcp and /usr/bin/netstat patch
103594-10	Patch installed	SunOS 5.5.1: /usr/lib/sendmail fixes
103600-18	Patch installed	SunOS 5.5.1: nfs, tlimod and rpcmod patch
103612-33	Patch installed	SunOS 5.5.1: libc, libnsl, libucb, nis_cachemgr and rpc.ni
103630-09	Patch installed	SunOS 5.5.1: ip ifconfig arp udp icmp patch
103663-08	Patch installed	SunOS 5.5.1: libresolv, in.named, named-xfer, nslookup & n
103680-01	Patch installed	SunOS 5.5.1: nscd/nscd_nischeck rebuild for BIND 4.9.3
103686-02	Patch installed	SunOS 5.5.1: rpc.nisd_resolv patch
103690-05	Patch installed	SunOS 5.5.1: cron/crontab/at/atq/atrm patch
[... 21 lines deleted ...]		
103901-08	Patch installed	OpenWindows 3.5.1: Xview Patch
104338-02	Patch installed	OpenWindows 3.5.1: libXt patch
105251-01	Patch installed	OpenWindows 3.5.1: libXt Binary Compatibility Patch