"Cheap Security Audits with Linux LiveCDs"

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écouter moi si'l vous plait!
You might be a system administrator if...

- Your friends and immediate family call you when their computer crashes
- You are the sole IT person in your organization
- Your boss asks you to fix computers on a consistent basis
What do we mean by “cheap”

• Not going to cost you any $

• Maybe not the best way to do this, monitoring systems are better (snort and tripwire)

• It’s not going to cost you very much time.
What exactly do we mean by “audit”

- To observe the current conditions and document
- We are not attempting to crack - or to test the strength by trying to intrude
- Auditing is not to be confused with monitoring
Recommended Linux Live CDs

- Knoppix 4.0.2 and 3.7
- Knoppix–STD 0.1
- BackTrack formerly known as WHAX
  formerly known as Whoppix
- Auditor by remote-exploit.org
- System Rescue CD 0.2.18

http://sysresccd.org
Other CDs

- Burn chkrootkit and rkhunter
  Check for rootkits and trojans
- Other OS installation media
- BartPE for Windows users
Users will not ask for a security audit

- If it’s not broke, why fix it?
- What could possibly go wrong?
- Why are you invading my privacy?
- Don’t you trust us?
Management is not likely to ask for a security audit either, however …

- You may need to do so to comply to legal, customer, or partner standards
- A security incident may get management to pay attention
- Check occasionally for IT policy compliancy
- Protect a specific mission-critical resource
- Vulnerability + exposure = liability
You need to initiate this process

Get away from your keyboard and initiate a project!
You must get management approval first

Now is not the time to take Grace Murray Hopper’s advice…

"It is much easier to apologize than to ask permission."
Why?

• Proceeding without permission could be illegal.
  ➢ Sorry wardrivers– you can’t audit first and sell later!
  ➢ PA Title 18, Chapter 76: Computer Offenses

• You could accidentally create a denial of service as you are auditing

• If an attack, accident, or disaster coincidentally occurs, you do not want to be blamed.

• Unless you already have a published policy that security audits will be done unannounced, you are invading your user’s privacy

• You should strive to the System Administrators’ Code of Ethics

How?

Document the entire scope and get management to sign-off

✓ What systems will be audited
✓ What tools you will use
✓ When you are doing this
✓ If you find something, are you allowed to further investigate?
✓ How the users have been informed
Scenario #1

You have been recently hired by a small company to be the sole IT person.

Nothing has been documented so no one knows what each computer does.
The risks

- No one admits to knowing the admin/root passwords
- There are several neglected systems that could already be exploited
- In the meantime, the users are typing their passwords on these neglected systems
How to do the audit

- Boot the most recent Knoppix off of the CD
  1. Use ethereal to capture packets for a few days, observe behavior, and document the key players of your network
  2. Use nmap to document open ports
  3. Use Nessus to check for vulnerabilities
- You should look for
  – Identify the ip address of each system on your network
  – What services are running
  – Remote logins… who are these people?
Ethereal
Nmap

[root@OPSEC /root]# nmap -sT -v -v 10.18.1.148

Starting nmap V. 2.53 by fyodor@insecure.org ( www.insecure.org/nmap/ )
Host opsec.suffolk.edu (10.18.1.148) appears to be up ... good.
Initiating TCP connect() scan against opsec.suffolk.edu (10.18.1.148)
Adding TCP port 1024 (state open).
Adding TCP port 443 (state open).
Adding TCP port 6000 (state open).
Adding TCP port 80 (state open).
Adding TCP port 22 (state open).
The TCP connect scan took 1 second to scan 1523 ports.
Interesting ports on opsec.suffolk.edu (10.18.1.148):
(The 1518 ports scanned but not shown below are in state: closed)

<table>
<thead>
<tr>
<th>Port</th>
<th>State</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>22/tcp</td>
<td>open</td>
<td>ssh</td>
</tr>
<tr>
<td>80/tcp</td>
<td>open</td>
<td>http</td>
</tr>
<tr>
<td>443/tcp</td>
<td>open</td>
<td>https</td>
</tr>
<tr>
<td>1024/tcp</td>
<td>open</td>
<td>kdm</td>
</tr>
<tr>
<td>6000/tcp</td>
<td>open</td>
<td>X11</td>
</tr>
</tbody>
</table>

Nmap run completed -- 1 IP address (1 host up) scanned in 1 second
[root@OPSEC /root]#
Nessus
One quick fix

- Change all the root passwords on the Linux/Unix systems by booting into single user mode
- chntpw on Knoppix-STD can help you change Windows passwords
After observing you’ll …

• Make a graphical map of each node in your network
• May decide to retire some machines
• Replace vs wipe/reinstall
• Discover that the receptionist’s desktop is also the file server and the boss’s niece is sharing mp3’s to the entire interweb
Scenario #2

You notice an usually large amounts of bandwidth usage coming from an ip address that belongs to a Linux desktop.
The risks

- Someone could have stolen the ip address and your bandwidth
- The user could be abusing resources by downloading or sharing software or media files which may be pirated
- The system may have been cracked and the cracker and his friends may be stealing your bandwidth
How to do the audit

• Boot Knoppix on another system and run ethereal to log the traffic.
• Make a note of the mac address that is using the ip address in question
• If you can safely remotely login, then use ps, lsof, and top to see what’s going on. Also verify the mac address with ifconfig
• Run chkrootkit and rkhunter
Scenario #3

Your employer recently implemented a policy of stronger passwords and you have been asked to check for compliance.
The risks

Weak passwords can lead to internal and external cracking.
How to do the audit

Knoppix-STD has password crackers
- John the Ripper for Linux/Unix /etc/shadow files
- Pwl9x for Windows password files
Scenario 4

You need to evaluate the data contents of an unknown hard drive before disposal.
The risks

Possible sensitive data could be lost or fall into the wrong hands

• Personal
• Intellectual property
System Rescue CD to the rescue

- Mount the file systems and take a look
- Read support for ext3/2, reiser, reiser4, xfs, fat16/32, NTFS, HFS
- Make an image of the disk with PartImage
- Use “wipe” to securely remove the files from the disk.
Sorry, that’s all folks
Special Thanks to...

- My husband, William August Eicher JR
- Western PA Linux User Group
- USENIX and The League of Professional of System Administrators (LOPSA)
- Carnegie Mellon University, School of Computer Science
- Ohio LinuxFest
Applause please for Notacon 3