

The most comprehensive guide to Incident Response ever published."

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INCIDENT RESPONSE

INVESTIGATING COMPUTER CRIME

Kevin Mandia & Chris Prosise

with contributing author Matt Pepe

Recognized security, forensics, and incident response experts

CASE NO. 21567

LEVEL ONE SECURITY CLEARANCE ONLY

HACKING CASE 21567 UNDER INVESTIGATION

INCIDENT RESPONSE

INVESTIGATING
COMPUTER CRIME

Learn secrets and strategies for recovering from computer crime incidents

Respond to security breaches and hacker attacks the right way with help from this insightful and practical guide. You'll get details on the entire computer forensic process and learn the importance of following specific procedures immediately after a computer crime incident occurs. Investigate various software including UNIX, Windows NT, Windows 2000, and application servers. Packed with technical examples and loads of how-to scenarios, this book will show you how to recognize unauthorized access, uncover unusual or hidden files, and monitor Web traffic. Detailed, authoritative, and up to date—**Incident Response** is the only book you need.

- Plan and prepare for all stages of an investigation—including detection, initial response, management interaction, and more
- Investigate Web server attacks, DNS attacks and router attacks
- Learn the importance of evidence handling and storage
- Perform a "trap and trace" and learn network protocols
- Monitor network traffic and detect illicit servers and covert channels

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NETWORKING/SECURITY



ISBN 0-07-213182-9



INCIDENT RESPONSE: INVESTIGATING COMPUTER CRIME

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Osborne/McGraw-Hill
New York Chicago San Francisco
Lisbon London Madrid Mexico City
Milan New Delhi San Juan
Seoul Singapore Sydney Toronto

Osborne/McGraw-Hill
2600 Tenth Street
Berkeley, California 94710
U.S.A.

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Incident Response: Investigating Computer Crime

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1234567890 CUS CUS 01987654321
ISBN 0-07-213182-9

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Links are used to associate a desktop shortcut or a Start menu item with an application or a document. Manually removing applications or documents does not remove the links that were created for them. Users may delete files but forget to delete the desktop icon on the system. The NTRK tool `chklnks.exe` is excellent for unearthing files that were once installed but now are nowhere to be found. As shown in Figure 10-9, `chklnks` finds dead (broken) links.

Links are also important when considering network connections and shortcuts. The average users have desktop shortcuts for their ISP dial-up connections and other network connections. Check out the user's `%systemroot%\Profiles\<user>\Desktop` directory and review all the links (*.lnk) for that user's desktop applications.

Reviewing Web Browser Files

Employees need access to the Internet at work, but many companies do not want their employees spending the majority of their work hours shopping, surfing, trading stocks, chatting, or downloading pornography on company systems. These activities require the use of Web browsers. Web browsers such as Netscape and Internet Explorer maintain log files. Both browsers record browsing history and track sites that were recently visited. They also maintain a cache that contains a certain amount of the actual files and Web pages recently viewed.

Viewing Netscape and Internet Explorer History Files The Netscape history file, `netscape.hst`, is normally located in the `\Program Files\Netscape\Users\<username>` directory. Netscape's `fat.db` file maintains an even longer history of browsing activity, and it is usually located in the `\Program Files\Netscape\Users\<username>\Cache` directory. Most people are aware of Netscape's history file, and individuals who wish to hide their cyber-shenanigans (using their browser to visit inappropriate sites) often erase this file or clear it via the Netscape Preferences settings. However, the `fat.db` file is often overlooked and is an excellent source for tracing browser use. For the initial response, you can simply use the `about:cache` URL to review the contents of the `fat.db`.

Internet Explorer maintains its temporary Internet files in the `\WINNT\Profiles\<UserId>\Local Settings\Temporary Internet Files\Content XX` directory, in the `index.dat` file. The actual HTML and files are stored in the Internet Explorer cache files, usually found in the `\WINNT\Temporary Internet Files` directory. Windows 2000 stores these files in a different directory, but they contain similar information. Windows 2000 maintains the Web browser cache in `\Documents and Settings\<User Account>\Local Settings\Temporary Internet Files`. The `index.dat` file in Windows 2000 that maps cached html pages to actual dates, times, and specific URLs is located in the `\Documents and Settings\<User Account>\Application Data\Microsoft\Internet Explorer\UserData` directory.

Netscape's fat.db and netscape.hst files and Internet Explorer's index.dat file are binary files. Therefore, you must use a special utility to view them. The Internet Explorer History Viewer, a tool discussed earlier in the "Reviewing Files in the Recycle Bin" section of this chapter, allows you to view most of the binary files maintained by both Netscape (fat.db and netscape.hst) and Internet Explorer (index.dat). The Internet Explorer History Viewer will parse and print the history of URLs visited using Internet Explorer versions 3.x, 4.x, and 5.x, as shown in Figure 10-10.

EnCase is another tool that provides phenomenal features that automate the process of outlining the Web activity of a system. Figure 10-11 shows the EnCase script that reports on Netscape and Internet Explorer Web use.

Reviewing Dialup Networking Another way to determine the browsing activities of a user is to review the Dial Up Networking (DUN) settings on the system. DUN has a feature called dial-on-demand, which many applications try to set automatically as a default. Dial-on-demand, or autodial, allows Windows systems to initiate a connection automatically whenever an application requires the use of the Internet.

Windows NT/2000 maintains a listing of the IP addresses that have been connected to via the autodial feature. To view the autodial database, use the following command:

```
rasautou -s
```

Figure 10-12 displays the output of the attempted connections made by the RAS dialer.

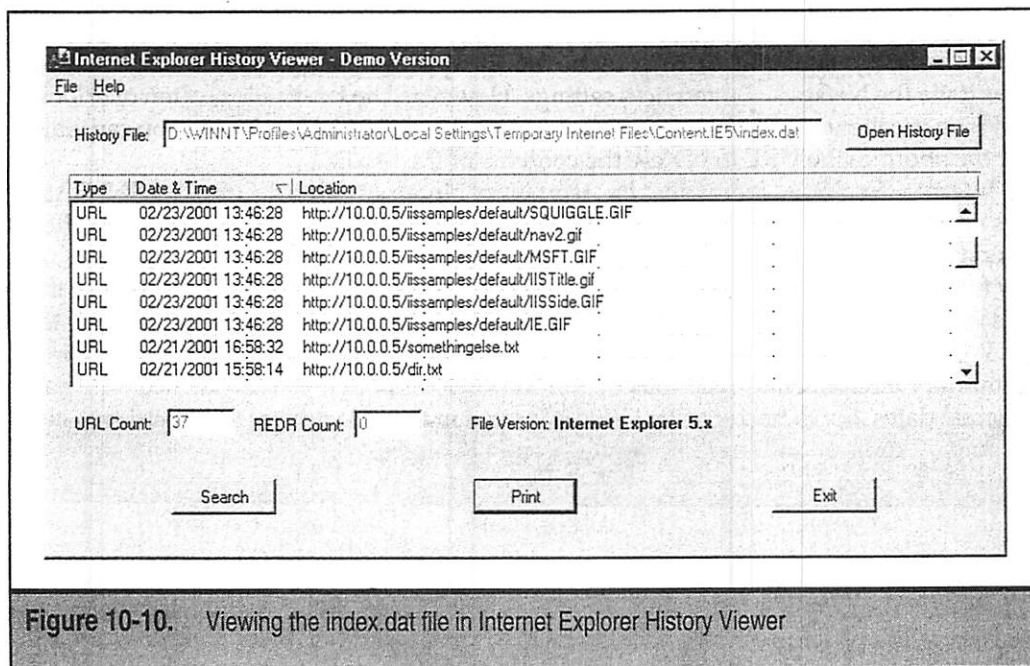


Figure 10-10. Viewing the index.dat file in Internet Explorer History Viewer

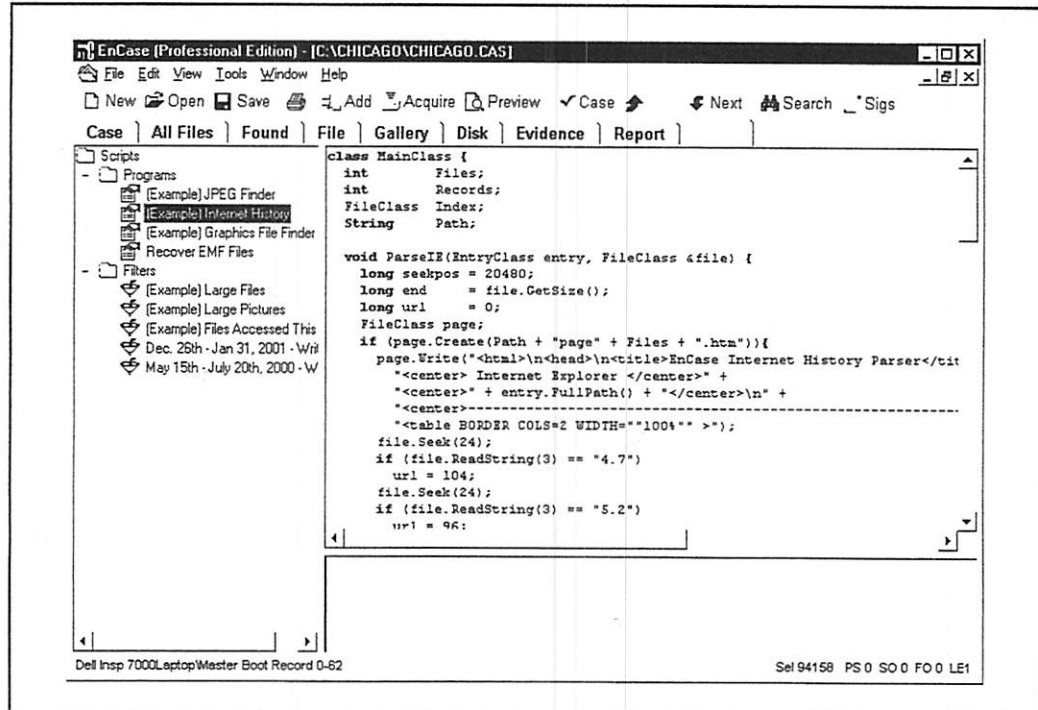


Figure 10-11. Using EnCase scripts to determine Web browsing activity

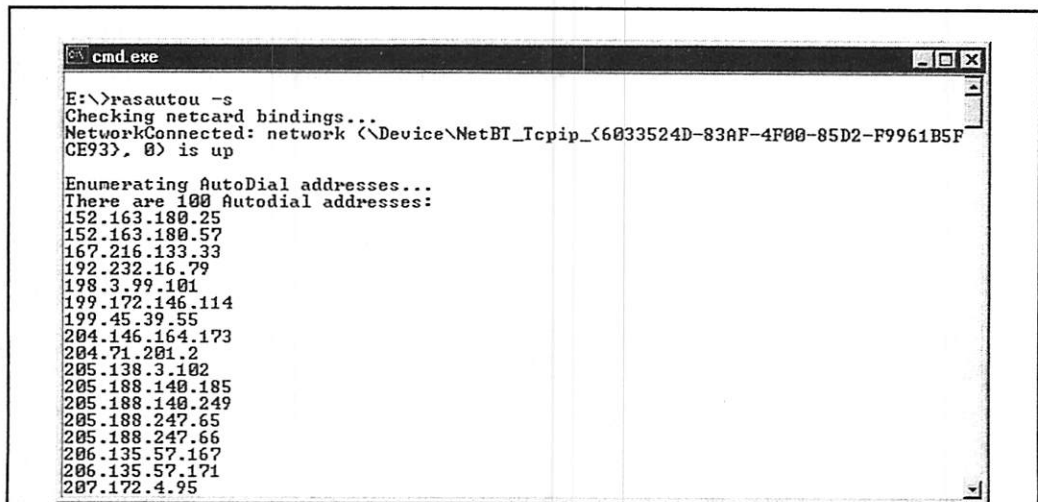
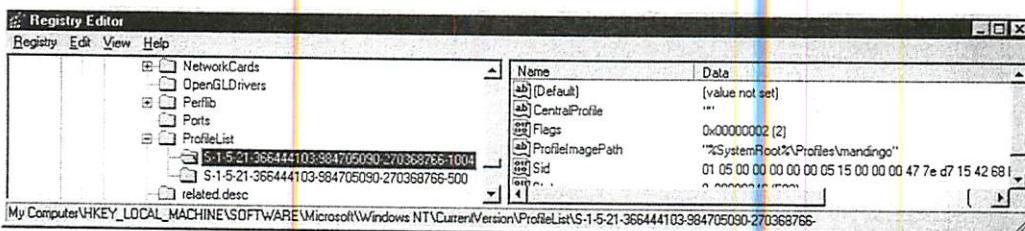


Figure 10-12. Reviewing attempted DUN connections using the rasautou command

Identifying Unauthorized User Accounts or Groups

A common ploy by evildoers is to start rogue accounts on a system or to elevate their privileges to an unauthorized level, where they can get to data that they should not be able to access. There are several ways to audit user accounts and user groups on a live system:

- ▼ Look in the User Manager for unauthorized user accounts (during a live system response).
- Use `usrstat` from the NTRK to view all domain accounts on a domain controller, looking for suspicious entries.
- Examine the Security log using Event Viewer, filtering for event ID 624 (addition of a new account), 626 (user account enabled), 636 (changing an account group), and 642 (user account changed).
- Check the `\WINNT\Profiles` directories on the system. If the user account exists, but there is no corresponding `\WINNT\Profiles\<useraccount>` directory, that user account has not been used to log in to the system yet. If that directory does exist, but the user account is no longer listed in the User Manager or Registry (at `HKLM\SAM\SAM\Domains\Account\Users\Names`), that user ID did exist at one time but no longer exists.
- ▲ Review the SIDs in the Registry, under `HKLM\SOFTWARE\Microsoft\Windows NT\CurrentVersion\ProfileList`. When a user account is deleted, the corresponding Profile directory entry is not deleted, and the corresponding SID will remain in the Registry, as shown in the following illustration (in which the Registry shows a SID value exists for user ID mandingo, which no longer exists as a valid user account on the system). This allows you to trace which user IDs have been deleted over the course of a system's life.



Identifying Rogue Processes

Identifying rogue processes is much simpler when reviewing a live system. Since most rogue processes listen for network connections or sniff the network for clear-text user IDs and passwords, these processes are easier to find when they are executing. As you learned in Chapter 9, the `pslist` command will list the name of the running process, `listdlls`

NOTE

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