How to Make Your HP-UX System More Secure

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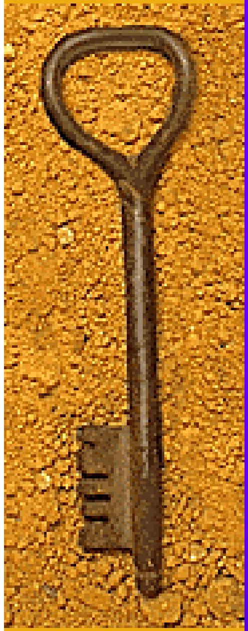
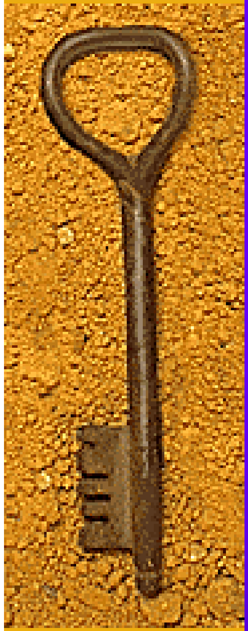


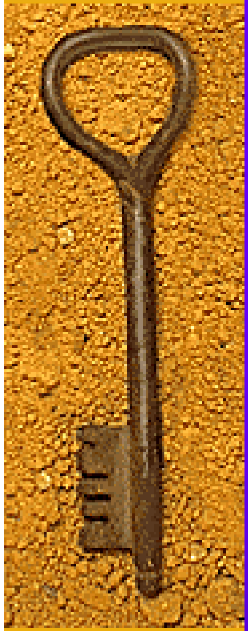
Today’s Agenda

- Physical Security
- Account Security
- File System Security
- Security Bulletins/Patches
- Modem Security
- Tightening Network Services
- Monitoring Logfiles
- Trusted Systems
- Security Tools
- Security Training



Why is Security Important?

- UNIX was designed for an open environment
- U.S. Computer Security Act of 1987 (Liability)
- Hacking (or Cracking) tools are easily and widely available
- Cost and frequency of security breaches is increasing

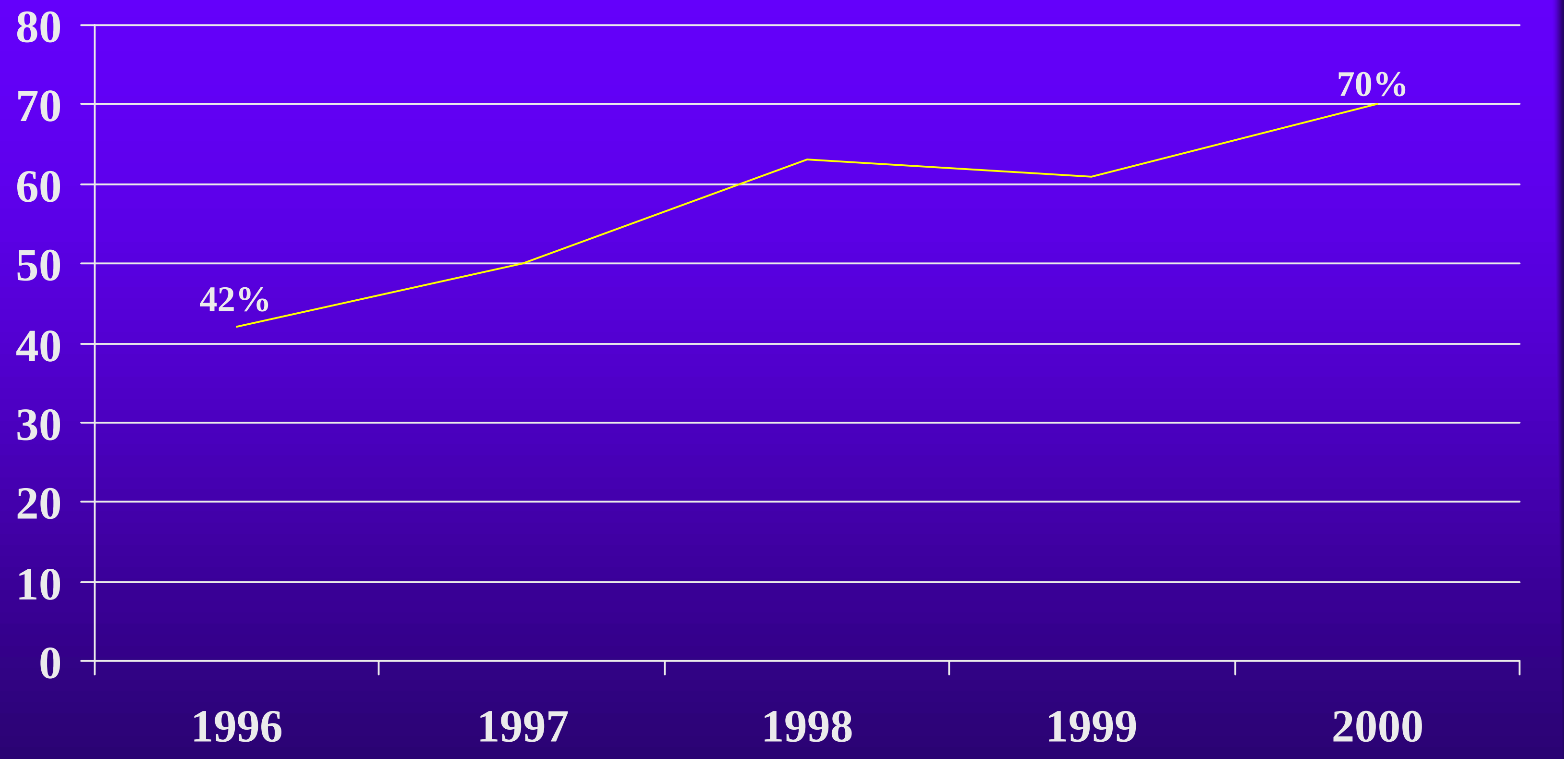


CSI/FBI 2000 Computer Crime and Security Survey

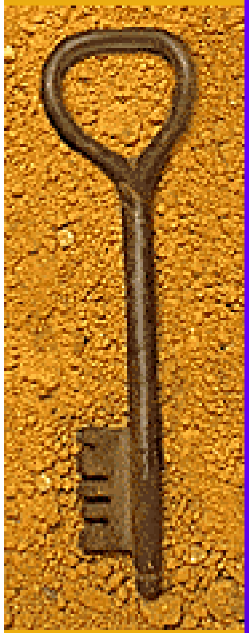
- Computer Security Institute and FBI Survey
- 4,284 anonymous surveys distributed
- 643 responses received
- Not all questions were answered
- Full report can be ordered at:

http://www.gocsi.com

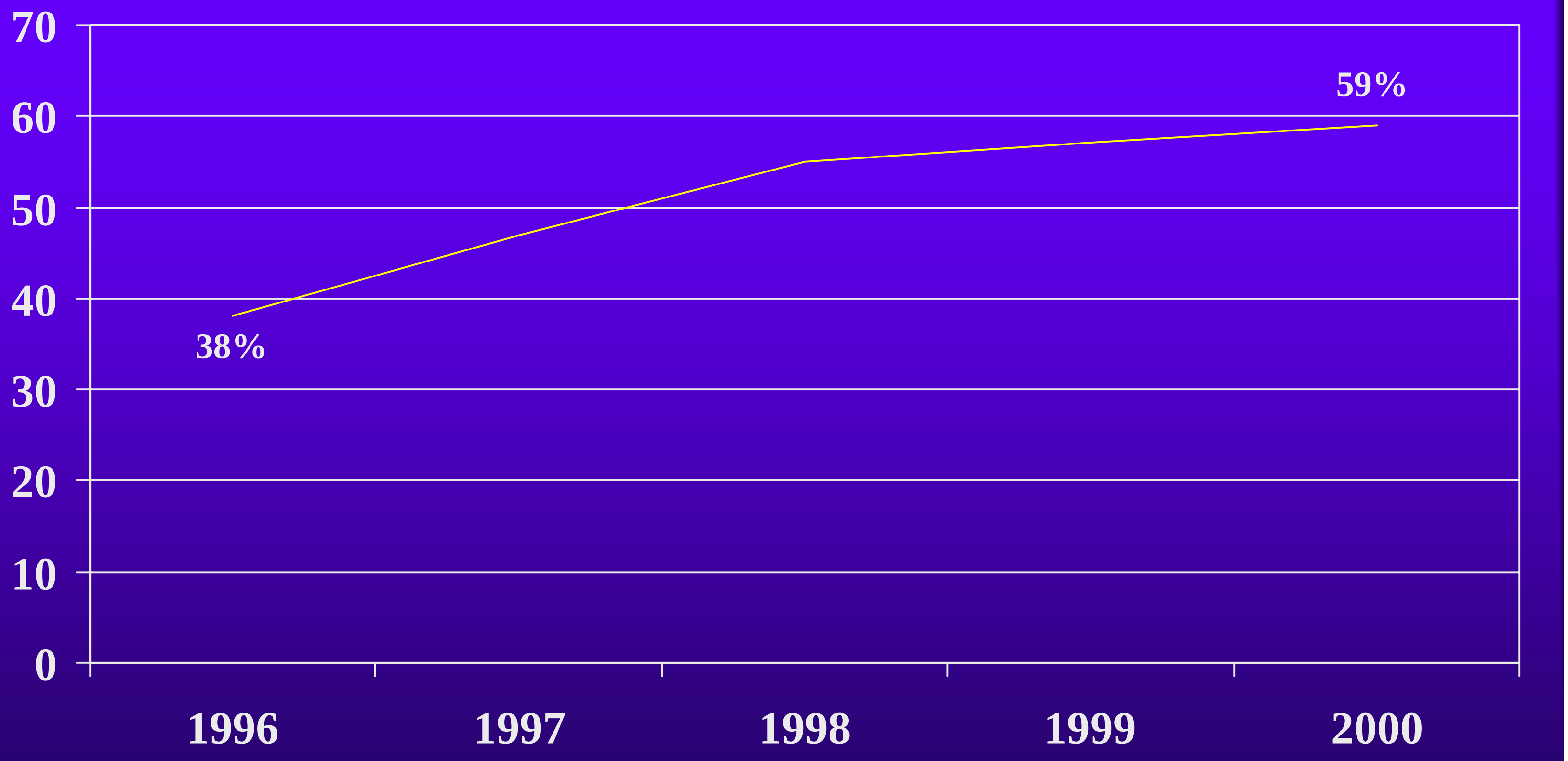
Percentage who reported an unauthorized use of their computer systems within the past 12 months



Source: Computer Security Institute/FBI 2000 Computer Crime and Security Survey



Percentage citing an Internet connection as a frequent point of attack



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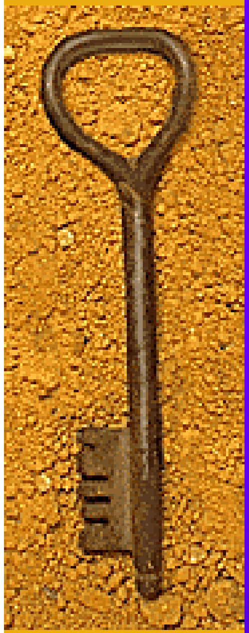
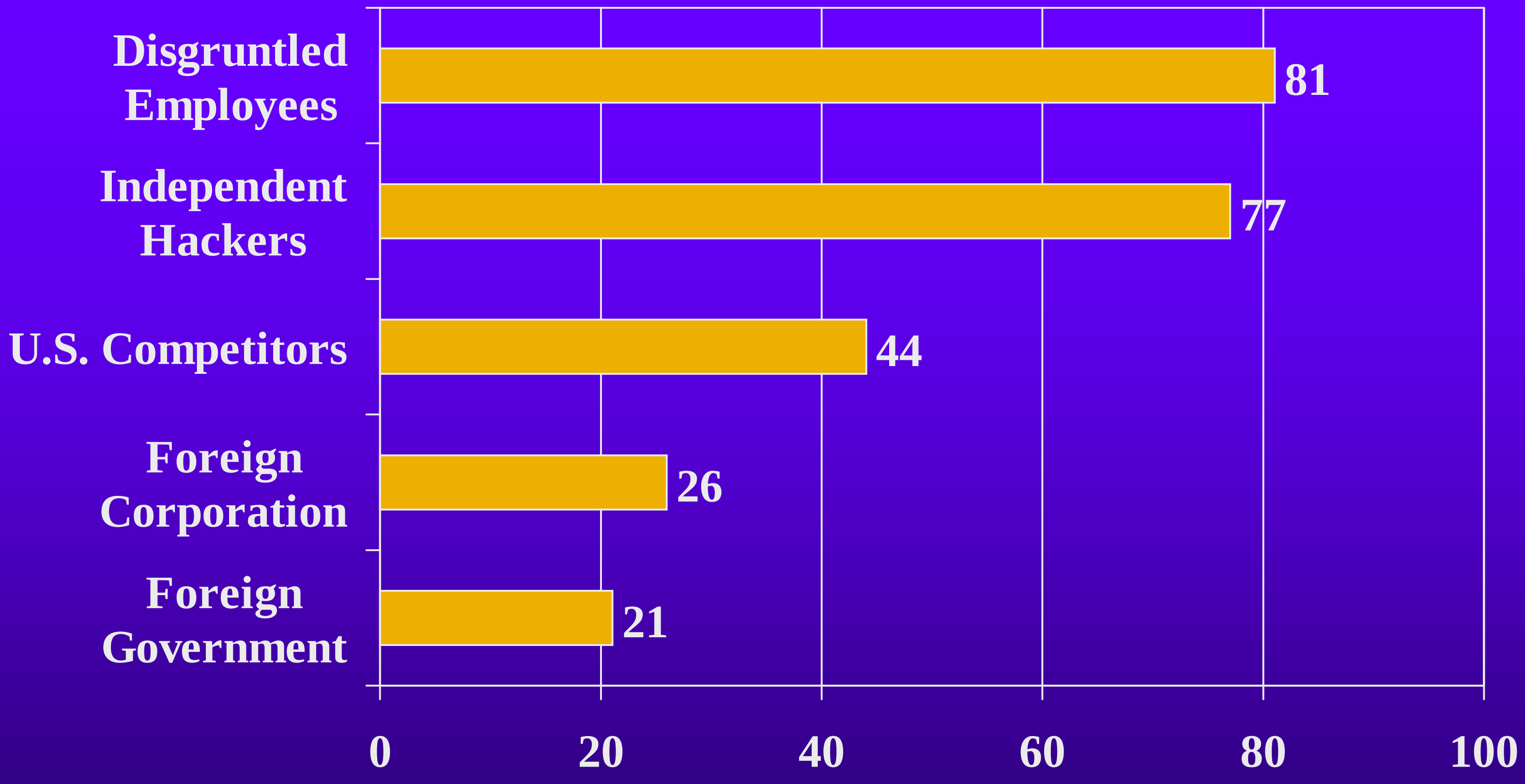
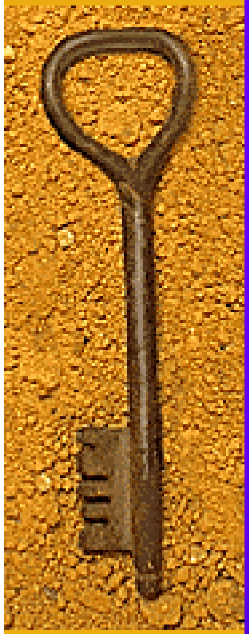


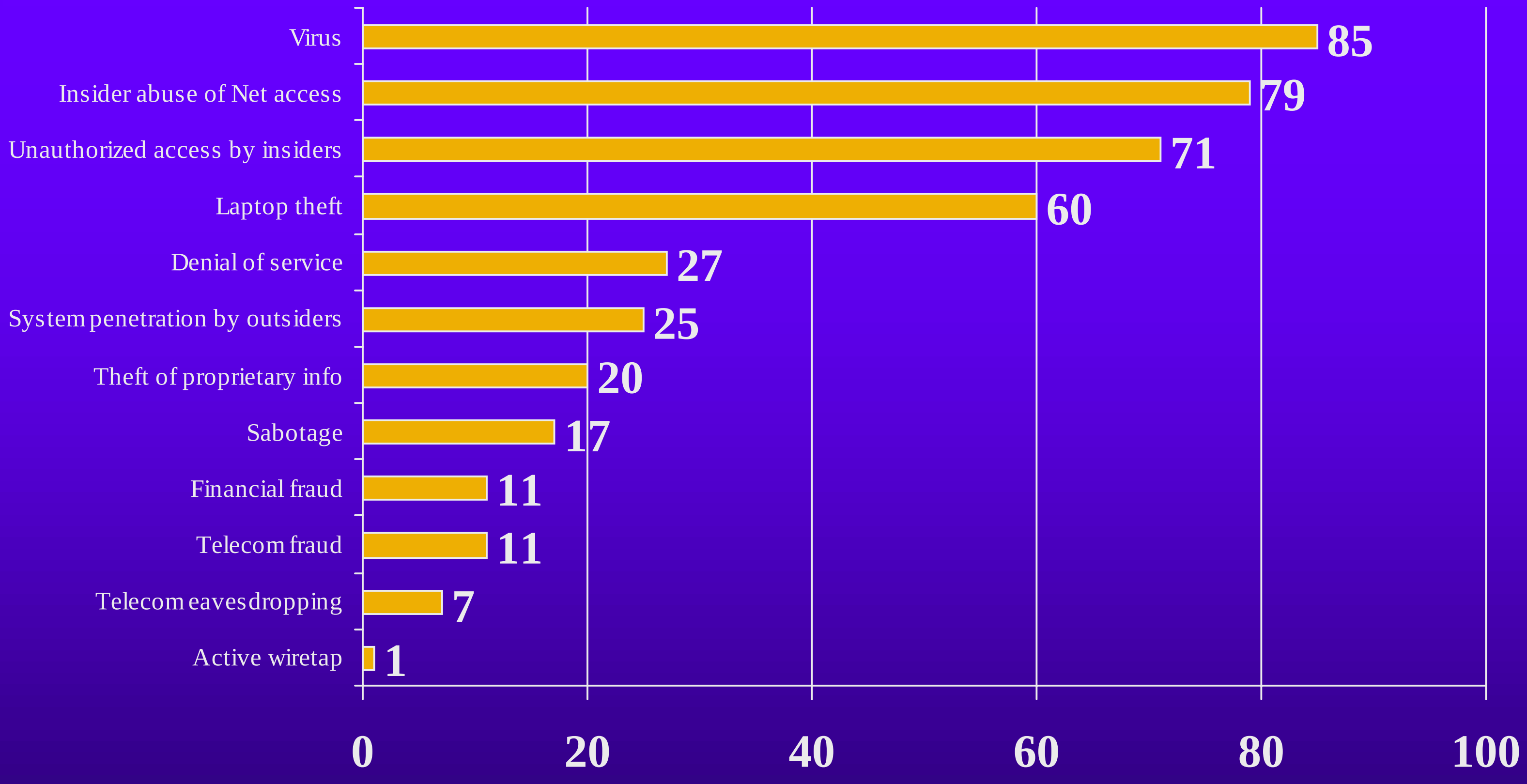
Percentage Citing These as Likely Sources of Attack



Source: Computer Security Institute/FBI
2000 Computer Crime and Security Survey

Types of Attack or Misuse Detected in Past 12 Months





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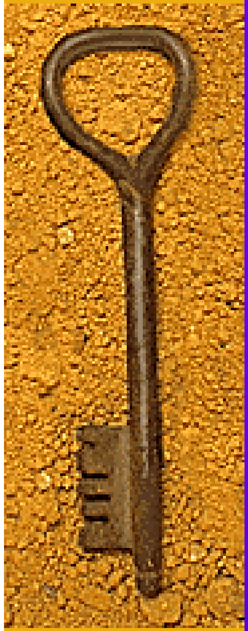
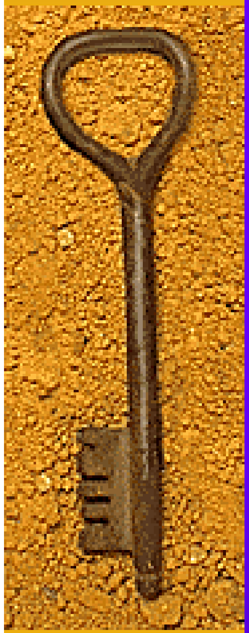


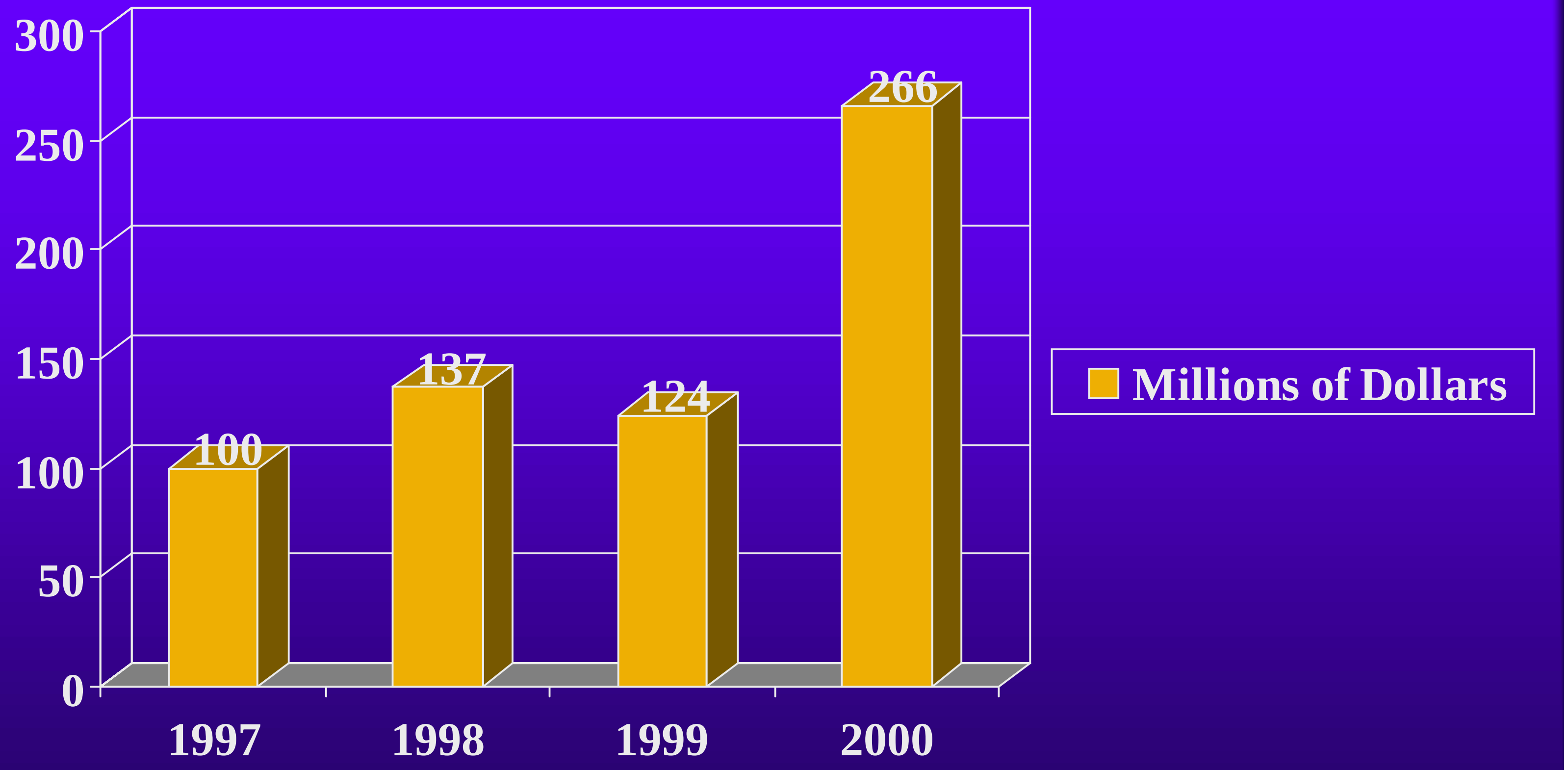
Dollar Amount (in millions) of losses by type in past 12 months reported by respondents willing to quantify losses

	1998	1999	2000
Theft of Proprietary Info	$33.6	$42.5	$66.7
Financial Fraud	$11.2	$39.7	$56.0
Virus	$7.9	$5.3	$29.2
Insider Net Abuse	$3.7	$7.6	$28.0
Sabotage	$2.1	$4.4	$27.1
Unauthorized access by insiders	$50.6	$3.6	$22.6
Laptop theft	$5.3	$13.0	$10.4
Denial of service	$2.8	$3.3	$8.2
System penetration by outsiders	$1.6	$2.9	$7.1
Telecom fraud	$17.3	$0.8	$4.0
Active wiretapping	$0.2	$0.0	$5.0
Telecom eavesdropping	$0.6	$0.8	$1.0

Source: Computer Security Institute/FBI 2000 Computer Crime and Security Survey



Total Amount Reported by Respondents Willing to Quantify Losses



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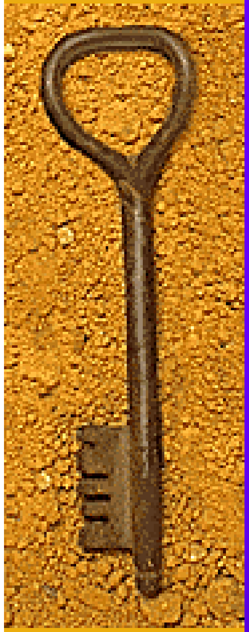
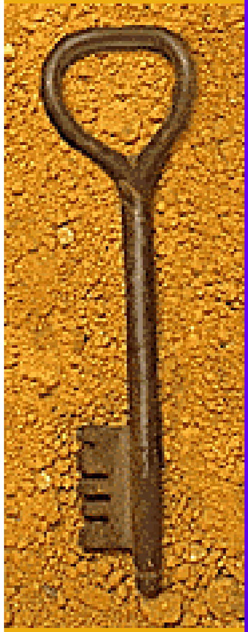
Physical Security



Physical Security

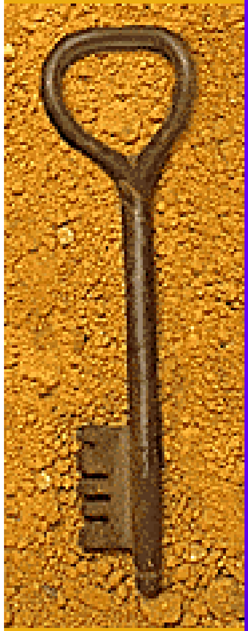
- Restrict access to the computer room
- Computer room walls should go from under raised floor to above ceiling
- Store backup media in a secure area
- Keep system in a secure area
- Keep copies of full backups, etc. offsite

Physical Security *(continued)*



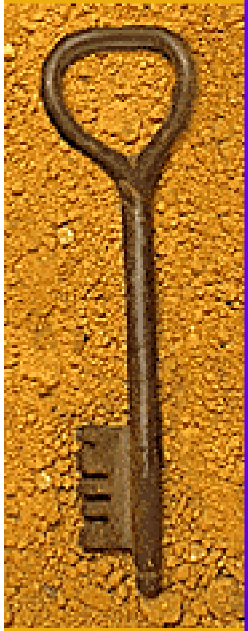
- Lock cabinets containing important information
- Destroy unwanted printer output containing sensitive information
- Secure network cables from exposure
- Log off when leaving terminal unattended
- Clear terminal screens after logging off

Account Security



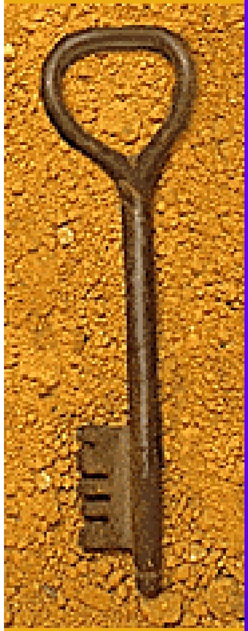
Account Security: Passwords

- Password Guidelines
  - New users should change their password first time they log on
  - All users should have a password
  - Users should not write passwords down
  - Users should not share passwords with anyone
  - Users should not store passwords in function keys
  - Check for weak passwords periodically (Crack)



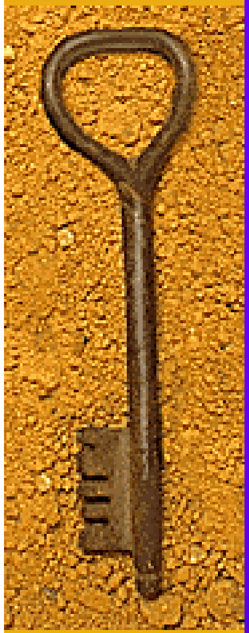
Account Security: Passwords *(continued)*

- Bad Password Composition
  - Your login name
  - Anyone else’s name
  - Women’s names
  - License plates
  - Dictionary words
  - Randomly generated passwords
  - Profane words



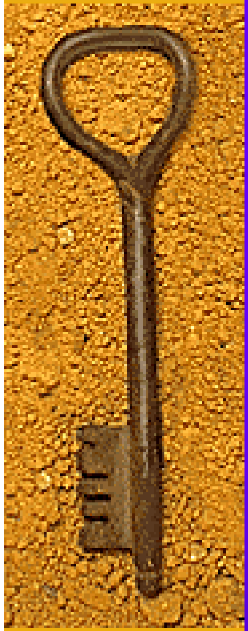
Account Security: Passwords *(continued)*

- Good Password Composition
  - Minimum of six characters
  - At least two alphabetic and one numeric or special character
  - Passwords that mix upper and lower case
  - Acrostic passwords (apsiape: a penny saved is a penny earned)



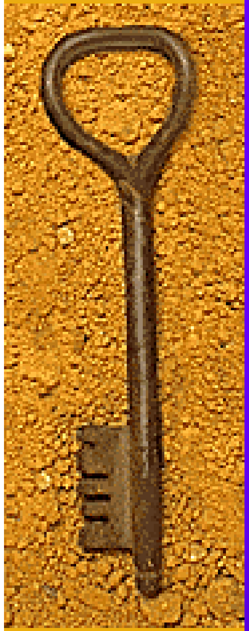
Account Security: Controlling Root Access

- Control number of users with root access
- Restrict root logins to console only (/etc/securetty file)
- Never leave a super-user shell open on an unattended terminal or workstation
- Log in with username and ‘su’ to root
- Change the root password periodically and whenever a root user leaves the company



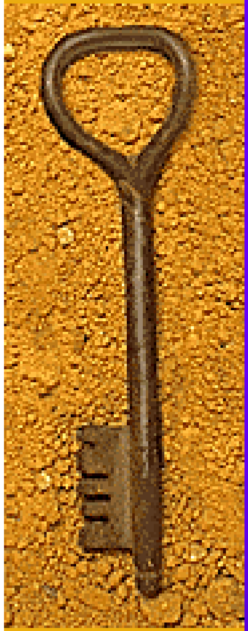
Account Security: Guest Accounts

- Create on an as-needed basis
- Remove when need no longer exists
- Make sure it has a strong password



Account Security: Trust Relationships

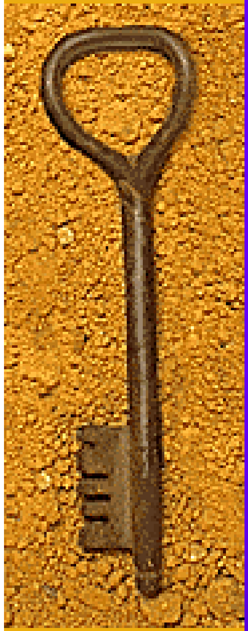
- Be careful with hosts.equiv files
- Restrict use of ‘.rhosts’ files
  - *if allowed permissions should be 600*
- Restrict use of ‘.netrc’ files
  - *if allowed permissions should be 600*



Account Security: Other Best Practices

- Remove accounts upon employee termination
- Disable login for well known accounts such as `sys`, `bin`, `uucp` and others
- Do not allow users to share accounts i.e. every account has a specific owner

File System Security

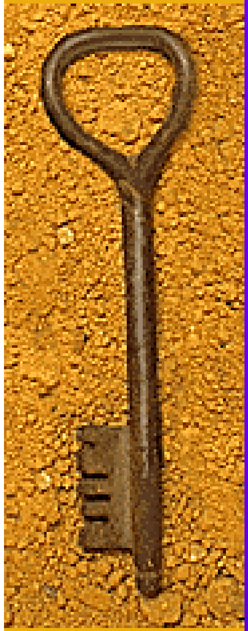


File System Security: Permissions

- Write protect startup files to `rw-------`
- Set `umask` value in .profile, .cshrc or .kshrc

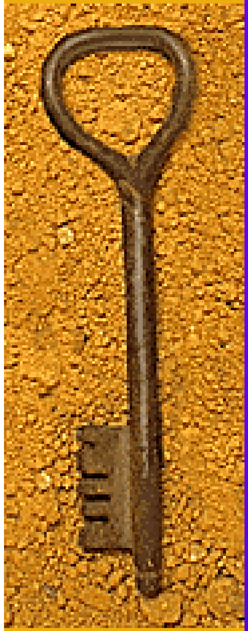
```
022 for root        = chmod 755 rwxr-xr-x
022 for users       = chmod 755 rwxr-xr-x
027 for users       = chmod 750 rwxr-x---
077 for users       = chmod 700 rwx------
```

- Device Files `/dev/null`, `/dev/tty` & `/dev/console` should be world writeable, but never executable, most others should be unreadable & un-writeable by regular users



File System Security: SUID & SGID Files

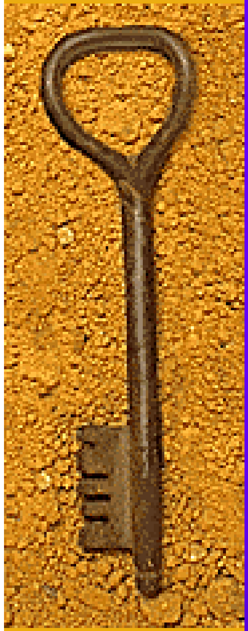
- Don’t write SUID & SGID shell scripts
- Most operating systems have SUID & SGID programs, but these are compiled programs
- Detect with the following commands:
  - `find / -type f -a -perm -4000 -print (suid)`
  - `find / -type f -a -perm -2000 -print (sgid)`



File System Security: Other Best Practices

- Make sure that system files and directories are only writable by root
- Make sure that files executable by root are not writable by anyone else.
- Make sure that users’ home directories are only writable by the owner.
- Eliminate all unnecessary world writable files and directories.
- Give users a restricted shell, or better yet, no shell at all.

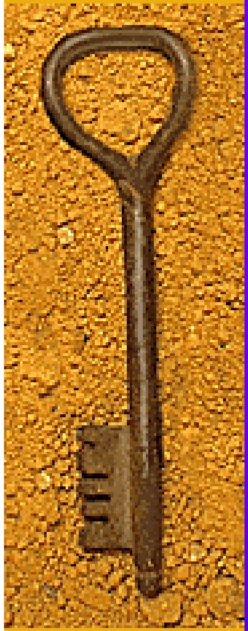
Security Bulletins & Patches



Security Bulletins & Patches

- Customers should subscribe to receive HP security bulletins
- These bulletins will outline specific patches to be installed to correct security vulnerabilities
- Can be found on HP’s I.T. Resource Center at: *http://itresourcecenter.hp.com*

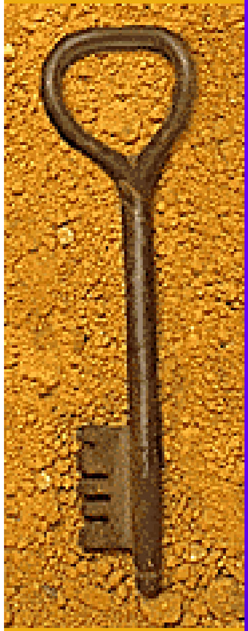
Modem Security



Modem Security

- All modems should have an additional dial-up password
- Details on creating dial-up passwords can be found in the `d_passwd` and `dialups` man pages
- All dial-up modems should log out users upon disconnect (check for hupcl in /etc/gettydefs)

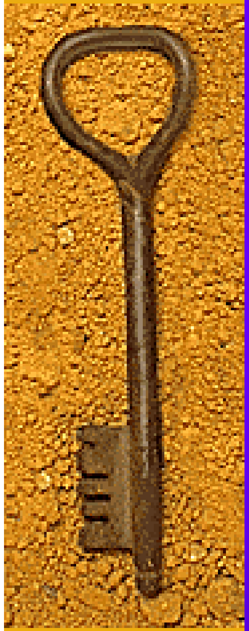
Tightening Up Network Services



Tightening Network Services

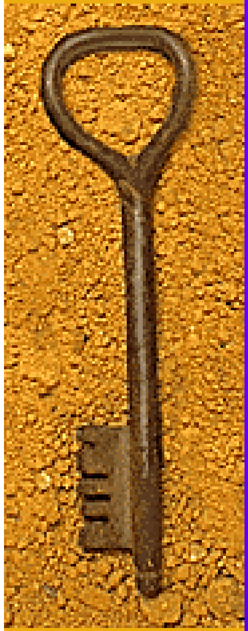
- Disable unnecessary network services in `/etc/inetd.conf`
- Configure access control lists with `/var/adm/inetd.sec`
- Correctly configure allowable services such as NFS, FTP & Anonymous FTP

Monitoring Logfiles



Monitoring Logfiles

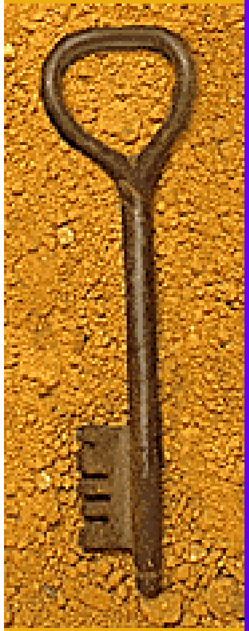
- `/etc/wtmp` (last command)
- `/etc/btmp` (lastb command)
- `/var/adm/sulog`
  (Tells you who has become root)
- `/var/adm/syslog/syslog.log`



Miscellaneous Best Practices

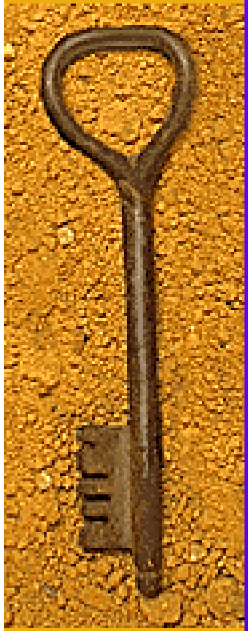
- Never put . (current directory) at the beginning of the path variable (especially root’s)
- Type in the full path name when not at the console.
- Do not allow write access to ANY directories in root’s path.
- Fix well-known security holes (sendmail, tftp, finger, etc.).

Trusted Systems



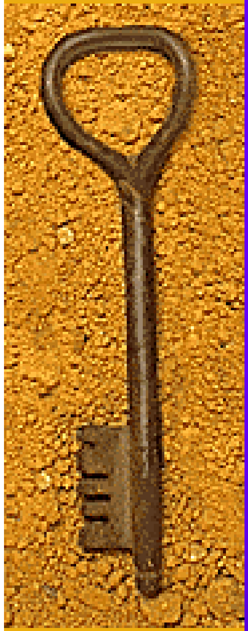
Trusted Systems Features:

- Is included as part of base operating system
- Provides Login Management Capabilities
- Provides Password Management Capabilities
- Provides Terminal Security Features



Trusted Systems - Login Management

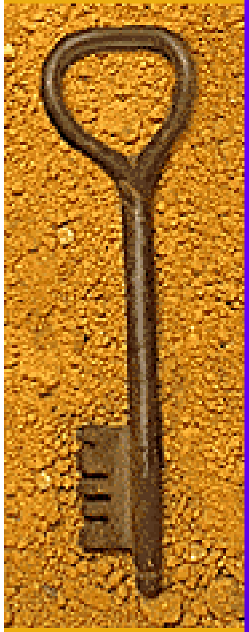
- Password required for single-user boot
- Creation of a defined password life-cycle
- Disables account after a certain number of successive login failures
- Provides time-of-day login access



Trusted Systems - Password Management

- System-wide password aging

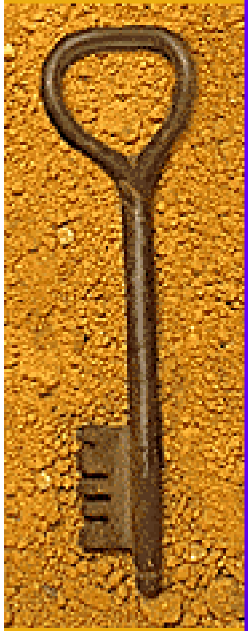
  (*includes min/max time between changes*)
- Warning period before password expires
- Password lifetime
- Random password generator
- Password history in HP-UX 11.00



Trusted Systems - Terminal Security

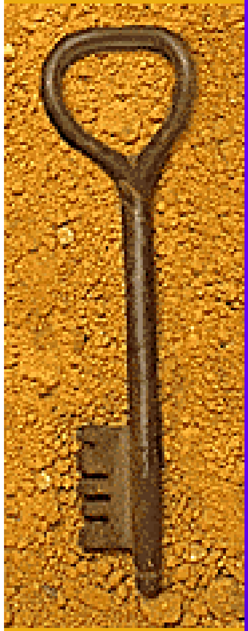
- Device-Based Access Control
- Terminal locked after successive login failures
- Time delay between unsuccessful logins
- Fixed amount of time to login
- List of authorized users per port

Security Tools



Security Tools

- COPS (Various system security checks)
- Crack (Password cracker)
- Tripwire (Detects changes to files)
- Tiger (Determines ways for root to be compromised)
- SATAN (Network security checker)



Security Tools

- To obtain security tools:

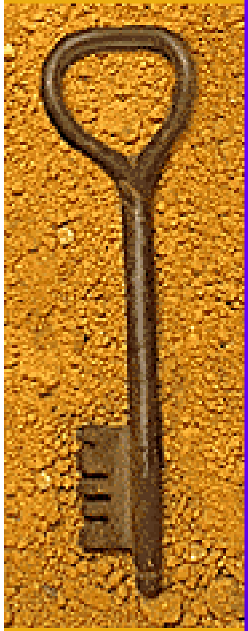
COAST Archive (Purdue University)

`http://www.cs.purdue.edu/coast`

or

`ftp://coast.cs.purdue.edu/pub/tools/unix`

Security Training

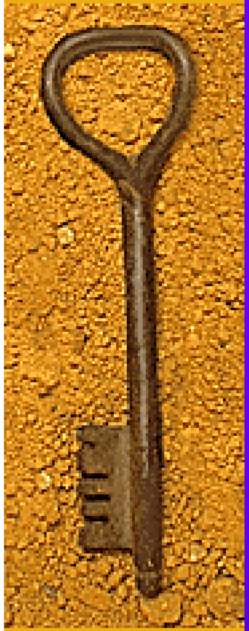


Security Training

Practical UNIX and Network Security (H3541S)

Course Overview:

This five-day course describes typical UNIX system and network vulnerabilities and introduces a variety of tools and techniques to defend against potential security breaches.



Security Training

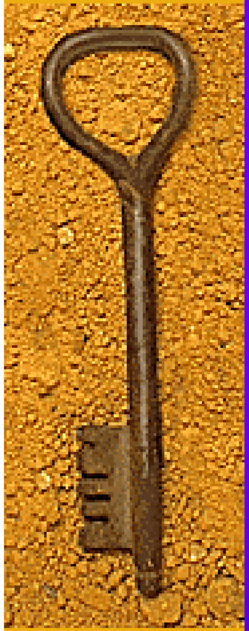
Security Conferences:

- CSI (Computer Security Institute)

  http://www.gocsi.com
- Usenix (Advanced Computing Systems Assoc)

  http://www.usenix.org
- SANS (Systems and Network Security)

  http://www.sans.org



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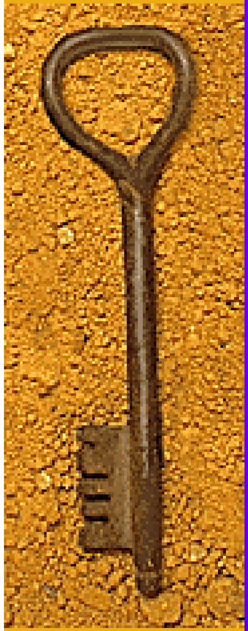

Questions?