Linux Security

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Base Security for the Linux System

- Partitioning
- Loading Services
- User/Group Access
- Program/Service Access

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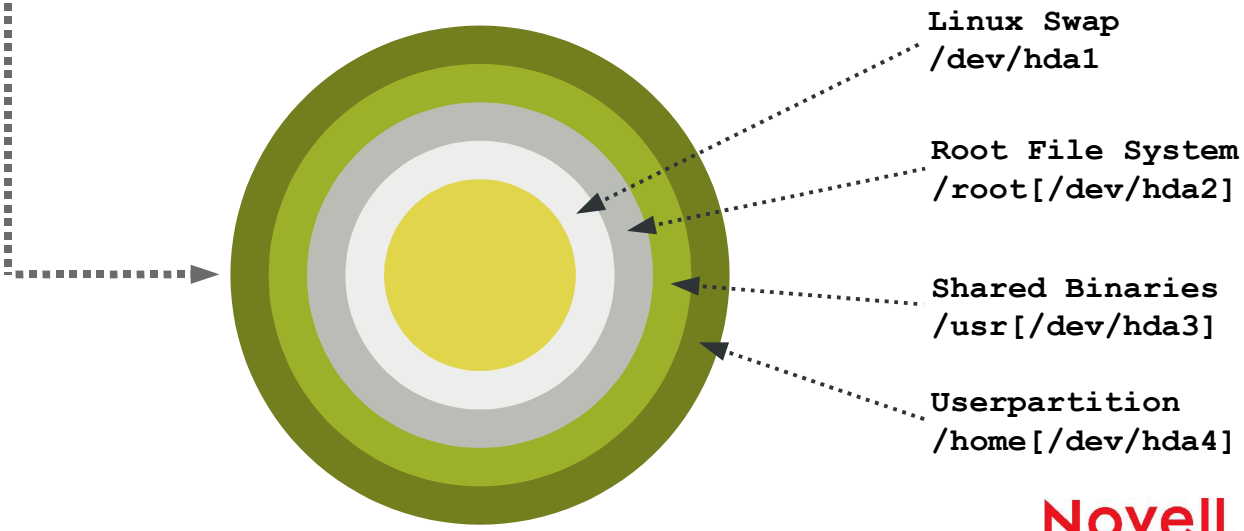
Loading the Linux System

Partitioning Disk

- Base Partition Scheme provided not adequate
- Partition disk to stop DOS attacks on system
- Partition each functional area based on usage of system
  - For example:



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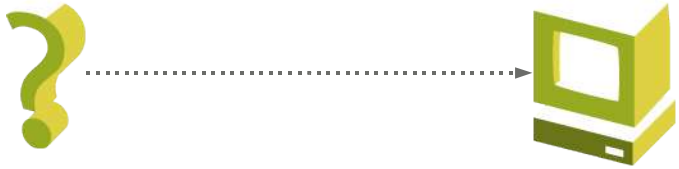
Loading Services for the System

What Services to Load?

- What is the system use going to be?
- More Services equal higher administrative cost
- More Services equal higher possibility of attack
- Remember Services are a privilege not a right. Only load what you will use on the system.



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Setting Up User and Group Security

Set User Accounts

- Delete unneeded default accounts
- Set user name, password and access
- Set Password Aging (change /etc/login.def)
  - PASS_MAX_DAYS & PASS_MIN_DAYS
- For system accounts lock them by assigning an invalid shell

Set Group Accounts

- Set up Groups to contain User Accounts
- Only give group enough rights as needed

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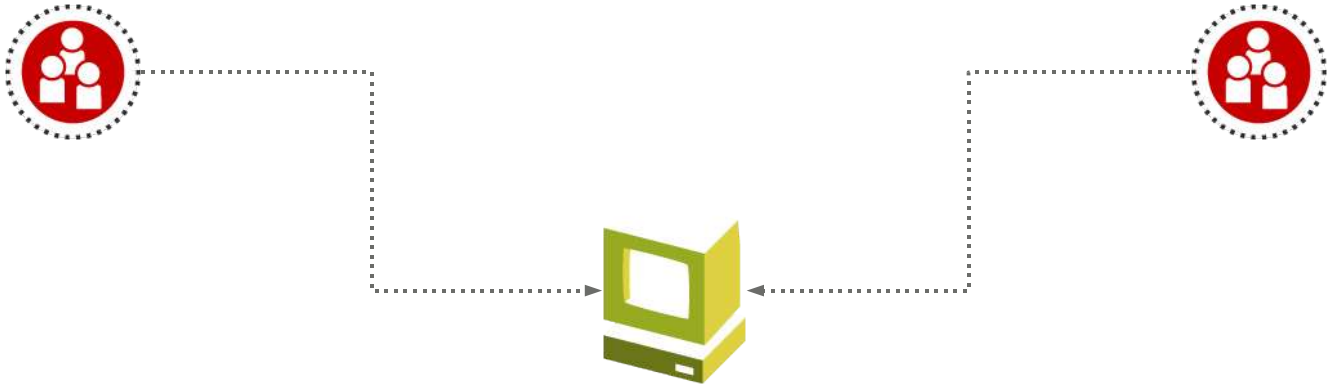
Designing Program and Services Access

Use Groups for access to Services and Programs

- This allows for better administration of Server
- No single account should need to be without a group
- Follows good design by establishing roles based on rules
- Easier to fit into an identity management architecture



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Additional Security Steps

1. Modify of initial files which were loaded
2. Disable CTS-ALT-Delete
3. Disallow Remote Root Login
4. Create Security Banners
5. Apply Updates and Patches
6. System Logging

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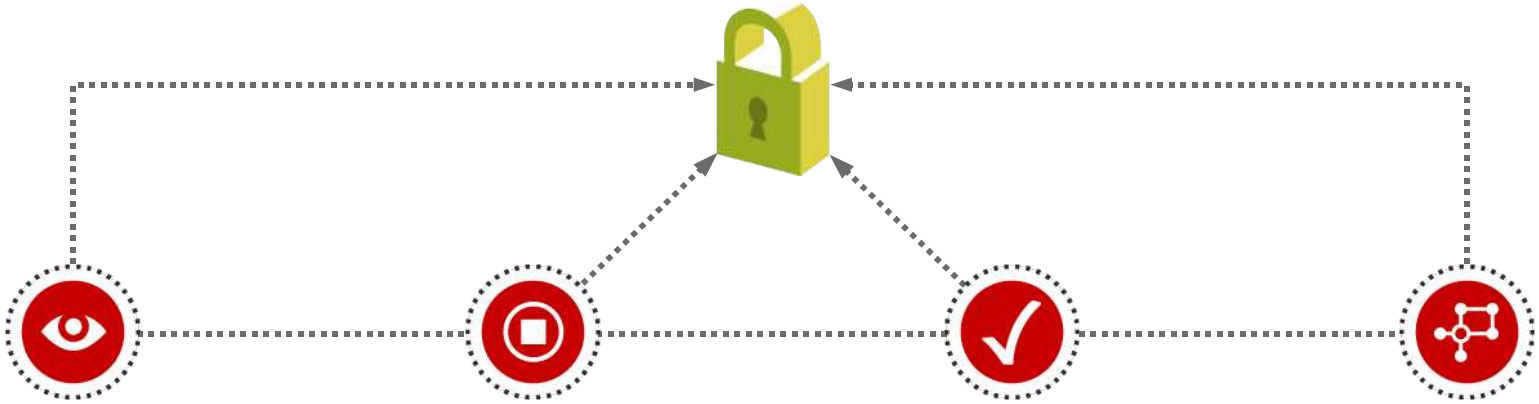
Web Security

Web Security steps

- Review Modules
- Harden Main Configuration Files
- Check Permissions of Files
- Encrypt Sensitive Traffic with HTTPS



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E-Mail Security

E-Mail Security

- Disable Sendmail Daemon on Workstations
- Define SMTP Server for Mail Clients
- Define Hosts Allowed to Relay Mail
- Set Domain Name Masquerading
- Configure Sendmail to Use RBL Support
- Install an Alternative MTA
- Secure POP and IMAP daemons

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Tripwire

Open Source Integrity Checker

Tripwire works by creating a hash for all files that you have chosen to monitor on your system. These hashes are then stored in a database. Once the database is created you can schedule tripwire to run on a regular basis to compare the hashes of the files you are monitoring to the hashes stored in the database.

If your system is compromised and/or files replaced or changed Tripwire will know if the files are in the snapshot of changes in size, inode number, permissions, or other attributes. Even a single character change by verifying its checksum.

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Tripwire Setup

Install Tripwire then do:

- cd /etc/tripwire
- ./twinstall.sh
- tripwire --init
- rm twcfg.txt twpol.txt

The script twinstall.sh performs the following:

- Creates site key and local key, you enter the passphrases.
- signs the default configuration file (twcfg.txt) with the site key creating tw.cfg
- Signs the default policy file twpol.txt with the site key creating tw.pol
- tripwire –init (builds the database)
- rm twcfg.txt twpol.txt (This step deletes the unencrypted policy and configuration files.)

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Displaying the binary Policy and Configuration Files for Tripwire

Now you wish to view Tripwire's Policy and Configuration files which are encrypted:

Generate the active Configuration File:

- cd /etc/tripwire
- twadmin –print-cfgfile > twcfg.txt

Generate the Active Policy File:

- cd /etc/tripwire
- twadmin –print-polfile > twpol.txt

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Modifying Tripwire's policy and Configuration

So you want to change the set of files and directories Tripwire examines:

1. Extract the Policy and Configuration

2. Modify the policy file, twpol.txt, and/or the configuration file, twcfg.txt, with any text editor.

3. Re-sign the modified files:
   - twadmin --create-cfgfile –cfgfile /etc/tripwire/tw.cfg \
     --site-keyfile site_key etc/tripewire/twcfg.txt
   - twadmin --create-cfgfile –cfgfile /etc/tripwire/tw.cfg \
     --site-keyfile site_key etc/tripewire/twpol.txt

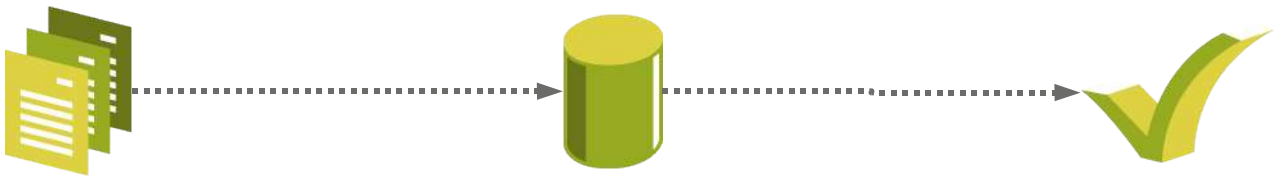
4. reinitialize the database:
   - tripwire –init
   - rm twcfg.txt twpol.txt

Tripwire Integrity Checking

Run:

- tripwire –check

This compares the filesystem against the database according to the rules of the active policy. The results are written to standard output and also stored as a timestamped signed Tripwire Report.



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Nessus

A Freeware Vulnerability Assessment Tool

- Works on a client/server based technology
- Server side contains the vulnerability database and the engine that actually performs the vulnerability assessment
- The Client connects to the server to configure the settings for the vulnerability assessment
- Nessus can provide reports in a number of different formats including its native GUI format, HTML and ASCII

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Installing and Running Nessus

1. Download the latest Distribution of Nessus
2. Four components must be installed in the order:
   - nessus-libraries
   - libnasl
   - nessus-core
   - nessus-plugins

   unarchive the source code with tar zxvf
   cd to source directory
   ./configure
   compile using make
   install make with install
3. Start the nessus server by running ./nessusd located in bin directory

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Installing and Running Nessus (cont.d)

4. Use nessus-adduser to add a new user to the system
5. Go to an X-term window type nessus and enter the password for the user you created in step 4
6. Use the Plugin Tab for the exploits you wish to check.
7. Next click the Target selection tab and enter the comma-delimited hosts to check.
8. Click Start

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