TASK1: LAB Assignment

LAB 1: Linux Security Configuration

Task 1: สร้าง User Accounts สำหรับ Team (นายนั้นทิพัฒน์ สมบัติวงศ์)

1.1 สร้าง Users และ Groups:

```
# สร้าง groups
sudo groupadd developers
sudo groupadd testers
sudo groupadd dbadmin
dev@LinuxServer:~$ sudo groupadd developers
sudo groupadd testers
sudo groupadd dbadmin
Sorry, try again.
[sudo] password for dev:
dev@LinuxServer:~$
# สร้าง users
sudo useradd -m -s /bin/bash -G developers chonl
sudo useradd -m -s /bin/bash -G developers nunt
sudo useradd -m -s /bin/bash -G testers tuser
sudo useradd -m -s /bin/bash -G dbadmin dbuser
 dev@LinuxServer:~$ sudo useradd -m -s /bin/bash -G developers chonl
 sudo useradd -m -s /bin/bash -G developers nunt
 sudo useradd -m -s /bin/bash -G testers tuser
 dev@LinuxServer:~$
# ตั้งรหัสผ่าน (ต้องตาม policy)
sudo passwd chonl
sudo passwd nunt
sudo passwd tuser
```

```
sudo passwd dbuser

dev@LinuxServer:~$ sudo passwd chonl
New password:
Retype new password:
passwd: password updated successfully
dev@LinuxServer:~$ sudo passwd nunt
New password:
Retype new password:
passwd: password updated successfully
dev@LinuxServer:~$ sudo passwd tuser
New password:
Retype new password:
passwd: password updated successfully
dev@LinuxServer:~$ sudo passwd dbuser
New password:
Retype new password:
passwd: password updated successfully
dev@LinuxServer:~$
```

1.2 ตั้งค่า Password Policy:

```
# แก้ไขไฟล์ /etc/login.defs
sudo nano /etc/login.defs
# เปลี่ยนค่าเหล่านี้:
PASS MAX DAYS 90
PASS MIN DAYS 7
PASS WARN AGE 14
PASS MIN LEN 12
        PASS_MAX_DAYS
                       Minimum number of days allowed between password changes.
        PASS_MIN_DAYS
        PASS_WARN_AGE
                       Number of days warning given before a password expires.
PASS_MAX_DAYS 90
 PASS_MIN_DAYS 7
PASS_WARN_AGE 14
 PASS_MIN_LEN
# ติดตั้ง libpam-pwquality
```

```
sudo apt install libpam-pwquality
dev@LinuxServer:~$ sudo apt install libpam-pwquality
Reading package lists... Done
Building dependency tree... Done
The following additional packages will be installed:
 cracklib-runtime libcrack2 libpwquality-common libpwquality1 wamerican
The following NEW packages will be installed:
  cracklib-runtime libcrack2 libpam-pwquality libpwquality-common libpwquality1 wamerican
0 upgraded, 6 newly installed, 0 to remove and 3 not upgraded.
Need to get 446 kB of archives.
Do you want to continue? [Y/n] y
# แก้ไข /etc/pam.d/common-password
sudo nano /etc/pam.d/common-password
# เพิ่มบรรทัด:
password requisite pam pwquality.so retry=3 minlen=12 difok=3 ucredit=-1 lcredit=-1
dcredit=-1 ocredit=-1
                                       pam_pwquality.so retry=3 minlen=12 difok=3 ucredit=-1 lcred<mark>i</mark>t=-1 dcr>
  since the modules above will each just jump aroun
```

```
cat /etc/passwd | tail -4
groups chonl nunt tuser dbuser

dev@LinuxServer:~$ sudo nano /etc/pam.d/common-password
dev@LinuxServer:~$ cat /etc/passwd | tail -4
chonl:x:1001:1004::/home/chonl:/bin/bash
nunt:x:1002:1005::/home/nunt:/bin/bash
tuser:x:1003:1006::/home/tuser:/bin/bash
dbuser:x:1004:1007::/home/dbuser:/bin/bash
dev@LinuxServer:~$ groups chonl nunt tuser dbuser
chonl : chonl developers
nunt : nunt developers
tuser : tuser testers
dbuser : dbuser dbadmin
```

Task 2: ตั้งค่า Sudo Permissions (นายนั้นทิพัฒน์ สมบัติวงศ์)

2.1 สร้าง Sudo Groups:

```
# สร้าง custom sudo groups
sudo groupadd sudo-developers
sudo groupadd sudo-limited

dev@LinuxServer:~$ sudo groupadd sudo-developers
sudo groupadd sudo-limited

# เพิ่ม users เข้า groups
sudo usermod -aG sudo-developers chonl
sudo usermod -aG sudo-developers nunt
sudo usermod -aG sudo-limited tuser

dev@LinuxServer:~$ sudo usermod -aG sudo-developers chonl
sudo usermod -aG sudo-developers nunt
sudo usermod -aG sudo-developers nunt
sudo usermod -aG sudo-limited tuser
```

2.2 Configure Sudoers:

```
# แก้ไขไฟด์ sudoers
sudo visudo

# เพิ่มกฎเหล่านี้:

# Developers - full sudo access

%sudo-developers ALL=(ALL:ALL) ALL

# Limited sudo - specific commands only

%sudo-limited ALL=(ALL) /usr/bin/systemctl status *, /usr/bin/tail /var/log/*, /bin/ps

# Database admin - database commands only
david ALL=(ALL) /usr/bin/mysql, /usr/bin/mysqldump, /bin/systemctl restart mysql
```

```
# Sudo session timeout (15 minutes)
Defaults timestamp timeout=15
# Log sudo commands
Defaults logfile="/var/log/sudo.log"
Defaults log input, log output
 # Log sudo commands
 Defaults logfile="/var/log/sudo.log"
 Defaults log_input, log_output
```

2.3 ทดสอบ Sudo Permissions:

```
# ทดสอบด้วย chonl
sudo -u chonl sudo ls /root

dev@LinuxServer:~$ sudo -u chonl sudo ls /root
[sudo] password for chonl:
vboxpostinstall.sh

# ทดสอบด้วย tuser (ควรใช้ได้เฉพาะคำสั่งที่อนุญาต)
sudo -u tuser sudo systemctl status ssh
```

Task 3: Configure SSH Security (นายชลศักดิ์ กันทา)

3.1 Backup และแก้ไข SSH Config:

```
# Backup original config
sudo cp /etc/ssh/sshd config /etc/ssh/sshd config.backup
dev@LinuxServer:~$ sudo cp /etc/ssh/sshd_config /etc/ssh/sshd_config.backup
# แก้ไข SSH configuration
sudo nano /etc/ssh/sshd config
# เปลี่ยบค่าเหล่าบึ้ง
                          # เปลี่ยนจาก default port
Port 2222
PermitRootLogin no
                              # ห้าม root login
                                 # อนญาต password (ชั่วคราว)
PasswordAuthentication yes
                                # เปิดใช้ key-based auth
PubkeyAuthentication yes
                             # จำกัดความพยายาม
MaxAuthTries 3
```

```
# Timeout session
ClientAliveInterval 300
ClientAliveCountMax 2
                       # Max idle sessions
AllowUsers chonl nunt tuser dbuser # อนุญาตเฉพาะ users เหล่านี้
                    # ใช้ SSH Protocol 2
Protocol 2
 #Port 22
 #AddressFamily any
 #ListenAddress 0.0.0.0
 #ListenAddress ::
 # เปลี่ยน port จากค่า default (22 → 2222)
 Port 2222
 # ไม่อนุญาตให้ root login โดยตรง
 PermitRootLogin no
 # Authentication settings
 PasswordAuthentication yes
 PubkeyAuthentication yes
 MaxAuthTries 3
 # Idle session control
 ClientAliveInterval 300
 ClientAliveCountMax 2
 # Allow specific users only
 AllowUsers chonl nunt tuser dbuser
 # Force SSH Protocol 2
 Protocol 2
 #HostKey /etc/ssh/ssh_host_rsa_key
 #HostKey /etc/ssh/ssh_host_ecdsa_key
 #HostKey /etc/ssh/ssh_host_ed25519_key
```

3.2 สร้าง SSH Keys:

```
# สร้าง SSH key pair สำหรับ chonl
sudo -u chonl ssh-keygen -t rsa -b 4096 -C "chonl@company.com"
dev@LinuxServer:~$ sudo -u chonl ssh-keygen -t rsa -b 4096 -C "chonl@company.com"
Generating public/private rsa key pair.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your public key has been saved in /home/chonl/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:BGFsf1UU19mP8GUGFa7/epw79qGtnCQ2J4LefybUKWA chonl@company.com
             o==B|
         . o.Bo++=
# Copy public key (สำหรับทดสอบ)
sudo -u chonl cp /home/chonl/.ssh/id rsa.pub /home/chonl/.ssh/authorized keys
sudo -u chonl chmod 600 /home/chonl/.ssh/authorized keys
 ev@LinuxServer:~$ sudo -u chonl cp /home/chonl/.ssh/id_rsa.pub /home/chonl/.ssh/authorized_keys
dev@LinuxServer:~$ sudo -u chonl chmod 600 /home/chonl/.ssh/authorized_keys
```

3.3 Configure SSH Banner:

```
# สร้าง warning banner
sudo nano /etc/ssh/ssh_banner.txt
# เนื้อหา banner:
```

*********** WARNING: Authorized access only! All connections are monitored and recorded. Disconnect immediately if you are not an authorized user. *********** GNU nano 7.2 **** WARNING: Authorized access only! All connections are monitored and recorded. Disconnect immediately if you are not an authorized user. # เพิ่มใน sshd config Banner /etc/ssh/ssh banner.txt PermitRootLogin no PasswordAuthentication yes PubkeyAuthentication yes MaxAuthTries 3 # Idle session control ClientAliveInterval 300 ClientAliveCountMax 2 # Allow specific users only AllowUsers chonl nunt tuser dbuser Protocol 2

Banner /etc/ssh/ssh_banner.txt

3.4 Restart SSH และทดสอบ:

```
# ทดสอบ config ก่อน restart
sudo sshd -t
# Restart SSH service
sudo systemctl restart sshd
dev@LinuxServer:~$ sudo systemctl restart sshd
dev@LinuxServer:~$ ssh -p 2222 chon@localhost
ssh: connect to host localhost port 2222: Connection refused
dev@LinuxServer:~$
# ทดสอบการเชื่อมต่อ
ssh -p 2222 alice@localhost
ED25519 key fingerprint is SHA256:MNd8cMO/QSVNx7M/2mUsTgyYXfcmxgwKonQfzpRRL7c.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
WARNING: Authorized access only!
All connections are monitored and recorded.
authorized user.
chonl@127.0.0.1's password:
```

Task 4: Set up Firewall Rules (นายชลศักดิ์ กันทา)

4.1 Configure UFW:

```
# Reset UFW to default
sudo ufw --force reset
```

```
dev@LinuxServer:~$ sudo ufw --force reset
Backing up 'user.rules' to '/etc/ufw/user.rules.20250827_110358'
Backing up 'before.rules' to '/etc/ufw/before.rules.20250827_110358'
Backing up 'after.rules' to '/etc/ufw/after.rules.20250827_110358'
Backing up 'user6.rules' to '/etc/ufw/user6.rules.20250827_110358'
Backing up 'before6.rules' to '/etc/ufw/before6.rules.20250827_110358'
Backing up 'after6.rules' to '/etc/ufw/after6.rules.20250827_110358'
# Set default policies
sudo ufw default deny incoming
sudo ufw default allow outgoing
dev@LinuxServer:~$ sudo ufw default deny incoming
sudo ufw default allow outgoing
Default incoming policy changed to 'deny'
(be sure to update your rules accordingly)
Default outgoing policy changed to 'allow'
(be sure to update your rules accordingly)
dev@LinuxServer:~$
# Allow SSH (new port)
sudo ufw allow 2222/tcp
dev@LinuxServer:~$ sudo ufw allow 2222/tcp
Rules updated
Rules updated (v6)
# Allow web services
sudo ufw allow 80/tcp
sudo ufw allow 443/tcp
 dev@LinuxServer:~$ sudo ufw allow 80/tcp
 sudo ufw allow 443/tcp
 Rules updated
 Rules updated (v6)
 Rules updated
 Rules updated (v6)
# Allow specific IPs only for SSH (optional)
# sudo ufw allow from 192.168.1.0/24 to any port 2222
```

```
# Enable UFW
sudo ufw enable
# Show status
sudo ufw status verbose
dev@LinuxServer:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
dev@LinuxServer:~$ sudo ufw status verbose
Status: active
Logging: on (low)
Default: deny (incoming), allow (outgoing), disabled (routed)
New profiles: skip
                                       From
2222/tcp
                           ALLOW IN
                                       Anywhere
                                       Anywhere
80/tcp
                           ALLOW IN
443/tcp
                           ALLOW IN
                                       Anywhere
2222/tcp (v6)
                           ALLOW IN
                                       Anywhere (v6)
80/tcp (v6)
                                       Anywhere (v6)
443/tcp (v6)
                           ALLOW IN
```

4.2 Advanced UFW Rules:

```
# Rate limiting for SSH
sudo ufw limit 2222/tcp

dev@LinuxServer:~$ sudo ufw limit 2222/tcp
Rule updated
Rule updated (v6)

# Allow MySQL only from specific network
sudo ufw allow from 192.168.1.0/24 to any port 3306

dev@LinuxServer:~$ sudo ufw allow from 192.168.1.0/24 to any port 3306
Rule added

# Log all denied connections
sudo ufw logging on

dev@LinuxServer:~$ sudo ufw logging on
Logging enabled
```

Show numbered rules sudo ufw status numbered

Task 5: Enable System Monitoring (นายชลศักดิ์ กันทา)

5.1 Install Monitoring Tools:

```
# Install required packages
sudo apt update
sudo apt install fail2ban logwatch sysstat htop iotop

dev@linuxServer:-$ sudo apt install fail2ban logwatch sysstat htop iotop
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
sysstat is already the newest version (12.6.1-2).
sysstat set to manually installed.
htop is already the newest version (3.3.0-4build1).
htop set to manually installed.
The following additional packages will be installed:
libdate-manip-perl libnsl2 postfix python3-pyasyncore python3-pyinotify ssl-cert whois
Suggested packages:
mailx monit sqlite3 libsys-cpu-perl libsys-meminfo-perl mail-reader postfix-cdb postfix-doc postfix-ldap
postfix-lmdb postfix-mta-sts-resolver postfix-mysql postfix-pcre postfix-sqlite procmail sasl2-bin
| dovecot-common python-pyinotify-doc
The following NEW packages will be installed:
# Install ELK stack components (optional)
sudo apt install elasticsearch logstash kibana
```

5.2 Configure Fail2Ban:

```
# Backup original config
sudo cp /etc/fail2ban/jail.conf /etc/fail2ban/jail.conf.backup

dev@LinuxServer:~$ sudo cp /etc/fail2ban/jail.conf /etc/fail2ban/jail.conf.backup
dev@LinuxServer:~$ 
# สร้าง local config
sudo nano /etc/fail2ban/jail.local

# เนื้อหาไฟล์:
[DEFAULT]
```

```
bantime = 3600
findtime = 600
maxretry = 3
backend = systemd
[sshd]
enabled = true
port = 2222
logpath = /var/log/auth.log
maxretry = 3
bantime = 3600
[apache-auth]
enabled = true
port = http,https
logpath = /var/log/apache2/error.log
[apache-badbots]
enabled = true
port = http,https
logpath = /var/log/apache2/access.log
bantime = 86400
maxretry = 1
```

5.3 Configure System Monitoring:

```
# Enable sysstat
sudo systemctl enable sysstat
sudo systemctl start sysstat
```

```
# Create monitoring script
sudo nano /usr/local/bin/system monitor.sh
#!/bin/bash
# System monitoring script
DATE=$(date)
echo "=== System Monitor Report - $DATE ===" >> /var/log/system monitor.log
# CPU Usage
echo "CPU Usage:" >> /var/log/system monitor.log
top -bn1 | grep "Cpu(s)" >> /var/log/system monitor.log
# Memory Usage
echo "Memory Usage:" >> /var/log/system monitor.log
free -h >> /var/log/system monitor.log
# Disk Usage
echo "Disk Usage:" >> /var/log/system monitor.log
df -h >> /var/log/system monitor.log
# Active Users
echo "Active Users:" >> /var/log/system monitor.log
who >> /var/log/system monitor.log
# Failed Login Attempts
echo "Recent Failed Logins:" >> /var/log/system monitor.log
tail -10 /var/log/auth.log | grep "Failed password" >> /var/log/system monitor.log
```

```
echo "======= >> /var/log/system monitor.log
   GNU nano 7.2
                                            /usr/local/bin/system_monitor.sh
 #<mark>!/bin/bash</mark>
 echo "=== System Monitor Report - $DATE ===" >> /var/log/system_monitor.log
 echo "CPU Usage:" >> /var/log/system_monitor.log
 top -bn1 | grep "Cpu(s)" >> /var/log/system_monitor.log
 echo "Memory Usage:" >> /var/log/system_monitor.log
 free -h >> /var/log/system_monitor.log
 echo "Disk Usage:" >> /var/log/system_monitor.log
 df -h >> /var/log/system_monitor.log
 echo "Active Users:" >> /var/log/system_monitor.log
 who >> /var/log/system_monitor.log
 echo "Recent Failed Logins:" >> /var/log/system_monitor.log
 tail -10 /var/log/auth.log | grep "Failed password" >> /var/log/system_monitor.log
 echo "============ >> /var/log/system_monitor.log
# Make executable
sudo chmod +x /usr/local/bin/system monitor.sh
dev@LinuxServer:~$ sudo chmod +x /usr/local/bin/system_monitor.sh
dev@LinuxServer:~$
# Add to crontab (run every hour)
sudo crontab -e
# เพิ่มบรรทัด:
0 * * * * /usr/local/bin/system monitor.sh
```

5.4 Configure Log Rotation:

```
# Create logrotate config
sudo nano /etc/logrotate.d/system_monitor
```

```
/var/log/system_monitor.log {
  daily
  missingok
  rotate 30
  compress
  delaycompress
  notifempty
  copytruncate
  GNU nano 7.2
                                                 /etc/logrotate.d/system_monitor *
 /var/log/system_monitor.log {
     missingok
     compress
     delaycompress
     notifempty
     copytruncate
```

ที่ต้องจับภาพ:

```
sudo fail2ban-client status

dev@LinuxServer:~$ sudo fail2ban-client status

Status

|- Number of jail: 1

`- Jail list: sshd
dev@LinuxServer:~$

sudo fail2ban-client status sshd
```

Aug 27 11:22:17 LinuxServer fail2ban-server[5074]: Server ready lines 1-14/14 (END)