Linux Security

Auditd

- Extended logging based on auditd rules

```
auditctl            # configure rules
auditsearch         # search for events
auditreport         # create report

/etc/audit/rules.d/##-<name>.rules
/etc/audit/auditd.conf

auditctl -w path_to_file -p permissions -k key_name
# or in rules file:
-w path_to_file -p permissions -k key_name

sudo ausearch -i -k user-modify
```

```
# Delete all previous rules
-D
# Set buffer size
-b 8192
# Make the configuration immutable -- reboot is required to change audit
rules
-e 2
# Panic when a failure occurs
-f 2
# Generate at most 100 audit messages per second
-r 100
# Make login UID immutable once it is set (may break containers)
--loginuid-immutable 1

-w /etc/passwd -p wa -k passwd_changes
-w /etc/selinux/ -p wa -k selinux_changes
-w /sbin/insmod -p x -k module_insertion

# some file and directory watches with keys
-w /var/log/audit/ -k LOG_audit
-w /etc/audit/auditd.conf -k CFG_audit_conf -p rxwa
-w /etc/audit/audit.rules -k CFG_audit_rules -p rxwa

-w /etc/passwd -k CFG_passwd -p rwxa
-w /etc/sysconfig/ -k CFG_sysconfig
# an example system call rule
-a entry,always -S umask
```

Sysmon for linux

- Linux port of sysmon
- Uses eBPF instead of kernel hooks
    - extended Berkley Packet Filter
- Creates events instead of log entries (?)

```
sudo ./sysmon -accepteula
sudo ./sysmon -i

systemctl status sysmon
```

all_in_one.xml

```
all-in-one.xml
<Sysmon schemaversion="4.70">
      <EventFiltering>
        <!-- Event ID 1 == ProcessCreate. Log all newly created
processes -->
        <RuleGroup name="" groupRelation="or">
          <ProcessCreate onmatch="exclude"/>
        </RuleGroup>
        <!-- Event ID 3 == NetworkConnect Detected. Log all network
connections -->
        <RuleGroup name="" groupRelation="or">
          <NetworkConnect onmatch="exclude"/>
        </RuleGroup>
        <!-- Event ID 5 == ProcessTerminate. Log all processes
terminated -->
        <RuleGroup name="" groupRelation="or">
          <ProcessTerminate onmatch="exclude"/>
        </RuleGroup>
        <!-- Event ID 9 == RawAccessRead. Log all raw access read -->
        <RuleGroup name="" groupRelation="or">
          <RawAccessRead onmatch="exclude"/>
        </RuleGroup>
        <!-- Event ID 10 == ProcessAccess. Log all open process
operations -->
        <RuleGroup name="" groupRelation="or">
          <ProcessAccess onmatch="exclude"/>
        </RuleGroup>
        <!-- Event ID 11 == FileCreate. Log every file creation -->
        <RuleGroup name="" groupRelation="or">
          <FileCreate onmatch="exclude"/>
        </RuleGroup>
        <!--Event ID 23 == FileDelete. Log all files being deleted -->
        <RuleGroup name="" groupRelation="or">
          <FileDelete onmatch="exclude"/>
        </RuleGroup>
      </EventFiltering>
```

```
    </Sysmon>
```

```
sudo ./sysmon -c all-in-one.xml
```

```
sudo tail -f /var/log/syslog | sudo /opt/sysmon/sysmonLogView

sudo tail -f /var/log/syslog | sudo /opt/sysmon/sysmonLogView -f
Image=/bin/cat
```

SELinux

- Mandatory access control
  - (“direct access control” linux file permissions (“directly on file”)
  - → Mandatory: generic profile rules
    - Each process has domain (label) and each file has label

```

```