

# Network Monitoring & Management Log Management

Network Startup Resource Center  
[www.nsrc.org](http://www.nsrc.org)



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# Log Management & Monitoring

- Keep your logs in a secure place where they can be easily inspected.
- Watch your log files.
- They contain important information:
  - Lots of things happen and someone needs to review them.
  - It's not practical to do this manually.

# Log Management & Monitoring

## On your routers and switches

```
Sep  1 04:40:11.788 INDIA: %SEC-6-IPACCESSLOGP: list 100 denied tcp  
79.210.84.154(2167) -> 169.223.192.85(6662), 1 packet  
  
Sep  1 04:42:35.270 INDIA: %SYS-5-CONFIG_I: Configured from console by pr on vty0  
(203.200.80.75)  
  
%CI-3-TEMP: Overtemperature warning  
  
Mar  1 00:05:51.443: %LINK-3-UPDOWN: Interface Serial1, changed state to down
```

## And, on your servers

```
Aug 31 17:53:12 ubuntu nagios3: Caught SIGTERM, shutting down...  
  
Aug 31 19:19:36 ubuntu sshd[16404]: Failed password for root from 169.223.1.130 port  
2039 ssh2
```

# Log Management

- Centralize and consolidate log files
- Send all log messages from your routers, switches and servers to a single node – a *log server*.
- All network hardware and UNIX/Linux servers can be monitored using some version of *syslog* (we use either `syslog-ng` or `rsyslog` for this workshop).
- Windows can, also, use syslog with extra tools.
- Save a copy of the logs locally, but, also, save them to a central log server.

# Syslog Basics

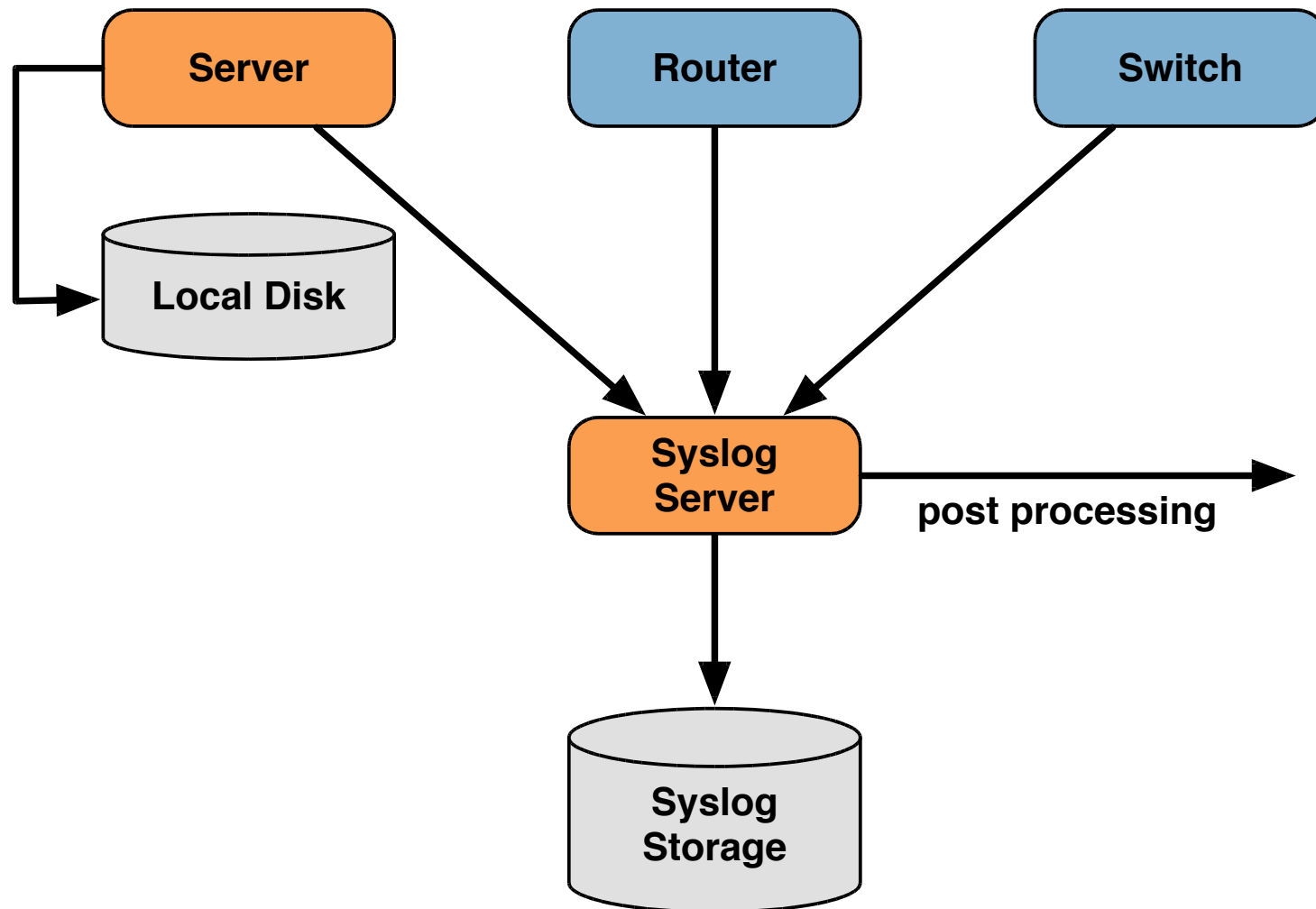
## Uses UDP protocol, port 514

Syslog messages have two attributes  
(in addition to the message itself):

| <u>Facility</u>   |          |  | <u>Level</u>  |
|-------------------|----------|--|---------------|
| Auth              | Security |  | Emergency (0) |
| Authpriv          | User     |  | Alert (1)     |
| Console           | Syslog   |  | Critical (2)  |
| Cron              | UUCP     |  | Error (3)     |
| Daemon            | Mail     |  | Warning (4)   |
| Ftp               | Ntp      |  | Notice (5)    |
| Kern              | News     |  | Info (6)      |
| Lpr               |          |  | Debug (7)     |
| Local0 ... Local7 |          |  |               |

In addition there is a concept of "Priority" which is a result of the combination of the facility and the level. See <http://en.wikipedia.org/wiki/Syslog#Priority>.

# Centralized Logging



# Configuring Centralized Logging

## Cisco hardware

- At a minimum:

```
logging ip.of.logging.host
```

## Unix and Linux nodes

- In syslogd.conf, or in rsyslog.conf, add:

```
*.* @ip.of.log.host
```

- Restart syslogd, rsyslog or syslog-ng

## Other equipment have similar options

- Options to control *facility* and *level*

# Receiving Messages – syslog-ng

- Identify the *facility* that the equipment is going to use to send its messages.
- Reconfigure *syslog-ng* to listen to the network\*
  - In Ubuntu update `/etc/syslog-ng/syslog-ng.conf`
- Create the following file\*  
`/etc/syslog-ng/conf.d/10-network.conf`
- Create a new directory for logs:  
`# mkdir /var/log/network`
- Restart the *syslog-ng* service:  
`# service syslog-ng restart`

\*See logging exercises for details



# If Using rsyslog

- *rsyslog* is included by default in Ubuntu (but we prefer *syslog-ng*). It's a slightly different configuration – we have labs for this as well:
- Update `/etc/rsyslog`
- Create the following file  
`/etc/rsyslog.d/30-routerlogs.conf`
- Create a new directory for logs and update permissions on the directory  

```
# mkdir /var/log/network  
# chown syslog:adm /var/log/network
```
- Restart the *rsyslog* service  

```
# service rsyslog restart
```

# Grouping Logs

- Using *facility* and *level* you can group by category in distinct files.
- With software such as *rsyslog* you can group by machine, date, etc. automatically in different directories.
- You can use *grep* to review logs.
- You can use typical UNIX tools to group and eliminate items that you wish to filter:

```
egrep -v '(list 100 denied|logging rate-limited)' mylogfile
```

- Is there a way to do this automatically?

# Tenshi

- Simple and flexible log monitoring tool
- Messages are classified into queues, using regular expressions
- Each queue can be configured to send a summary e-mail within a time period
  - E.g. You can tell Tenshi to send you a summary of all matching messages every 5 minutes to avoid cluttering your mailbox

# Sample Tenshi Configuration

```
set uid tenshi
set gid tenshi

set logfile /log/dhcp

set sleep 5
set limit 800
set pager_limit 2
set mailserver localhost
set subject tenshi report
set hidepid on

set queue dhcpd tenshi@localhost sysadmin@noc.localdomain [*/10 * * * *]

group ^dhcpd:
dhcpd ^dhcpd: .+no free leases
dhcpd ^dhcpd: .+wrong network
group_end
```

# To Learn More About Syslog

- **RFC 3164:** *BSD Syslog Protocol*  
<http://tools.ietf.org/html/rfc3164>
- **RFC 5426:** Transmission of Syslog Messages over UDP  
<http://tools.ietf.org/html/rfc5426>
- Transmission of syslog messages over UDP draft-ietf-syslog-transport-udp-00  
<http://tools.ietf.org/html/draft-ietf-syslog-transport-udp-00>
- Wikipedia Syslog Entry  
<http://tools.ietf.org/html/rfc3164>
- Cisco Press: *An Overview of the Syslog Protocol*  
<http://www.ciscopress.com/articles/article.asp?p=426638>

# References & links

## **Rsyslog**

<http://www.rsyslog.com/>

## **SyslogNG**

<http://www.balabit.com/network-security/syslog-ng/>

## **Windows Log to Syslog**

<http://code.google.com/p/eventlog-to-syslog/>

<http://www.intersectalliance.com/projects/index.html>

## **Tenshi**

<http://www.inversepath.com/tenshi.html>

## **Other software**

<http://sourceforge.net/projects/swatch/>

<http://www.crypt.gen.nz/logsurfer>

<http://simple-evcorr.sourceforge.net/>

# Questions?