SLUUG Linux SIG, Jan 2026

First 10 Minutes on a System

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SLUUG Linux SIG January 2026; Ken Johnson (ken.johnson@pobox.com)

Thank you for coming to the January Linux meeting on Thursday.

About Me

I work as an independent consultant performing system and small network administration, and writing specialized technical documentation.

I have been trouble-shooting systems since

the PDP-11 days...

Goal

Teach you how to quickly cast a wide but thorough net when you start trouble-shooting a system.

Gary, would you remind me if there are unaddressed questions in the chat?

Why? -- you need to ...

Trouble-shoot a system new to you.

Trouble-shoot a familiar system, that has unfamiliar problems.

Start a new job – Hi, sysadmin!

Outline

Introduction

Theory

Specific Commands

Wrap-up

I encourage you to open a shell window and try out the commands as we go along in that section.

Sometimes you will need sudo or an equivalent.

inxi needs perl. Consider installing anyway.

Take notes – have a text editor open or (old school) use a technical notebook.

Acknowledgments

Andrew Latham, whose tutorial for the
January 2016 Wednesday meeting
inspired this rework, and for kindly
reviewing my slides and notes.

Utagawa Hiroshige (1797 – 1858), a
Japanese painter and print-maker.

Shortcomings

Andrew's stories are better than mine.

No demos, but there are screenshots.

All examples are from Debian systems.

There is homework.

Captures from terminal windows, anyhow.

Give someone a fish, and they eat for a day.
Teach them to fish, and they eat for a lifetime.

Oversimplified, with a kernel of truth. Simplifications
help us get started.

I will teach you to fish, then give you some fish as a
reward for your work.

Utagawa Hiroshige (1797 – 1858)

Theory, Concepts, and Plan

There can be more than one thing wrong.

"Is this mistake somewhere else also?"
    -- Tom Van Vleck, *Three Questions About*
    Each Bug You Find; ACM SIGSOFT
    Software Engineering Notes, vol 14 no 5

Do not stop looking after you find the first one.

The same problem can exist in more than one place.

The *Three Questions* article is worthwhile – there is a copy at the multicians website.

Theory, Concepts, and Plan, continued

Guidelines, not rules

Different kinds of systems

Divide and conquer -- What are the parts of a system?

Theory, Concepts, and Plan, continued

Never underestimate the power of a checklist.

Kinds of Systems

Servers

Workstations and laptops

Routers

Embedded systems

Borrowing heavily from Andrew:

Servers may have a larger number and wider variety of services.

Workstations and laptops are subject to more extensive custom configuration.

Routers and Embedded systems may be more likely to overflow storage with logfiles. And have smaller and weaker storage implementations. (MicroSD cards instead of NVMe drives...)

Parts of a system

CPU	Network
Memory	Software
Disk	Cooling
Op. System	Display

I think these categories are useful, even if not perfectly orthogonal.

CPU

If it boots and runs, CPU probably OK. But,

Check the temperature

Check the firmware or BIOS

Consider system-specific CPU diagnostic

Is it the CPU you expect?

Ethernet switches with data-dependent packet corruption

Memory

How much is being used?

Does it all report in?

Extra credit – memory diagnostic

I have encountered a situation where memory failed in a way that only half appeared present.

Is some being used for video support?

On a router, is too much memory available for packet buffers, leading to bufferbloat?

Disks

SMART error reports

Are they all present?

Are any unexpectedly full or empty?

Full disk – an automated procedure failed to mount the special filesystem needed, so / got full instead.

Operating System

Date and Time

Uptime

Logs

Kernel log

Many operations, especially network operations, depend on the correct time.

Uptimes of less than 60 days, please. Unless you have no-reboot kernel updates.

You will need the logs as you dive more deeply into the problem.

Errors in the kernel log?

Network

Hardware – look at the lights

Software – check interface names

Software – check IP addresses

Debian, by default, names Ethernet interfaces according to the attaching bus and the position on that bus. Quite predictable, as long as you have complete and correct knowledge of all bus configurations.

Ask me what happens if you remove a SAS HBA in order to be certain that the cable you order for the replacement LTO tape drive will fit at both ends...

Software

What is installed?

Is it updated?

Is it what you think it is?

Are there any unusual software repositories in use?

Is there unusual locally installed software?

Is the system being updated?

Is the system obviously corrupt?

Software

What is running now?

What runs on a scheduled basis?

Is anything running that shouldn't?

Are the expected services running?

Is anything running belonging to an ex-employee?

Cooling

Are the fans running?

Is the AC running?

Back in the days of disk drives the size of washing machines that held 256MB …

Harder if the system is remote.

Display

Simple video diagnostic

.

Specific Commands

CPU	Network
Memory	Software
Disk	Cooling
Op. System	Display

My categories again.

This is the section you could convert to a checklist, or a shell script. May want to check that needed tools are installed.

All of the examples are from Debian, so Redhat / SUSE / others will have more homework.

CPU

$ lscpu | grep "Model name" # inxi -c | head -1

sensors   # inxi -s, inxi -xD

Is it the CPU you expect? (X100 ...)

The sensors command can provide temperature data.

CPU

```
$ fwupdmgr get-updates
Devices with no available firmware updates:
 • SSD 970 EVO 500GB
 • TPM
 • UEFI dbx
Dell Inc. OptiPlex 5055 Ryzen APU
│
│ └─System Firmware:
│     Device ID:          86916062c3d836 ...
│     Summary:            UEFI System Resource Table device ...
│     ...
│
├─OptiPlex 5055 Ryzen APU System Update:
│     New version:     1.12.0
│     Remote ID:      lvfs
│     Release ID:     89520
│     Summary:        Firmware for ... 5055 Ryzen APU
│
```

Does the CPU need firmware or BIOS updates?

Memory

```
$ free -h     # inxi -m
       total    used   free
Mem:     14Gi    10Gi  1.3Gi
Swap:    14Gi  1.9Gi    13Gi


       shared  buff/cache   avail
Mem:     79Mi        2.8Gi   3.7Gi
```

Output re-arranged to fit on slide.

Is it the expected amount?

Is the 'avail' amount as expected?

Memory

```
# inxi -m

Memory: RAM: total: 31.32 GiB used: 5.87 GiB
        (18.7%)

        Array-1: capacity: 32 GiB slots: 4 EC:
          None

        Device-1: DIMM3 size: 8 GiB spd: 1600 MT/s

        Device-2: DIMM1 size: 8 GiB spd: 1600 MT/s

        Device-3: DIMM4 size: 8 GiB spd: 1600 MT/s

        Device-4: DIMM2 size: 8 GiB spd: 1600 MT/s
```

An alternative view on a different system.

Disks

```
$ df -h | egrep -e "(dev|Used)"    # inxi -p
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda3        19G   11G  7.0G  61% /
tmpfs            16G  2.3M   16G   1% /dev/shm
/dev/sda7       110G   37G   68G  36% /var
/dev/sda6       293G  149G  130G  54% /tmp
/dev/nvme0n1p1  1.4T  627G  650G  50% /home
/dev/sda1       6.3G  978M  5.0G  17% /boot
/dev/nvme1n1p1  1.8T  730G 1011G  42% /mnt/b
```

Do all of the disks report in?

Are any unexpectedly full or empty?

Disks

```
# smartctl -H /dev/sda3  | grep self-assess
SMART ... self-assessment test result: PASSED


# smartctl -H /dev/nvme0n1p1 | grep self-assess
SMART ... self-assessment test result: PASSED


# smartctl -H /dev/nvme1n1p1 | grep self-assess
SMART ... self-assessment test result: PASSED
```

Operating System

```
$ date
Sun 11 Jan 2026 05:21:37 PM CST


$ uptime
 17:22:40 up 331 days,  5:18,  2 users,
 load average: 0.25, 0.18, 0.17
```

Excessive uptimes may tell you something about the UPS protecting the system.

Operating System

```
$ ls /var/log -lhat | head
-rw-r-----  1 root adm  102K Jan 17 10:39
daemon.log
-rw-r-----  1 root adm  158K Jan 17 10:39 syslog
-rw-r-----  1 root adm  113K Jan 17 10:39 auth.log
-rw-r-----  1 root adm  3.3M Jan 17 10:38 messages
-rw-rw-r--  1 root utmp  18M Jan 17 10:36 lastlog
-rw-rw-r--  1 root utmp 109K Jan 17 10:36 wtmp
...
```

Are log files being updated?

Operating System

```
# dmesg -l warn,err,crit,alert,emerg
[ 0.000000] secureboot: Secure boot ...
[ 0.319339] ENERGY_PERF_BIAS: Set to ...
[ 0.319339] ENERGY_PERF_BIAS: View and ...
[ 0.339442] pmd_set_huge: Cannot satisfy ...
[ 1.322076] ACPI: Invalid active0 threshold
...
```

The dmesg command displays the in-memory contents of the kernel log. "-l" lets you select only particular log level messages. These are all warnings, it turns out.

Some systems may support a "warn+" syntax.

Network

Look at the lights

Network

```
$ inxi -in    # ip -a
Network:
  Device-1: Intel Ethernet I217-LM
  IF: eno1 state: up ...
  IP v4: 10.1.1.27/24 ...
  Device-2: Realtek ...
  IF: enp4s0 state: down ...
  WAN IP: 192.0.2.1
```

Inxi is a useful tool. This particular command will show device names and IP addresses.

Software

```
$ grep -v "#" /etc/apt/sources.list

$ grep -v -r "#"
            /etc/apt/sources.list.d

Or, "inxi -r"

# ls -lhat /usr/local

# ls -lhat /opt
```

What is installed on the system?
Or, at least, where did it come from?

Software

```
$ tail /var/log/dpkg.log

# debsums -cs

$ ps -aux | grep fired_employee
```

Are updates happening?

Is the installed software what it should be?

Is anything running that should not be?

Software

```
systemctl list-units --type=service

    --state=running

systemctl list-units --failed

ls -lhat /etc/cron*

crontab -l | grep -v "#"      #(as root)
```

What is running right now?
What should be running but is not?
What gets run on a regular basis?

Display

I have used the video display test at

https://www.eizo.eu/monitor-test/

to have some confidence in correct

operation.

Cooling

Are the fans running?

Is the A/C on?

Wrap-up

Great systems are lots of work. Andrew suggests:

http://sts.ono.at/blog/2012/02/01/a-systems-policy/

Summary – Questions?

Consider the type of system.

Divide and conquer.

Look for more than one problem.

Checklists are powerful tools.

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Thanks for listening.