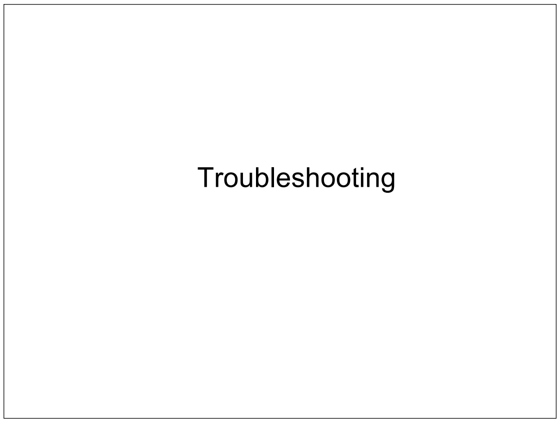
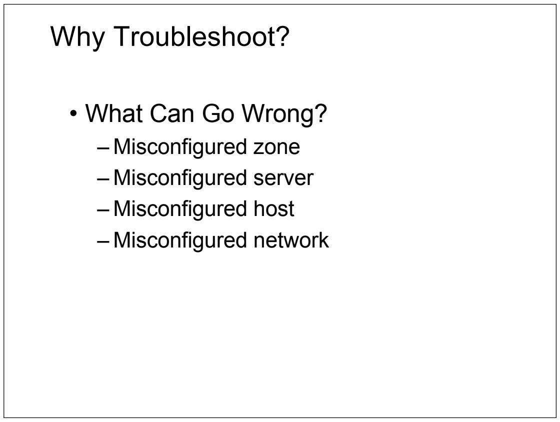
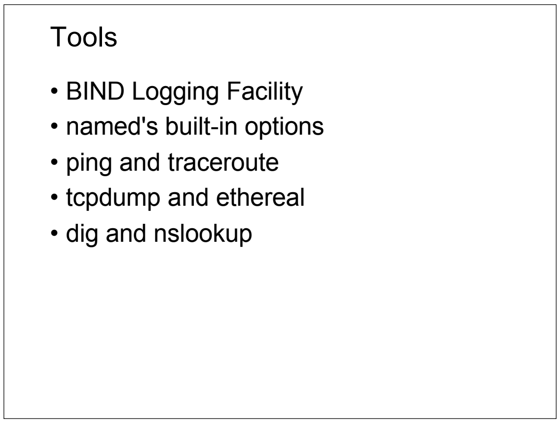


Troubleshooting



Why Troubleshoot?

- What Can Go Wrong?
  - Misconfigured zone
  - Misconfigured server
  - Misconfigured host
  - Misconfigured network



Tools

- BIND Logging Facility
- named's built-in options
- ping and traceroute
- tcpdump and ethereal
- dig and nslookup

The Best Way To Handle Mistakes

- Assume You Will Make Them
- Prepare The Name Server via Logging

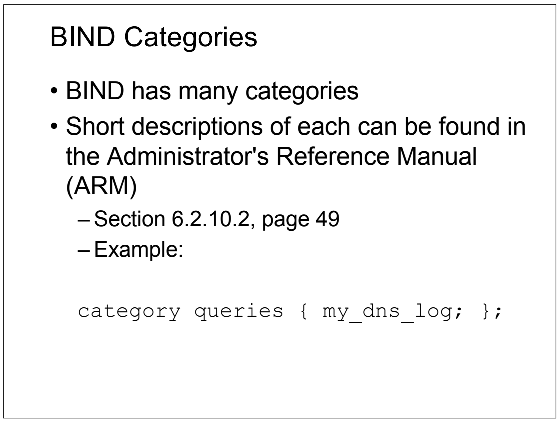
BIND Logging

- Telling named which messages to send
  - category specification
- Telling named where to send messages
  - channel specification

BIND channels

- BIND can use syslog
- BIND can direct output to other files
  - Example:

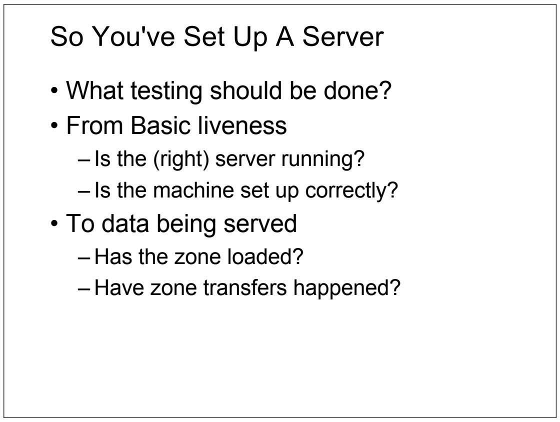
```
 channel my_dns_log {
 file "seclog" versions 3 size 10m;
 print-time yes;
 print-category yes;
 print-severity yes;
 severity debug 3;
};
```



BIND Categories

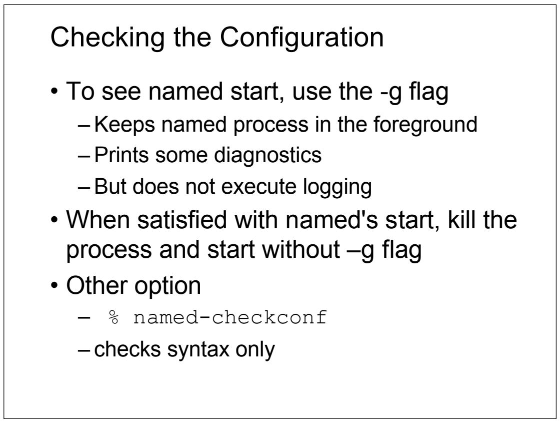
- BIND has many categories
- Short descriptions of each can be found in the Administrator's Reference Manual (ARM)
  - Section 6.2.10.2, page 49
  - Example:

```
category queries { my_dns_log; };
```



So You've Set Up A Server

- What testing should be done?
- From Basic liveness
  - Is the (right) server running?
  - Is the machine set up correctly?
- To data being served
  - Has the zone loaded?
  - Have zone transfers happened?



Checking the Configuration

- To see named start, use the -g flag
  - Keeps named process in the foreground
  - Prints some diagnostics
  - But does not execute logging
- When satisfied with named's start, kill the process and start without –g flag
- Other option
  - `% named-checkconf`
  - checks syntax only

Is the Server Running?

- Once the name server is thought to be running, make sure it is

```
% dig @127.0.0.1 version.bind chaos txt
```

- This makes the name server do the simplest lookup it can - its version string
- This also confirms which version you started
  - Common upgrade error: running the old version, forgetting to 'make install'

Is the Server Data Correct?

- Now that the server is the right one (executable)

```
% dig @127.0.0.1 <zone> soa
```

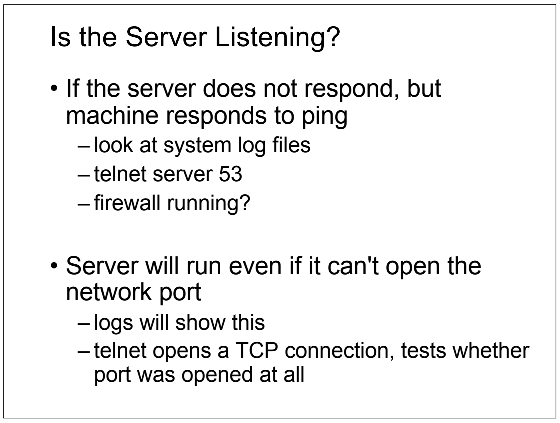
- Check the serial number to make sure the zone has loaded
- Also test changed data in case you forgot to update the serial number
- When we get to secondary servers, this check is made to see if the zone transferred

Is the Server Reachable?

- If the dig tests fail, its time to test the environment (machine, network)

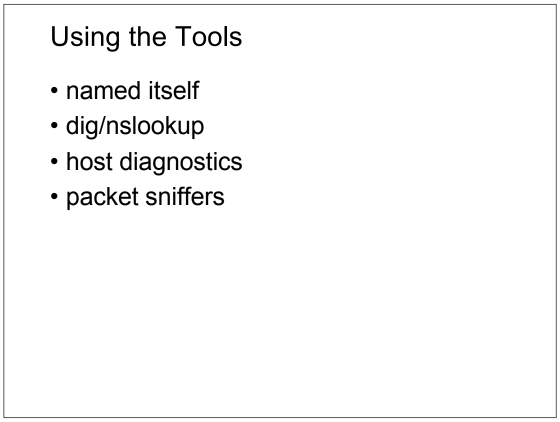
```
% ping <server machine ip address>
```

- This tests basic network flow, common errors
  - Network interface not UP
  - Routing to machine not correct
- Pinging 'locally' is useful, believe it or not
  - Confirms that the IP address is correctly configured



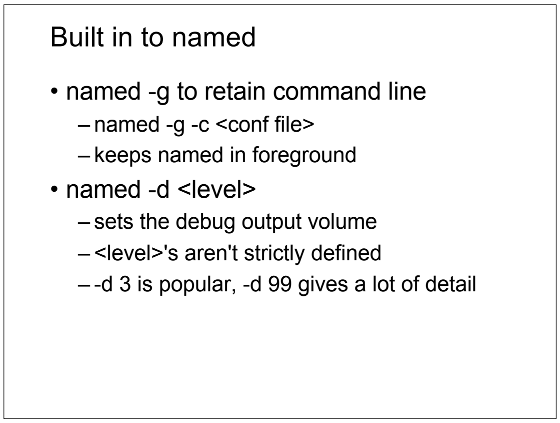
Is the Server Listening?

- If the server does not respond, but machine responds to ping
  - look at system log files
  - telnet server 53
  - firewall running?
- Server will run even if it can't open the network port
  - logs will show this
  - telnet opens a TCP connection, tests whether port was opened at all



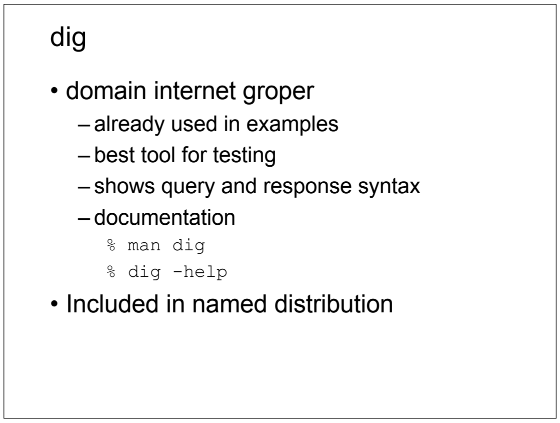
Using the Tools

- named itself
- dig/nslookup
- host diagnostics
- packet sniffers



Built in to named

- named -g to retain command line
  - named -g -c <conf file>
  - keeps named in foreground
- named -d <level>
  - sets the debug output volume
  - <level>'s aren't strictly defined
  - -d 3 is popular, -d 99 gives a lot of detail

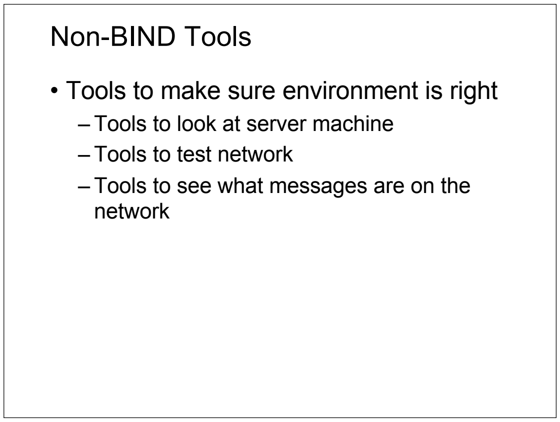


dig

- domain internet groper
  - already used in examples
  - best tool for testing
  - shows query and response syntax
  - documentation

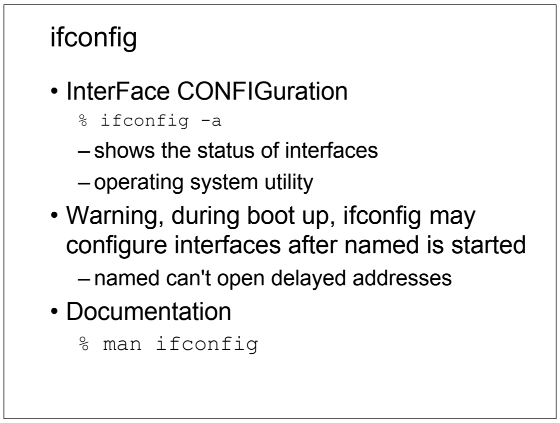
```
% man dig
% dig -help
```

- Included in named distribution



Non-BIND Tools

- Tools to make sure environment is right
  - Tools to look at server machine
  - Tools to test network
  - Tools to see what messages are on the network



ifconfig

- InterFace CONFIGuration

```
% ifconfig -a
```

  - shows the status of interfaces
  - operating system utility
- Warning, during boot up, ifconfig may configure interfaces after named is started
  - named can't open delayed addresses
- Documentation

```
% man ifconfig
```

ping

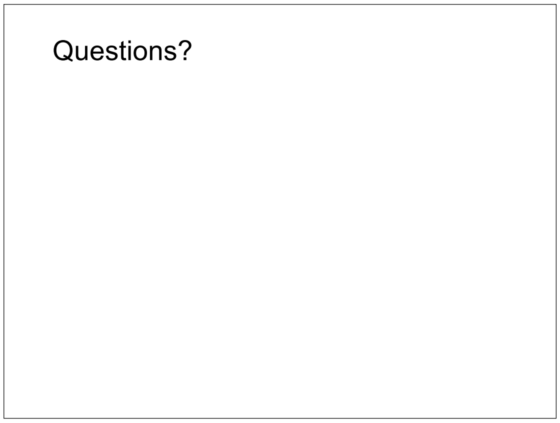
- Checks routing, machine health
  - Most useful if run from another host
  - Could be reason "no servers are reached"
  - Can be useful on local machine - to see if the interface is properly configured

traceroute

- If ping fails, traceroute can help pinpoint where trouble lies
  - the problem may be routing
  - if so - it's not named that needs fixing!
  - but is it important to know...

tcpdump and ethereal

- Once confident in the environment, problems with DNS setup may exist
- To see what is happening in the protocol, use traffic sniffers
- These tools can help debug "forwarding" of queries
- ethereal can be retrieved from
  - http://www.ethereal.com



Questions?