Troubleshooting and fixing networks

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1

Contents

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Methods for maintenance

- Proactive

  - FCAPS

  - ITIL

  - TMN

- Reactive

3

FCAPS

- Fault management

- Configuration management

- Accounting management

- Performance management

- Security management

4

Routine management tasks

- Configuration changes

- Replacement of older and failed hardware

- Scheduled backups

- Updating software

- Monitoring network performance

Managing network changes

- Impacts productivity

- Don't make changes during business hours

- Make users aware of changes

- Urgent tasks might need to be dealt with immediately

6

Documenting the network

- Logical topology diagram

- Physical topology diagram

- Listing of interconnections

- Inventory of network equipment

- IP address assignment

- Configuration information

- Original design documents

7

Restoration after failure

- Duplicate hardware

- Operating system and application software

- Backup of device configuration information

8

Troubleshooting methods

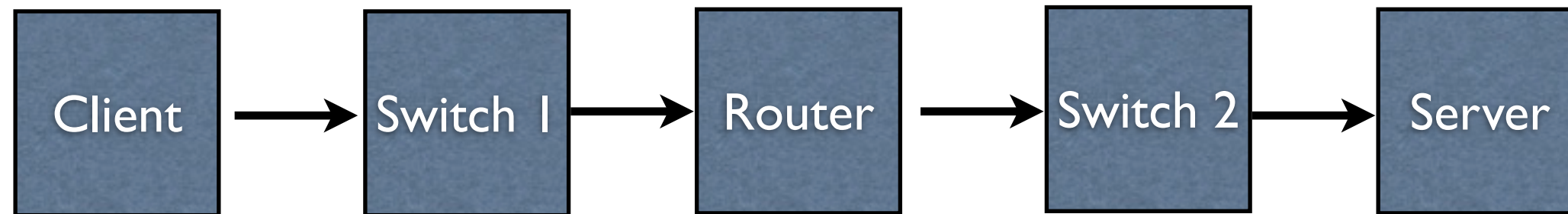Problem report → Problem diagnostics → Problem resolution
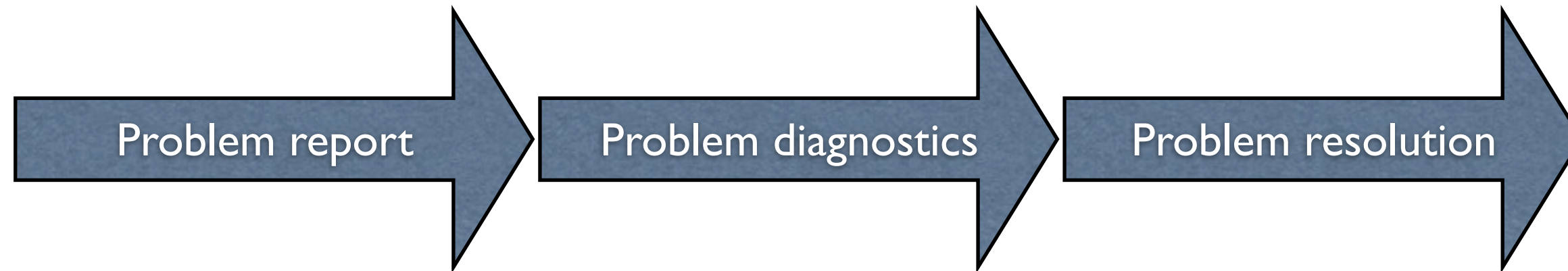
- Collect information

- Examine collected information

- Eliminate potential causes

- Hypothesize underlying cause

- Verify hypothesis

9

The value of a structured approach

- Random

- "Shoot from the hip"-method

Methods

OSI model

Top down

| Layer 7 |
| Layer 6 |
| Layer 5 |
| Layer 4 |
| Layer 3 |
| Layer 2 |
| Layer 1 |

Bottom up

Client → Switch 1 → Router → Switch 2 → Server

11

Selecting method

- A computer lab at a university contains 48 PCs. 24 of the PCs cannot access the Internet, the other 24 can. The 24 PCs that can't access the Internet today could yesterday. Which troubleshooting method would be appropriate to use?

Problem reporting

- Identify indicators pointing to the underlying cause of the problem

- Find evidence that can be used to eliminate potential causes

- What is occurring on the network?

- What should be occurring on the network?

13

Troubleshooting in network maintenance

- Relationship between maintenance and troubleshooting tasks

- Maintaining current network documentation

- Establishing a baseline

- Change management

14