

Computer Fundamentals: Hardware and Network Troubleshooting

THE TROUBLESHOOTING METHODOLOGY



Overview



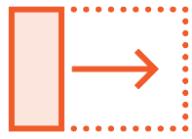
- Identify the problem**
- Establish a theory of probable cause**
- Test the theory**
- Establish a plan of action**
- Verify system functionality**
- Document findings**



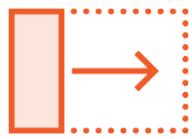
Identify the Problem



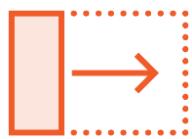
Identify the Problem



Ensure the problem is properly understood



Do not confuse symptoms with being the problem



Determine if the symptoms can be recreated





Question the user

- What were they doing?
- Exact error message details

What has changed?

- Are there system restore points or backups?
- Configuration settings
- Updates applied
- Network changes

Review relevant logs

- User device
- Servers, network devices



Identify the Problem: Example



I can't save new customer profiles using our system!



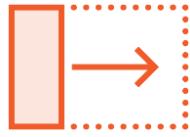
Is there an error message?
When did this start happening?
Were there any recent system changes?
Do other apps work?
Are others affected?



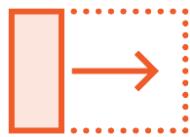
Establish a Theory of Probable Cause



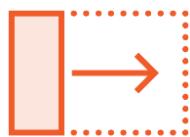
Establish a Theory of Probable Cause



What caused the problem symptoms?

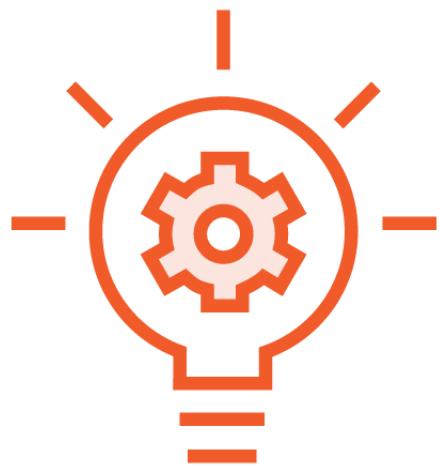


There could be more than one probable cause; prioritize by likelihood



In case of inability to list probable causes, escalate





Consider the obvious

- Power unplugged
- Cable not plugged in all the way
- Chip/card not plugged in all the way

For network issues

- Network device firmware updates
- Network congestion

Consult internal/external knowledgebase



Establish a Theory of Probable Cause



I can't save new customer profiles using our system!



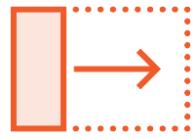
No error messages.
This just started happening
again (esp. workday).
The system was recently
updated.
Other systems/applications
haven't changed?
Others are not affected.



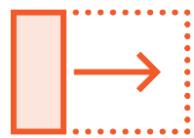
Test the Theory



Test the Theory

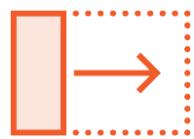


Select the most likely problem cause



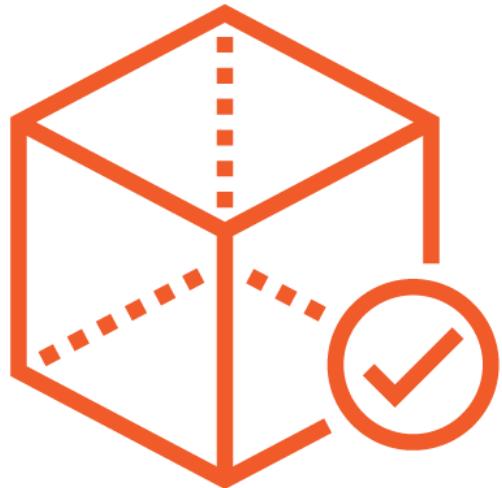
Determine how to best test the most likely problem cause

If applicable, backup data and configurations



In case of inability to test probable cause, escalate





Test the theory

- Change one thing at a time

Determine the root cause

Upon theory failure

- Establish a new theory
- Escalate the problem



Test the Theory: Example



I can't save new customer profiles using our system!



Check network status (ipconfig, ifconfig, ping, tracert)

Re-establish network connection

Simulate a busy network

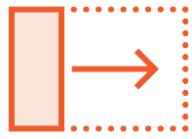
Test saving new customer profiles



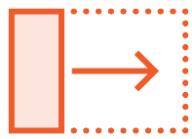
Establish a Plan of Action



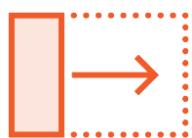
Establish a Plan of Action



Determine how to roll out the fix (if applicable on a larger scale)

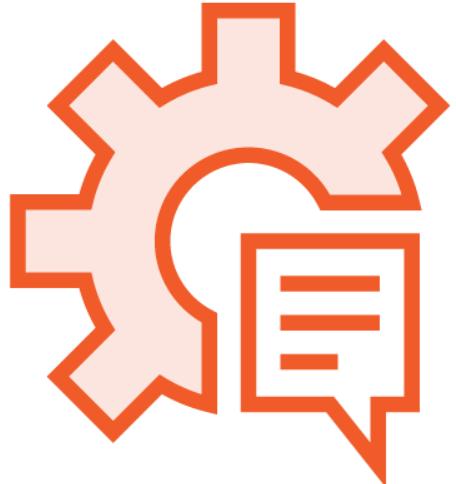


Backup data and configurations



In case of inability to execute plan, escalate





Determine solution scope

- User device (s)
- Server(s)
- Network devices (s)

Plan solution implementation

Put the solution into motion

- Backup affected system first



Establish a Plan of Action: Example



I can't save new customer profiles using our system!



Patch affect user system
(also updates drivers)

Configure traffic shaping
to control network
congestion

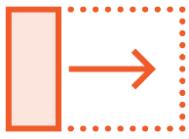
Increase available
bandwidth



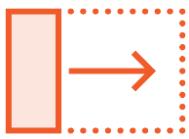
Verify System Functionality



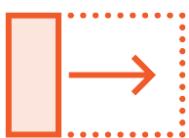
Verify System Functionality



Are affected users happy with the solution?



How can we ensure this problem is not repeated?



Track the implemented solution over time (logs, monitoring solutions)





Is the problem solved?

Consult SMEs if required

Have new problems been introduced?

Put preventative measures into effect



Verify System Functionality: Example



I can now save new customer profiles using our system, thank you!



You're welcome!

Let us know if the problem reoccurs.

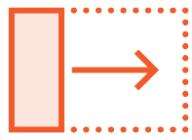
We will monitor the solution to the problem.



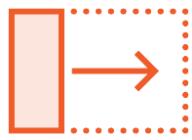
Document Findings



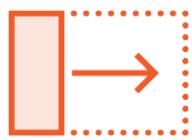
Document Findings



Are affected stakeholders happy with the solution?

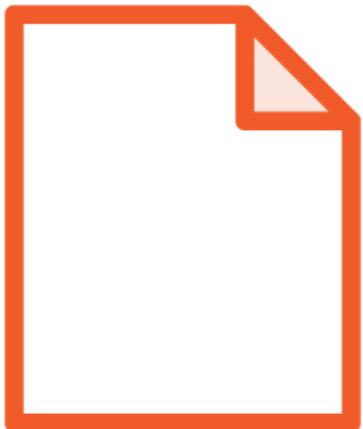


How can we ensure this problem is not repeated?



Track the implemented solution over time (logs, monitoring solutions)





Document the

- Problem
- Actions
- Result

Documentation through

- IT incident report
- Add to knowledgebase

Close help desk ticket

Update related training materials



Summary



- Identify the problem**
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