

# Computer Fundamentals: Hardware and Network Troubleshooting

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## 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

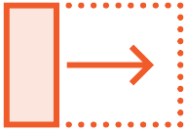


# Identify the Problem

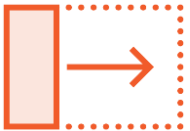
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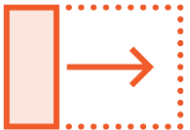
# Identify the Problem



**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?

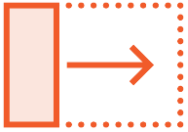


# Establish a Theory of Probable Cause

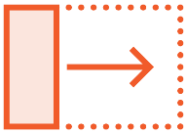
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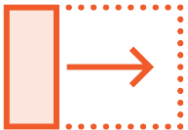
# Establish a Theory of Probable Cause



What caused the problem symptoms?

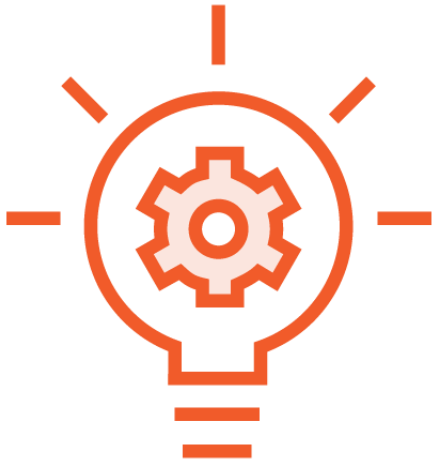


There could be more than one probable cause; prioritize by likelihood



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 (network).  
The system was recently  
updated.  
Other users/app permissions  
have changed?  
Others are not affected.

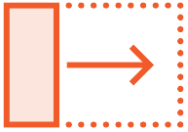


# Test the Theory

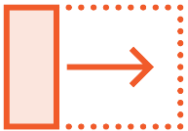
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# Test the Theory

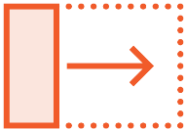


Select the most likely problem cause



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

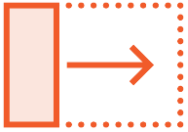


# Establish a Plan of Action

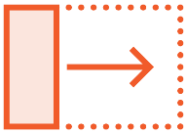
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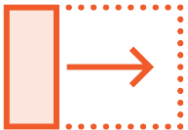
# Establish a Plan of Action



**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

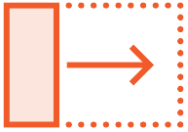


# Verify System Functionality

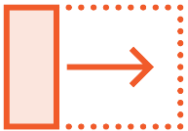
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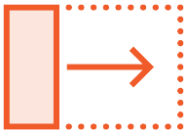
# Verify System Functionality



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.

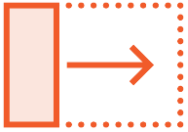


# Document Findings

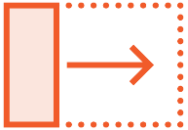
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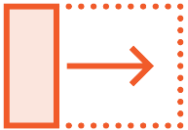
# Document Findings



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



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