

10: CELL PHONE PROBLEMS

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An International
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SUMMARY

When the call center agent of a cell phone carrier configures your new cell phone, they can misconfigure it and turn your shiny new cell phone into a useless brick. Therefore, you need to run a few tests of any cell phone that has been recently configured by a cell phone carrier.

TOPICS

- Misconfigured Cell Phone Causes Grief
- Explanation of What Happened
- How to Avoid The Same Disaster When You Get a Newly-Configured Cell Phone

MISCONFIGURED CELL PHONE CAUSES GRIEF

In August 2019, a California-based business owner purchased an iPhone 7 from an AT&T store:

While she was at the store, the salesperson used her own AT&T cell phone to call the new iPhone 7 successfully. phones or land-line phones.

MISCONFIGURED CELL PHONE CAUSES GRIEF (continued)

While she was at the store, California-based business owner used her own AT&T new iPhone 7 to successfully call the salesperson's cell phone.

MISCONFIGURED CELL PHONE CAUSES GRIEF (continued)

However for the next 8 weeks, none of the California-based business owner's friends, relatives, or clients were able to call the new iPhone 7 with their own cell phones or their own land-line phones.

MISCONFIGURED CELL PHONE CAUSES GRIEF (continued)

During the 8 weeks of cell phone trouble, the business owner went back to the original "AT&T Store" several times and the salespeople there were always able to use their own AT&T cell phones to call the business owner's new iPhone 7

MISCONFIGURED CELL PHONE CAUSES GRIEF (continued)

During these multiple visits to the "AT&T Store", the business owner was always able to use her new iPhone 7 to call the salesperson's AT&T cell phones.

MISCONFIGURED CELL PHONE CAUSES GRIEF (continued)

After 8 weeks of phone calls to AT&T's "customer service call center", the business owner's new iPhone was finally reachable from the cell phones and land line phones of her friend, relatives, and business clients.

EXPLANATION OF WHAT HAPPENED

- Salespeople at cell phone carrier stores such as "AT&T Stores" do not configure cell phones. To get a new cell phone configured, they phone the same "AT&T customer service call center" that you call and ask a "AT&T customer center agent" to configure a new cell phone.

EXPLANATION OF WHAT HAPPENED (continued)

- If the call center customer service agent screws up the configuration process, you end up with a cell phone that does not work right a.k.a. a cell phone from hell!!

EXPLANATION OF WHAT HAPPENED (continued)

- It tooks 8 weeks of phone calls to AT&T's "customer service call center" before a call center agent that was smart enough and determined enough to resolve the problem was located.

EXPLANATION OF WHAT HAPPENED (continued)

- In a nutshell:
The new iPhone could call other cell phones that were using the cell phone service of AT&T.
Other cell phones could call the new iPhone
Cell phones that were using non-AT&T carriers and land-line phone were unable to call the new iPhone

BLOCK DIAGRAM OF HOW A CELL PHONE WORKS

See the next slide:

Cell phone

connects via radio waves to
cell tower (of carrier)

connects to

Base Station Controller ("BSC" of carrier)

connects to

Multiple Telephone Switching Office
("MTSO" of carrier)

connects to

Mobile Switching Center ("MSC" of carrier)

connects to

Public Switched Telephone Network (PSTN)

BLOCK DIAGRAM OF HOW A CELL PHONE WORKS

The next slide uses only the cell
system acronyms to save on space:

Cell phone
connects to
cell tower
connects to
"BSC"

connects to
"MTSC"

connects to
"MSC"

connects to
"PSTN"

EXPLANATION OF WHAT HAPPENED (continued)

- When an AT&T cell phone calls an AT&T cell phone, the call is routed between "Mobile Switching Centers" ("MSCs") that belong to AT&T and the call is NOT routed through the "Public Switched Telephone Network":

Cell phone
connects to
cell tower
connects to
"BSC"

connects to
"MTSC"

connects to
"MSC"

connects to
"PSTN"

Cell phone
connects to
cell tower
connects to
"BSC"

connects to
"MTSC"

connects to
"MSC"

connects to
"PSTN"



EXPLANATION OF WHAT HAPPENED (continued)

- When an AT&T cell phone calls a cell phone of another cell carrier or a land-line phone, the call is routed out through the "Public Switched Telephone Network":

Cell phone
connects to
cell tower
connects to
"BSC"

connects to
"MTSC"

connects to
"MSC"

connects to
"PSTN"

Cell phone
connects to
cell tower
connects to
"BSC"

connects to
"MTSC"

connects to
"MSC"

connects to
"PSTN"



EXPLANATION OF WHAT HAPPENED (continued)

- In the case of our friend's misconfigured AT&T cell phone, there was no connection from her cell phone out to the "Public Switched Telephone Network" ("PSTN") so she could not call any cell phones outside of the AT&T system nor could she call any land-line phones:

EXPLANATION OF WHAT HAPPENED (continued)

- The following diagram shows what happened when she tried to call a non-AT&T cell phone (or vice versa):

Cell phone
connects to
cell tower
connects to
"BSC"

connects to
"MTSC"

connects to
"MSC"

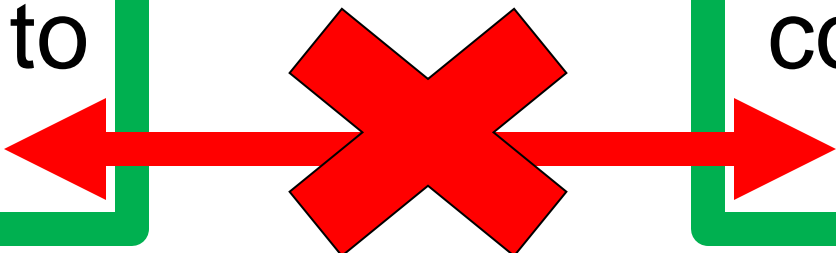
~~connects to~~
"PSTN"

Cell phone
connects to
cell tower
connects to
"BSC"

connects to
"MTSC"

connects to
"MSC"

connects to
"PSTN"



EXPLANATION OF WHAT HAPPENED (continued)

- The following diagram shows what happened when she tried to call a land-line phone (or vice versa):

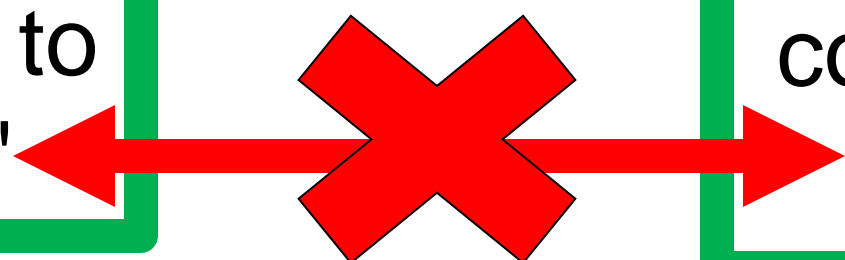
Cell phone
connects to
cell tower
connects to
"BSC"

connects to
"MTSC"

connects to
"MSC"

~~connects to~~
"PSTN"

Land-line
phone
connects to
"PSTN"



HOW TO AVOID THE SAME DISASTER WHEN YOU GET A NEWLY-CONFIGURED CELL PHONE

- When you get a newly-configured cell phone:

Use the new cell phone to call a cell phone that is using a different cell phone carrier.

Use a cell phone that is using a different cell phone carrier or a landline to call the new cell phone

REFERENCES

- https://en.wikipedia.org/wiki/Cellular_network
- https://en.wikipedia.org/wiki/Base_transceiver_station
- https://en.wikipedia.org/wiki/Base_station_subsystem
- https://en.wikipedia.org/wiki/Mobile_Telephone_Switching_Office

REFERENCES (continued)

- [https://en.wikipedia.org/wiki/Network_switching_subsystem#Mobile_switching_center_\(MSC\)](https://en.wikipedia.org/wiki/Network_switching_subsystem#Mobile_switching_center_(MSC))