

TWO TYPES OF CELLULAR PROVIDERS: MVNOS AND MNOS

by Francis Chao
fchao2@yahoo.com



PCC

TuCS COMPUTER SOCIETY



Web location for this
presentation:

<http://aztcs.apcug.org>

Click on

"Meeting Notes"

SUMMARY

There are two types of cellular service providers: MVNOs and MNOs. MVNOs usually have cheaper and more generous "data caps" for tethering cell phones to other devices.

TOPICS

- Two Types of Cellular Operators

BASIC CONFIGURATION OF THE CELL PHONE SYSTEM

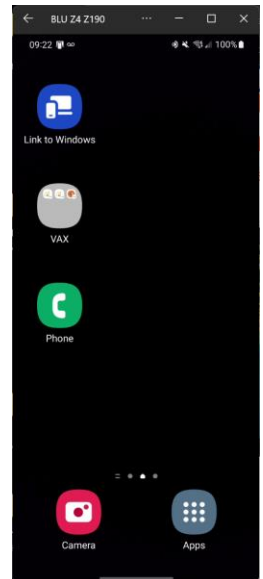
- For most of us, most cell phones have BOTH a radio connection to a cell phone tower AND a Wi-Fi connection to your broadband Internet provider. This gives your cell phone a much faster and almost unlimited connection to the Internet.

**Internet Cloud
(= "Data Plan"
in cell phone lingo)**

**Public Switched
Telephone Network
("PSTN")
= "Plain Old Telephone
Service" ("POTS")**



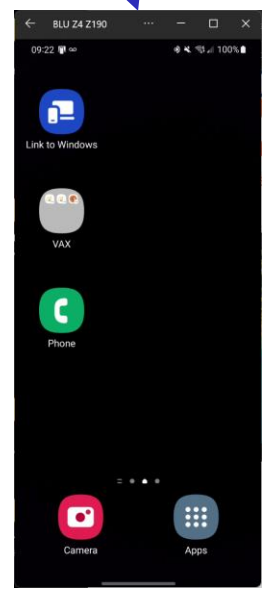
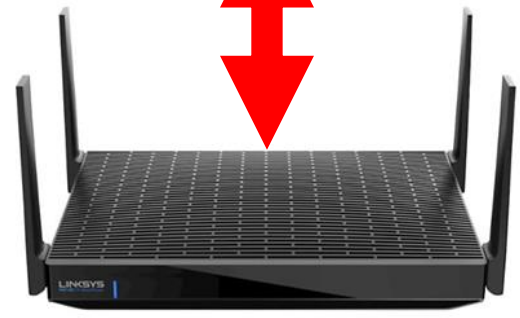
SIM

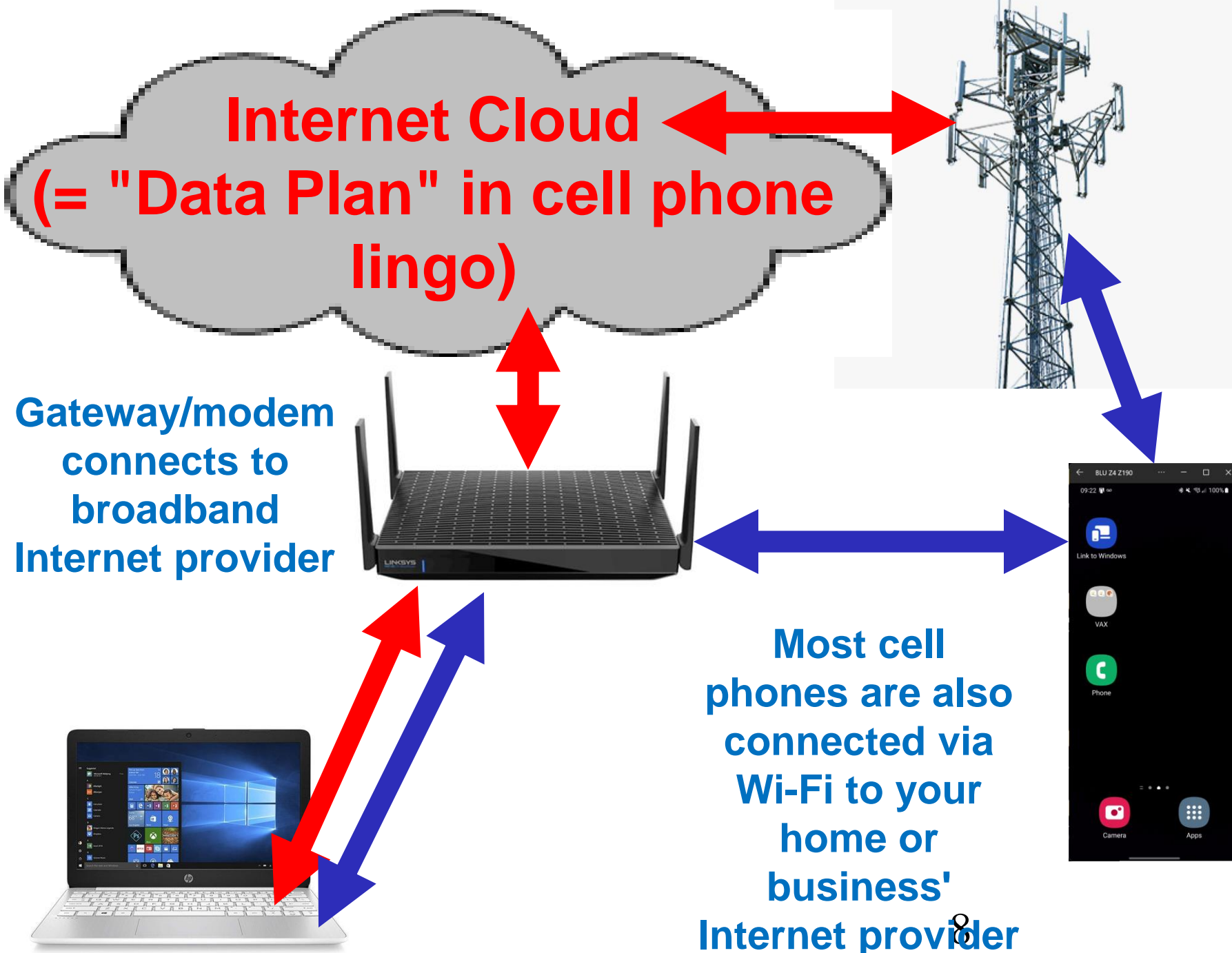


**Internet Cloud
(= "Data Plan" in cell phone
lingo)**



**Gateway/modem
connects to
broadband
Internet provider**





**Internet Cloud
(= "Data Plan" in cell phone
lingo)**

**Gateway/modem
connects to
broadband
Internet provider**

**Most cell
phones are also
connected via
Wi-Fi to your
home or
business'
Internet provider**

TWO TYPES OF CELLULAR PROVIDERS

- Cell phone operators that have cell towers and interconnecting infrastructure are called **"Mobile Network Operators"** (= "MNOs")
- Cell phone operators that do not have cell towers and do not have interconnecting infrastructure are called **"Mobile Virtual Operators"** ("MVNOs")

TWO TYPES OF CELLULAR PROVIDERS (continued)

- **"Mobile Network Operators"** (= "MNOs") have their own "Radio Access Network (= "RAN")
- **"Mobile Virtual Network Operators"** ("MVNOs") use/resell the "Radio Access Network" of a "Mobile Network Operator"

TWO TYPES OF CELL SERVICE PROVIDERS (continued)

- The "Radio Access Network" of a "Mobile Network Operator" looks like this:

Your cell phone
connects via radio waves to
cell tower transmitter/receiver (of MNO)
connects to
Base Station Controller (= "BSC" of MNO)
connects to
Multiple Telephone Switching Office
(= "MTSO" of MNO)
connects to
Mobile Switching Center(s)(="MSCs" of MNO)
connects to
Public Switched Telephone Network ("PSTN")

Cell phone

connects via radio waves to

cell tower transmitter/receiver (of MNO)

connects to

Base Station Controller (= "BSC" of MNO)

connects to

Multiple Telephone Switching Office

(= "MTSO" of MNO)

connects to

Mobile Switching Center(s)(="MSCs" of MNO)

connects to **BSS/OSS(Business support system)**

Public Switched Telephone Network ("PSTN")

Mobile Switching Center(s)
(="MSCs" of the MNO)

have a

BSS/OSS (Business support system)
that belongs to the
"Mobile Network Operator" (= MNO)

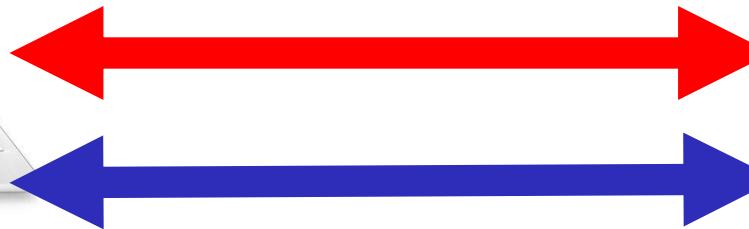
which then connects to the
BSS/OSS (Business support system)
that belongs to one or more
"Mobile Virtual Network Operators"
(= MVNOs)

When your FWA gateway (or your cell phone) connects to a Mobile Network Operator (MNO), it looks like this:

MNO's WIRELESS NETWORK INFRASTRUCTURE



**FWA
"GATEWAY"
PROVIDED
BY "MNO"**



When your cell phone connects to a Mobile Virtual Network Operator (MVNO), it looks like this:

MNO's RADIO ACCESS NETWORK ("RAN") INFRASTRUCTURE



MNO's BSS/OSS COMPUTERS

MVNOs BSS/OSS COMPUTERS

FWA
"GATEWAY"
PROVIDED
BY "MVNO"



**BLOCK DIAGRAM
SHOWING THE
RELATIONSHIP
BETWEEN AN MNO
AND IT'S MANY
MVNOs:**

T-MOBILE'S RADIO ACCESS NETWORK ("RAN")



T-MOBILE'S BSS/OSS COMPUTERS

**EARTHLINK'S
BSS/OSS
COMPUTERS**

**ULTRA
MOBILE'S
BSS/OSS
COMPUTERS**

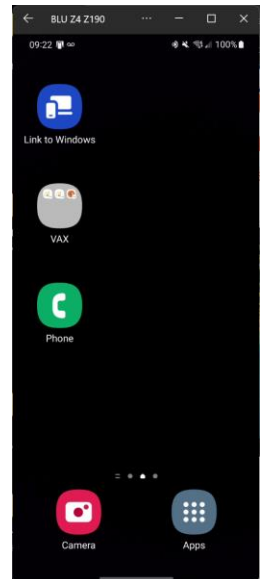
**METRO BY T-
MOBILE'S
BSS/OSS
COMPUTERS**

**Internet Cloud
(= "Data Plan"
in cell phone lingo)**

**Public Switched
Telephone Network
("PSTN")
= "Plain Old Telephone
Service" ("POTS")**



SIM



**Internet Cloud
(= "Data Plan" in cell phone
lingo)**



**SIM
INSIDE
FWA
"GATEWAY"
PROVIDED
BY "MNO"
OR "MVNO"**



LIST OF "MOBILE WIRELESS OPERATORS" (MNOs)

- Verizon
- T-Mobile
- Starry Internet
- USCellular
- AT&T

The above are the only cellular providers that have their own "Radio Access Networks".

MVNO DETAILS

- "Ultra Mobile" is an MVNO that resells T-Mobile cellular service. See <https://homeinternet.ultramobile.com/coverage> and <https://homeinternet.ultramobile.com/>

MVNO DETAILS (continued)

- Cricket Wireless
is an MVNO that resells "AT&T
Mobility".
<https://cricketwireless.com>

MVNO DETAILS (continued)

- "Mint Mobile" is an MVNO that resells "T-Mobile"
<https://mintmobile.com>

MVNO DETAILS (continued)

- "Broadband Q Wireless" is an MVNO that resells Verizon, T-Mobile, and AT&T.

MVNO DETAILS (continued)

- "Broadband Q Wireless"
(continued):
See
<https://www.broadbandqwireless.com>
m

MVNO DETAILS (continued)

- "Broadband Q Wireless"
(continued):
Contact:
Steven Rodden
s_rodde@hotmai.com
text: 850-820-2504
cell phone: 781-336-6652

MVNO DETAILS (continued)

- "Straight Talk" is an MVNO that resells AT&T, T-Mobile, and Verizon
To determine availability, please go to
<https://www.straighttalk.com/>

MVNO DETAILS (continued)

- "USCellular" is an small MNO that has it's own "Radio Access Network" equipment.
<https://www.uscellular.com>

MVNO DETAILS (continued)

- "AT&T Home Internet":
See
<https://www.att.com/>