Circuits

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Circuits

- Circuits were one per physical link
- Circuits are always connected

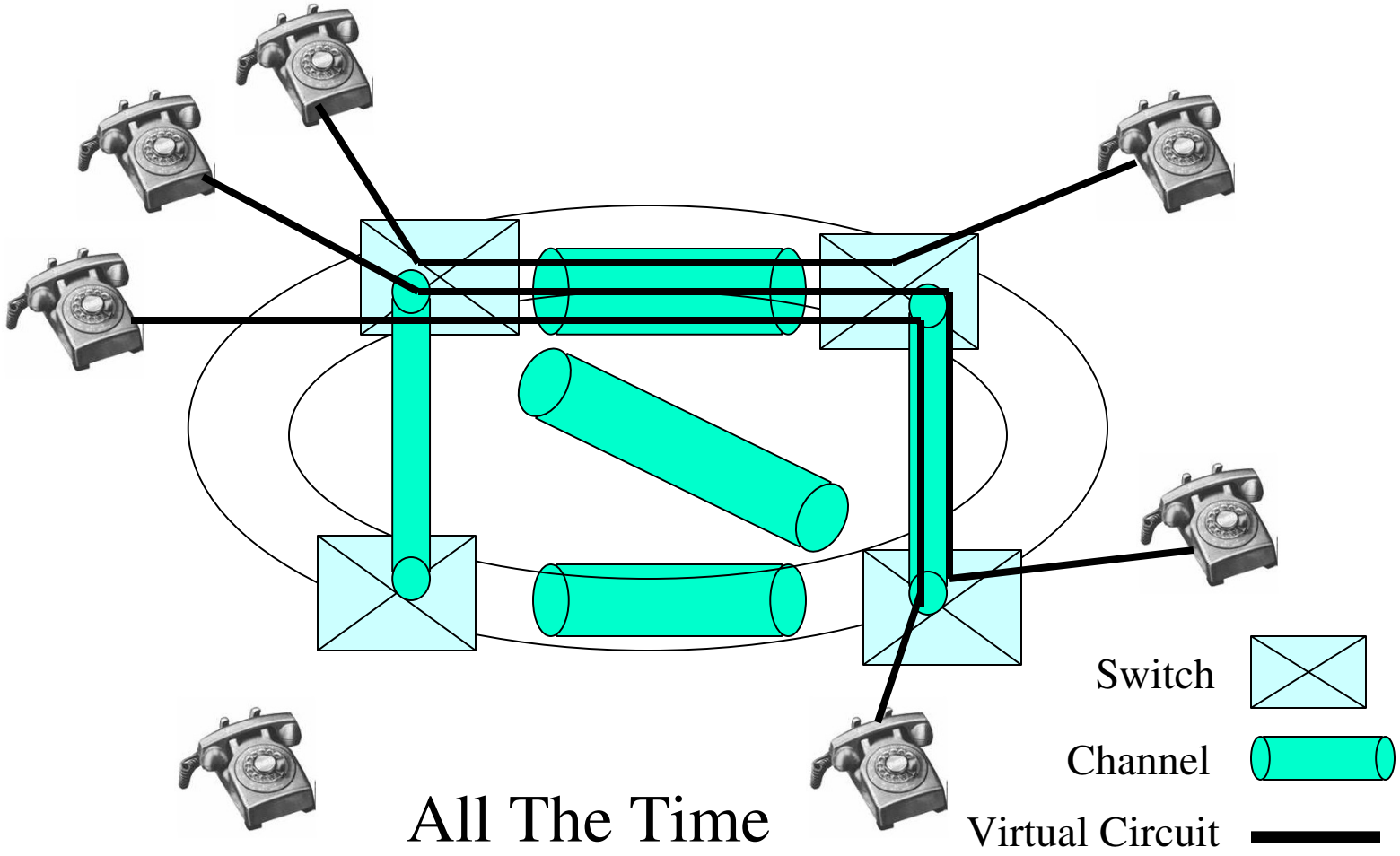
Multiplexing (Muxing)

- Scheme for sharing a physical link
- uses the likes of time (TDM) or frequency division (FDM)

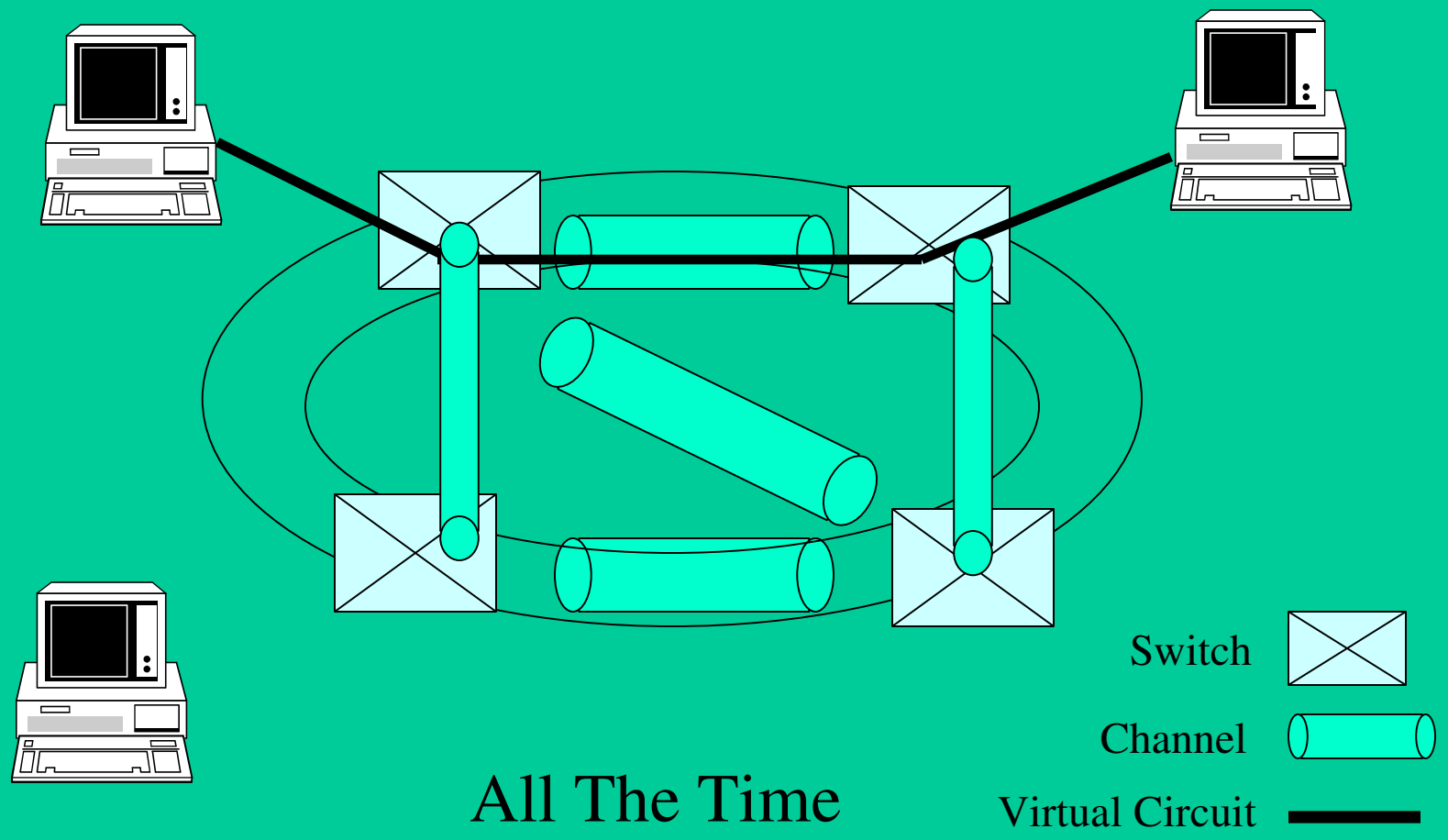
Virtual Circuits

- VC - seemingly always connected
- uses muxing
  - Time Division Multiple Access (TDMA)
  - Frequency Division Multiple Access (FDMA)
  - Code Division Multiple Access (CDMA)

Virtual Circuits



Permanent Virtual Circuit (PVC)

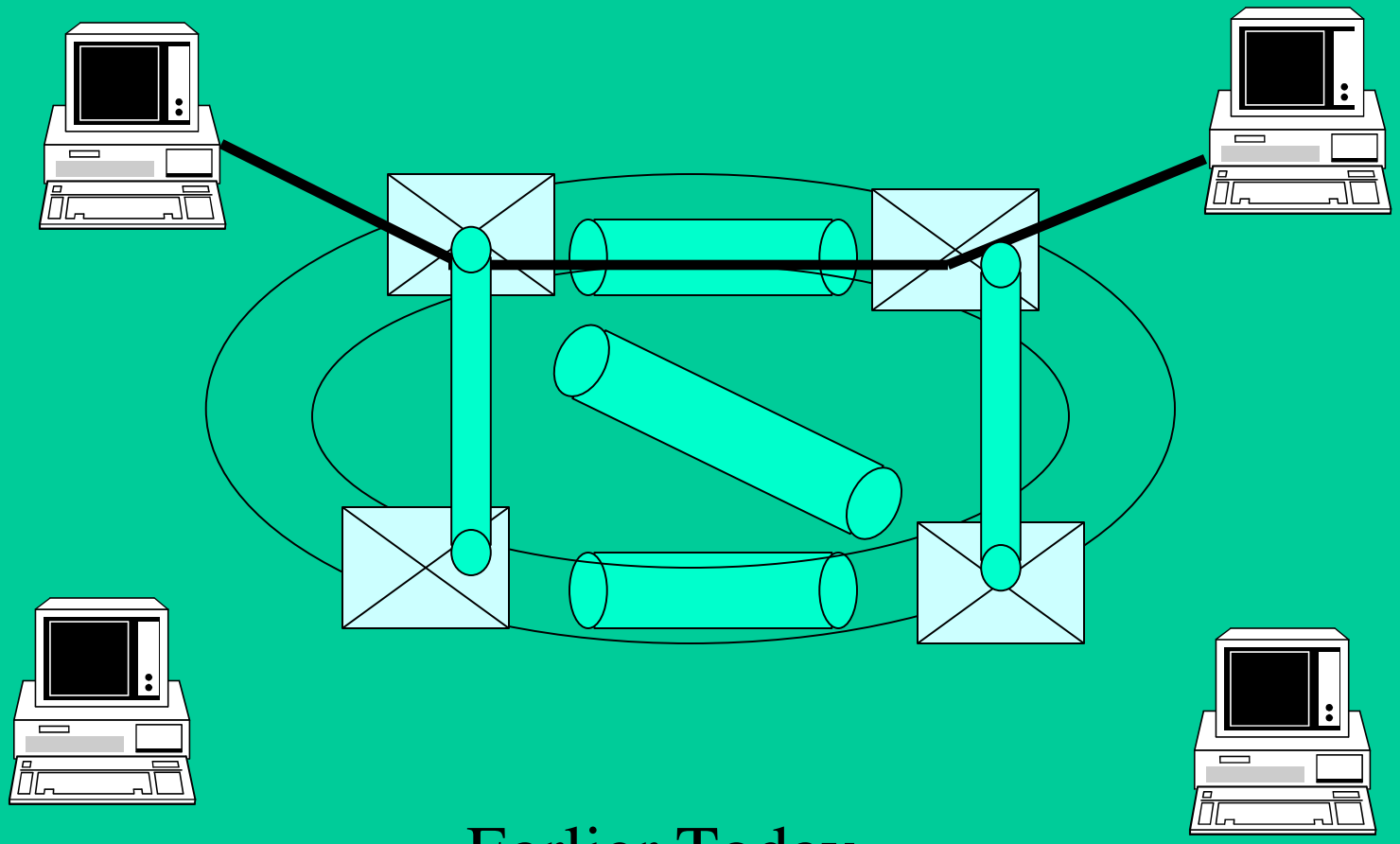


All The Time

Permanent Virtual Circuit (PVC)

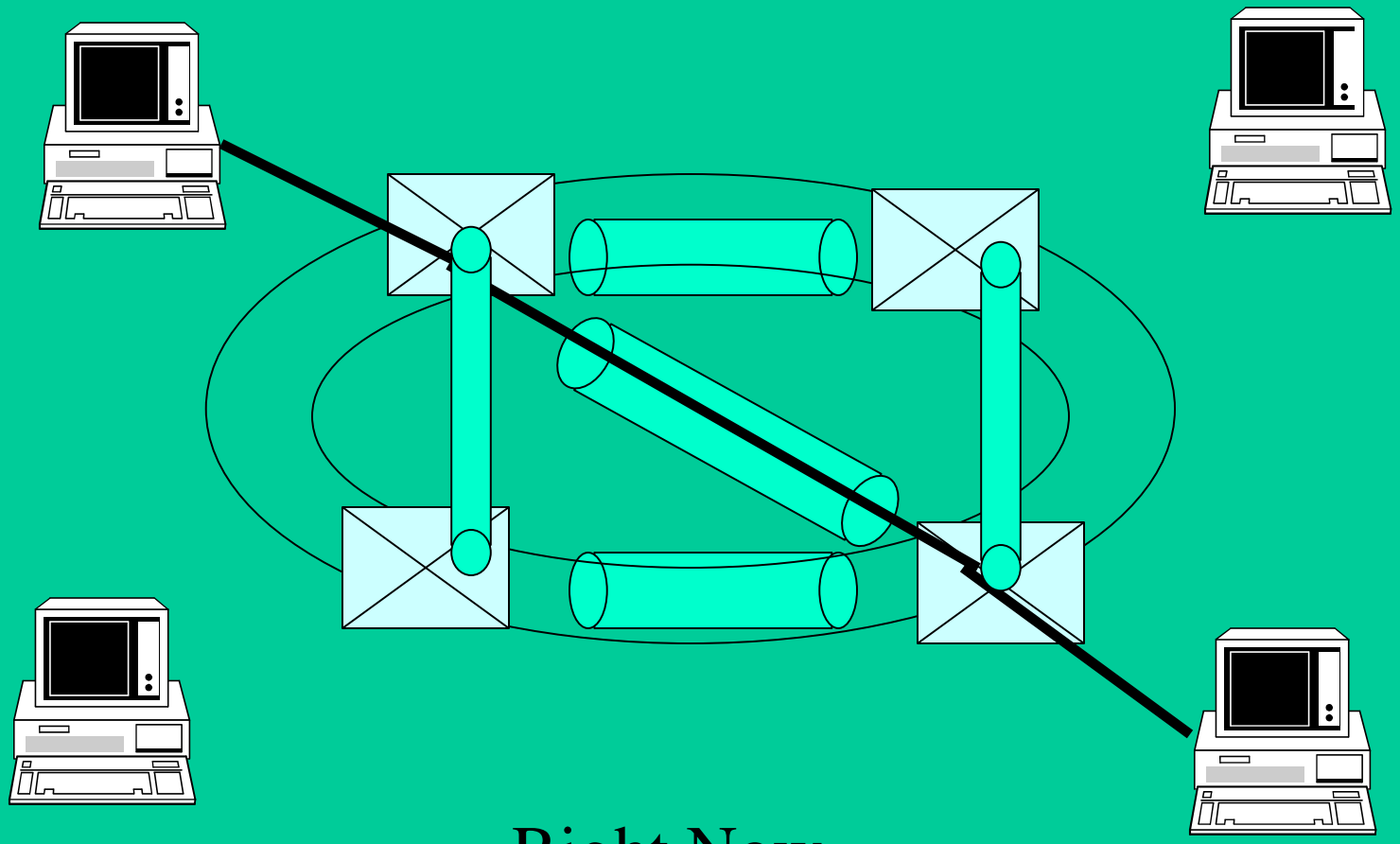
- End points and paths are fixed
- VC is available 24 X 7
- Pre-provisioned; bandwidth and services are both guaranteed and fixed
- Expensive
- Bandwidth may not be optimally used
- Analogy is a leased line

Switched Virtual Circuit (SVC)



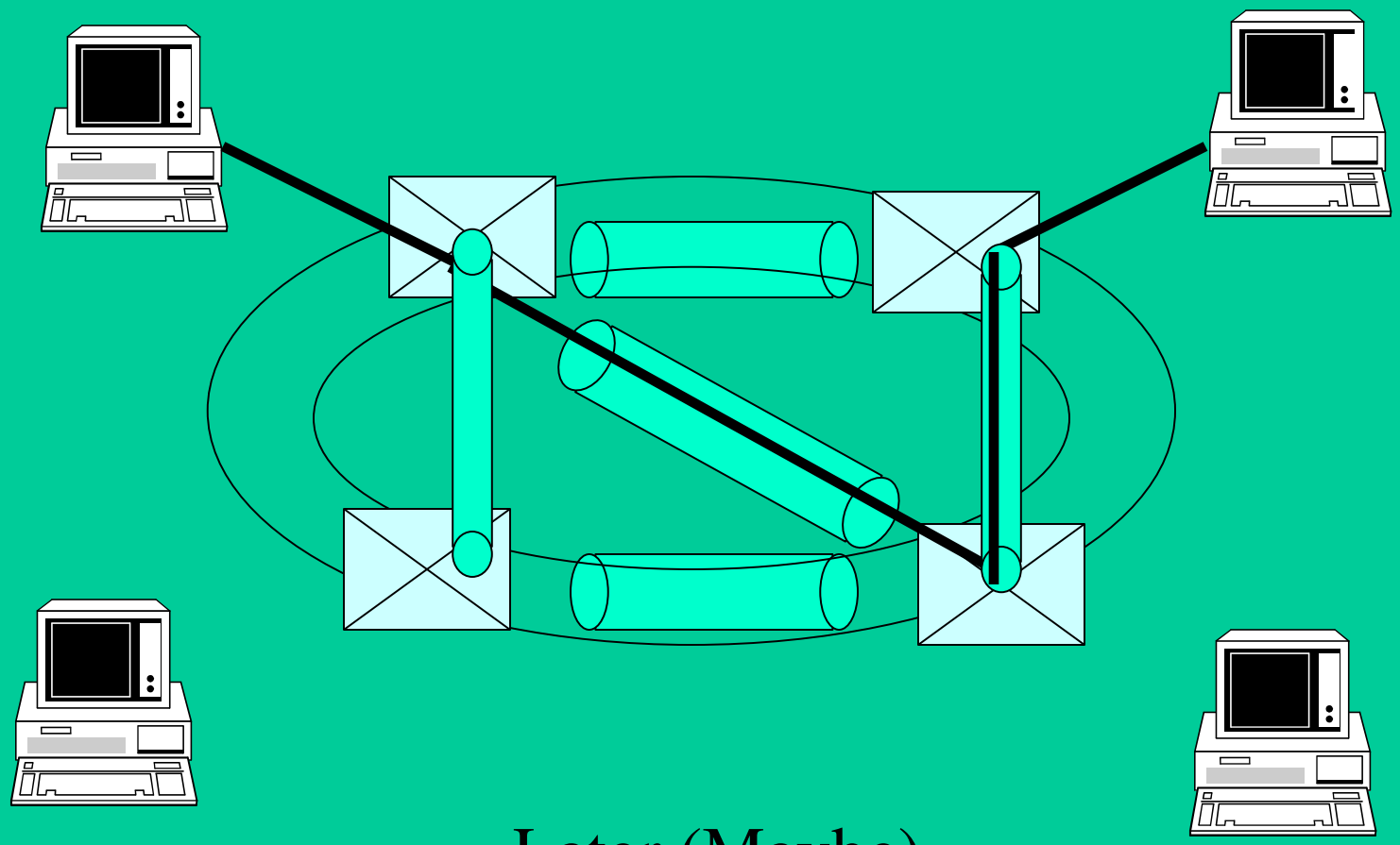
Earlier Today

Switched Virtual Circuit (SVC)



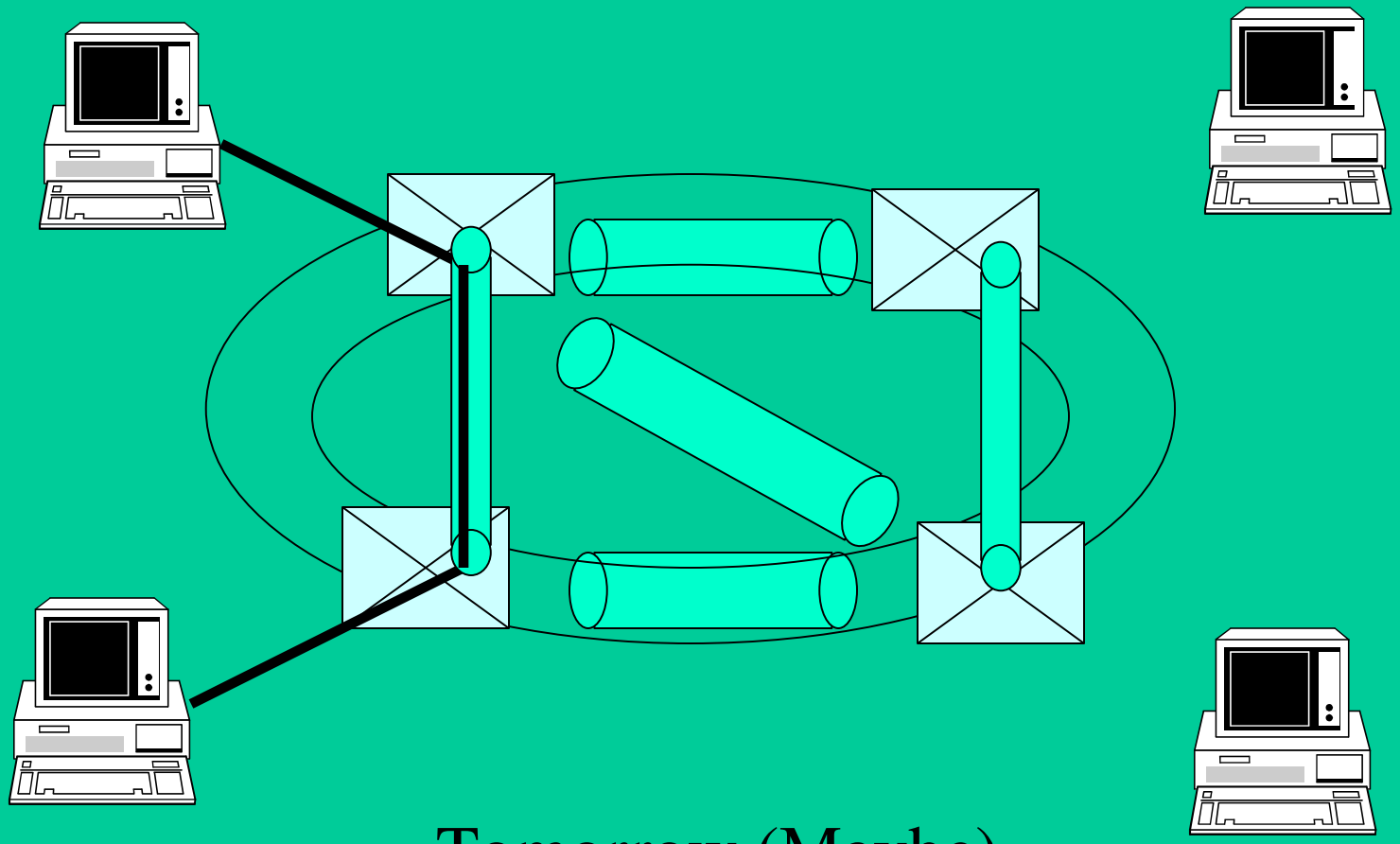
Right Now

Switched Virtual Circuit (SVC)



Later (Maybe)

Switched Virtual Circuit (SVC)



Tomorrow (Maybe)

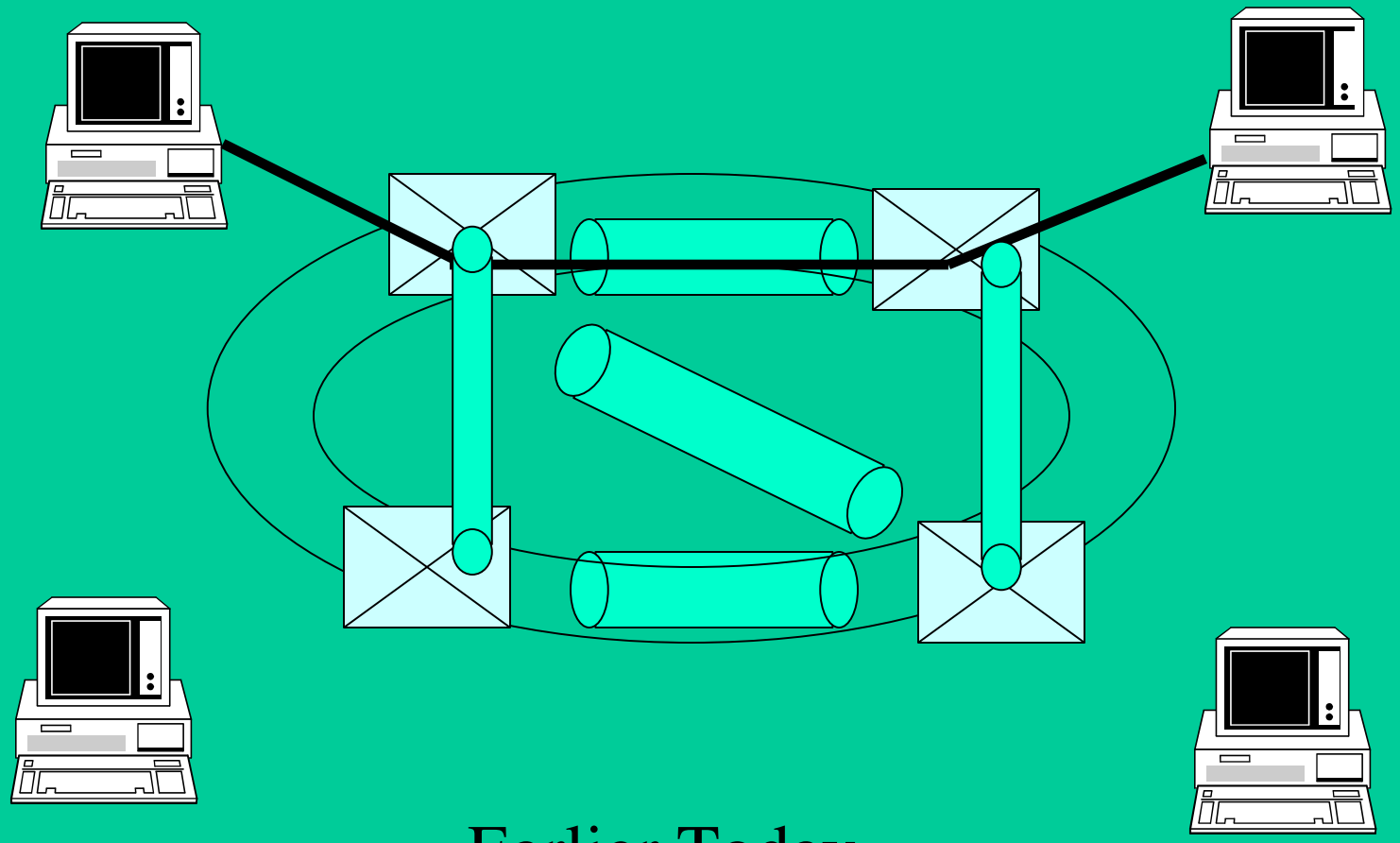
Switched Virtual Circuit (SVC)

- End points and paths can be different at different times
- Services and BW can be negotiated
- Cheaper
- VC may or may not be available all the time depending on network congestion
- Can ask for a minimum guaranteed BW

Switched Virtual Circuit (SVC)

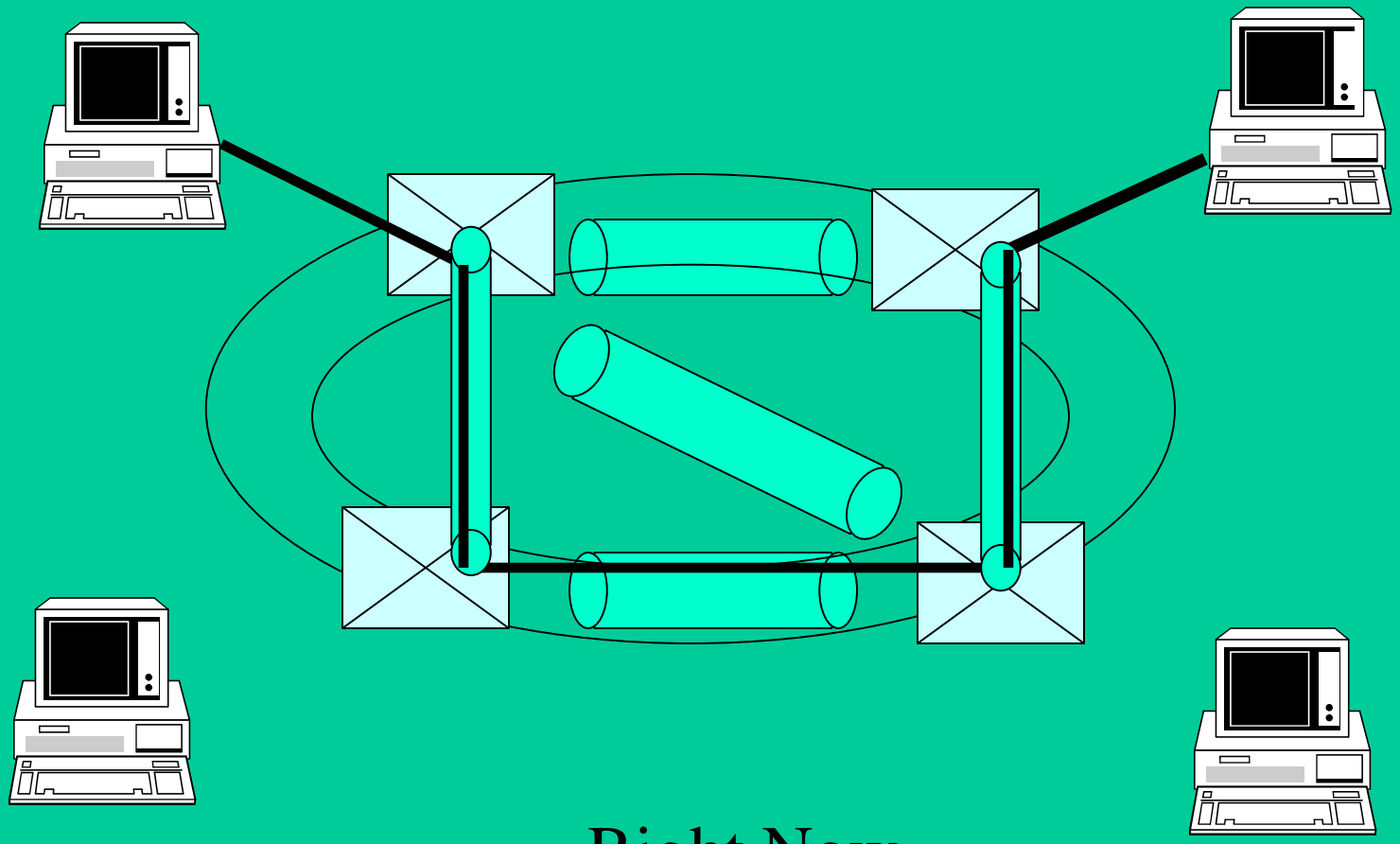
- Initially requested bandwidth may not be guaranteed but a lower bandwidth may be negotiated and granted
- Connection setup & tear down overhead
- Analogy is your regular and wireless phones (busy if network is congested, or called party is not available)

SPVC (Soft PVC or Semi-PVC)



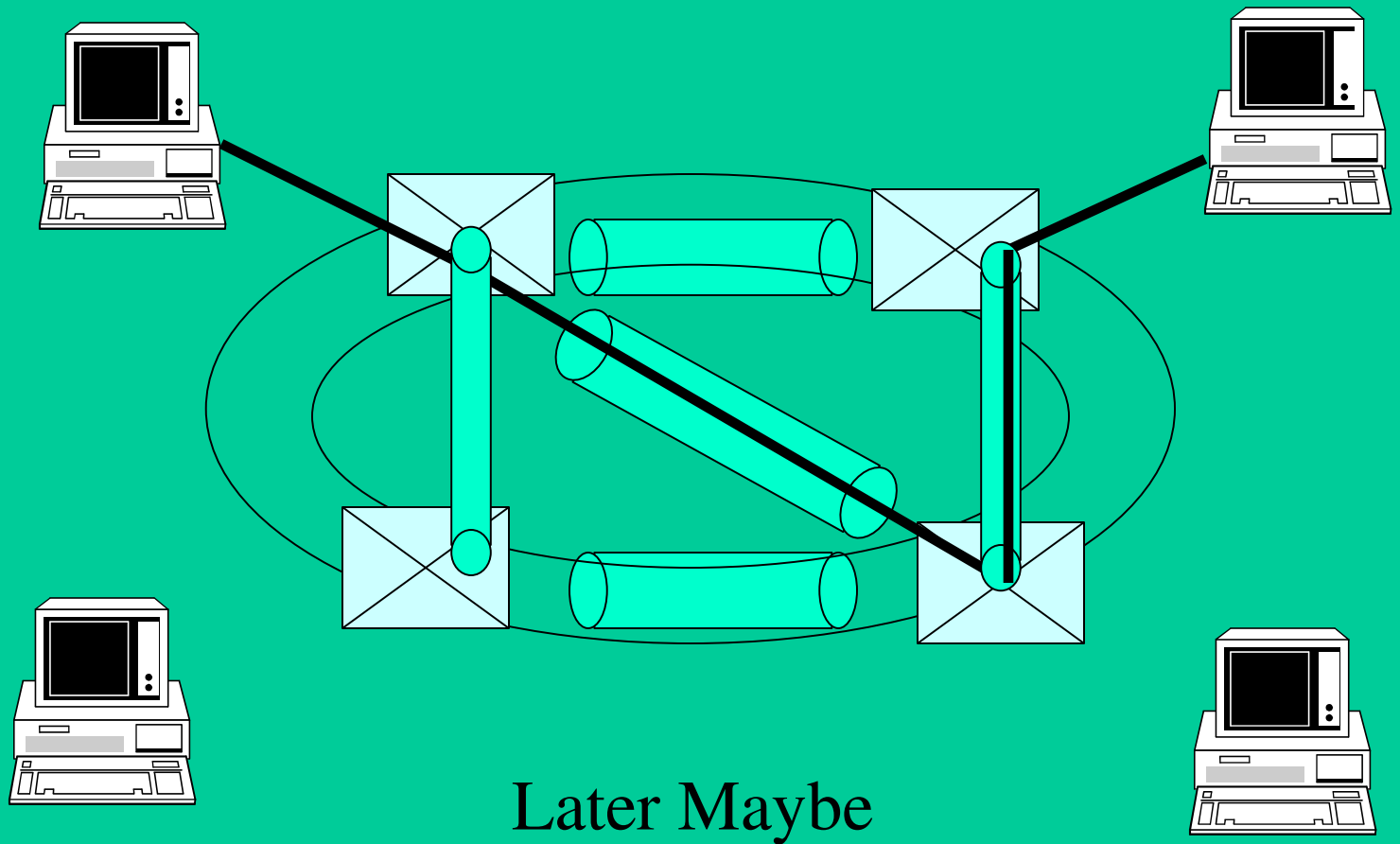
Earlier Today

SPVC (Soft PVC or Semi-PVC)



Right Now

SPVC (Soft PVC or Semi-PVC)



Later Maybe

SPVC (Soft PVC or Semi-PVC)

- End points are fixed but paths can be different at different times
- Services and BW are negotiated
- Cheaper than PVC but not SVC
- Full BW may not be available all the time depending on network congestion but VC can be available all the time with a minimum BW guaranteed

SPVC (Soft PVC or Semi-PVC)

- Initially requested bandwidth may not be guaranteed but a lower bandwidth may be negotiated and granted
- Connection setup & tear down overhead
- Analogy is going to Megamall, you can go through Corinthians, Valle Verde, Boni Serrano, etc.