

# TPF Communications Update

Jamie Farmer



(c) Copyright IBM Corporation 2002

Any references to future plans are for planning purposes only. IBM reserves the right to change those plans at its discretion. Any reliance on such a disclosure is solely at your own risk. IBM makes no commitment to provide additional information in the future.



# TPF Communications Update

- Many new enhancements for TPF's TCP/IP native stack support
- 11 New Enhancements
- All enhancements are customer requirements
- 4 came out of Spring '02 TPF User Group
- Will be covering 5 of the enhancements in today's presentation



# Comms Subcommittee Agenda

- Tuesday, 3:30 pm
- Will be covering all 11 enhancements
  - ▶ More technical detail
- New Driver to aid in OSA-Express setups in a test environment
  - ▶ Driver will be made available on the TPF website
- TPF Offload support enhancements



# TCP Connection Limiting

## PJ28493



# TCP Connection Limiting

- Quality of Service (QoS) function
- Limits resources used for a given TCP application:
  - ▶ Base TCP architecture has no way to limit the number of connections.
- Ability to limit inbound and outbound connections
- Protects from normal workload spikes and from attacks.



# Connection Limiting Implementation

- PUT 16: TPF delivered the network services database (NSD).
  - ▶ Original NSD was extended to support other QoS functions.
- Ability to define connection limits for servers defined in the NSD.
- Inbound TCP connection requests being rejected due to connection limits will be flagged in the IP trace.
  - ▶ Help to determine if its a volume issue or an attack.



# **PING with SIZE Parameter PJ28659**



# PING with SIZE

- Ability to specify the size of a PING message.
- Used to determine non-optimal network definitions:
  - ▶ Avoid Fragmentation.
- Using IP trace and Simple Network Management Protocol (SNMP), determine if fragmentation is occurring in your network.
- Use ZDTCP PING command with the SIZE parameter to determine which router is fragmenting.
  - ▶ Display will also show the maximum packet size the router can support.



# **PING with COUNT Parameter PJ28659**



# PING with COUNT

- Ability to specify how many consecutive PING messages to send
- Displays a summary of all the PING messages sent:
  - ▶ Packets lost
  - ▶ Response times (Minimum, Maximum, Average).
- Helps determine if your network is overloaded
  - ▶ Minor packet loss can cause significant problems in high volumes.



# **AUTOMATIC SWING OF VIPA WHEN GATEWAYS FAIL PJ28584**

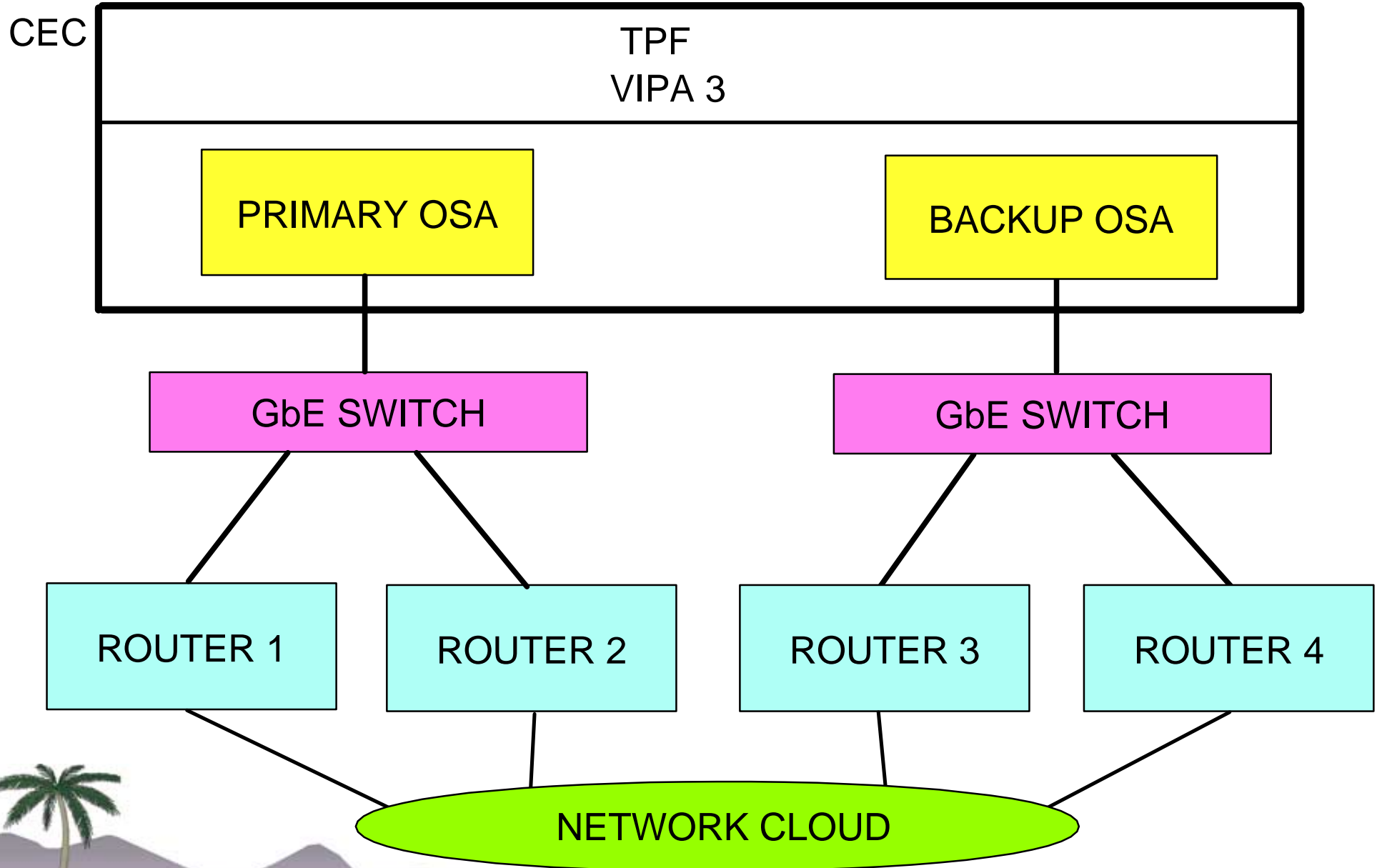


# Original Gateway Failure Detection

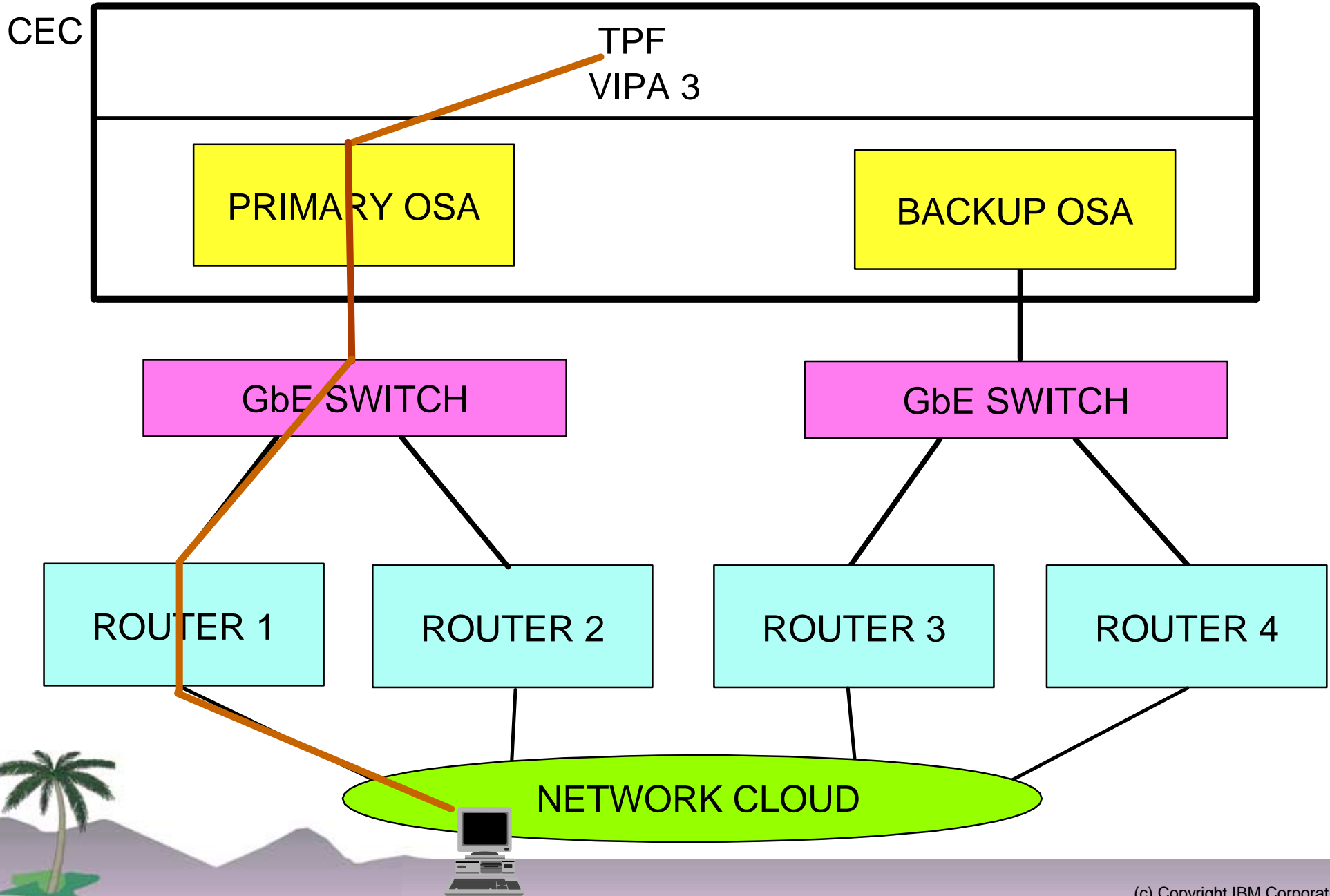
- Shipped with original OSA-Express support (PUT 13)
- Network configuration with separate switch and routers
  - ▶ Two default gateways (routers) defined.
- If one router fails, TPF will reroute all IP connections through the second active router.



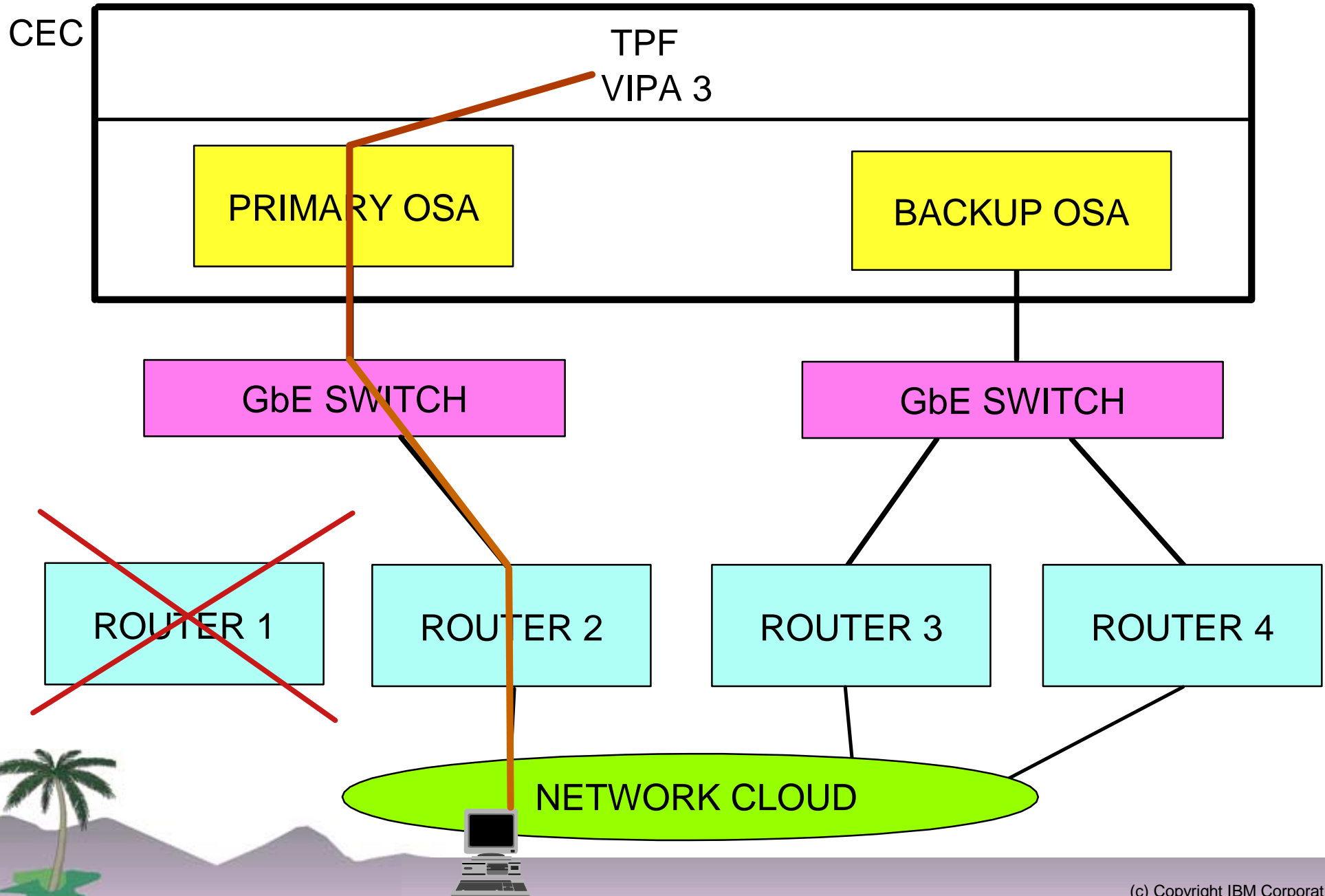
# Environment with Separate Switch and Routers



# Connection through Router 1



# Router 1 Fails: Connection Moved to Router 2

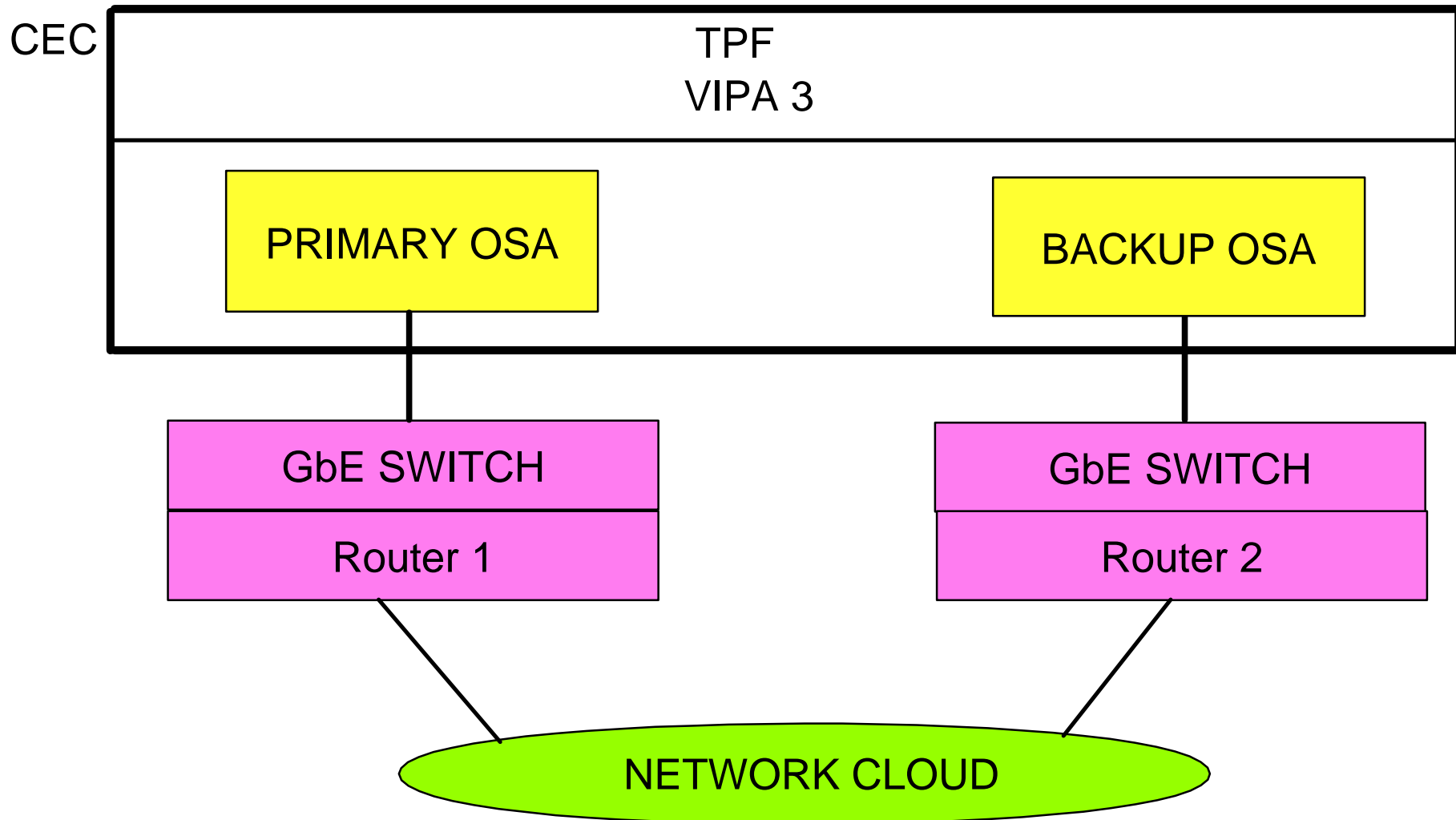


# Network Configuration with Combined Switch and Router

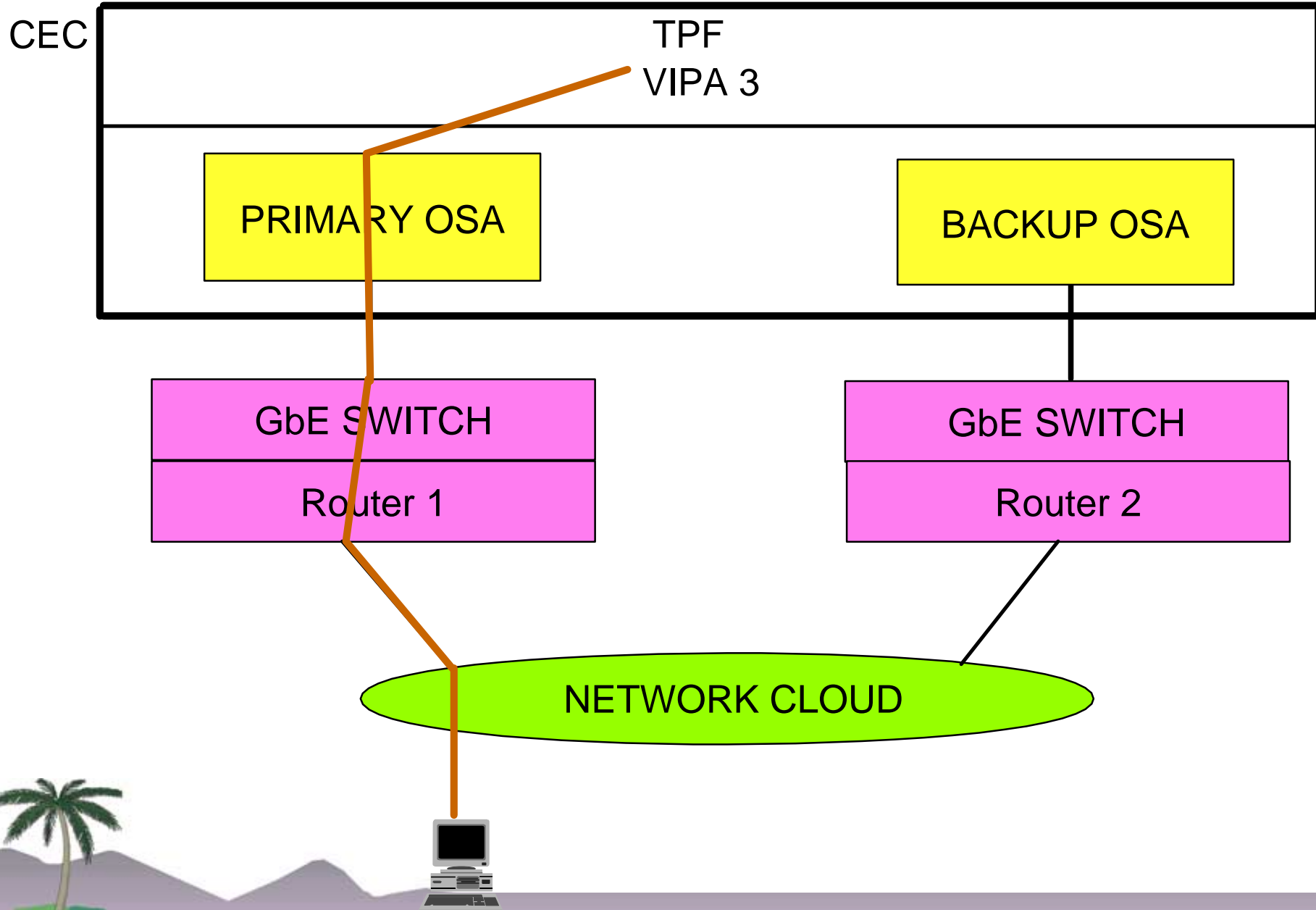
- Some network configurations use a combination layer 2/3 switch/router.
  - ▶ Switch and router reside in the same physical box.
- Only one switch can be attached to each OSA card.
  - ▶ Only one default gateway can be defined
- If the router fails, TPF has no place to reroute the IP traffic.



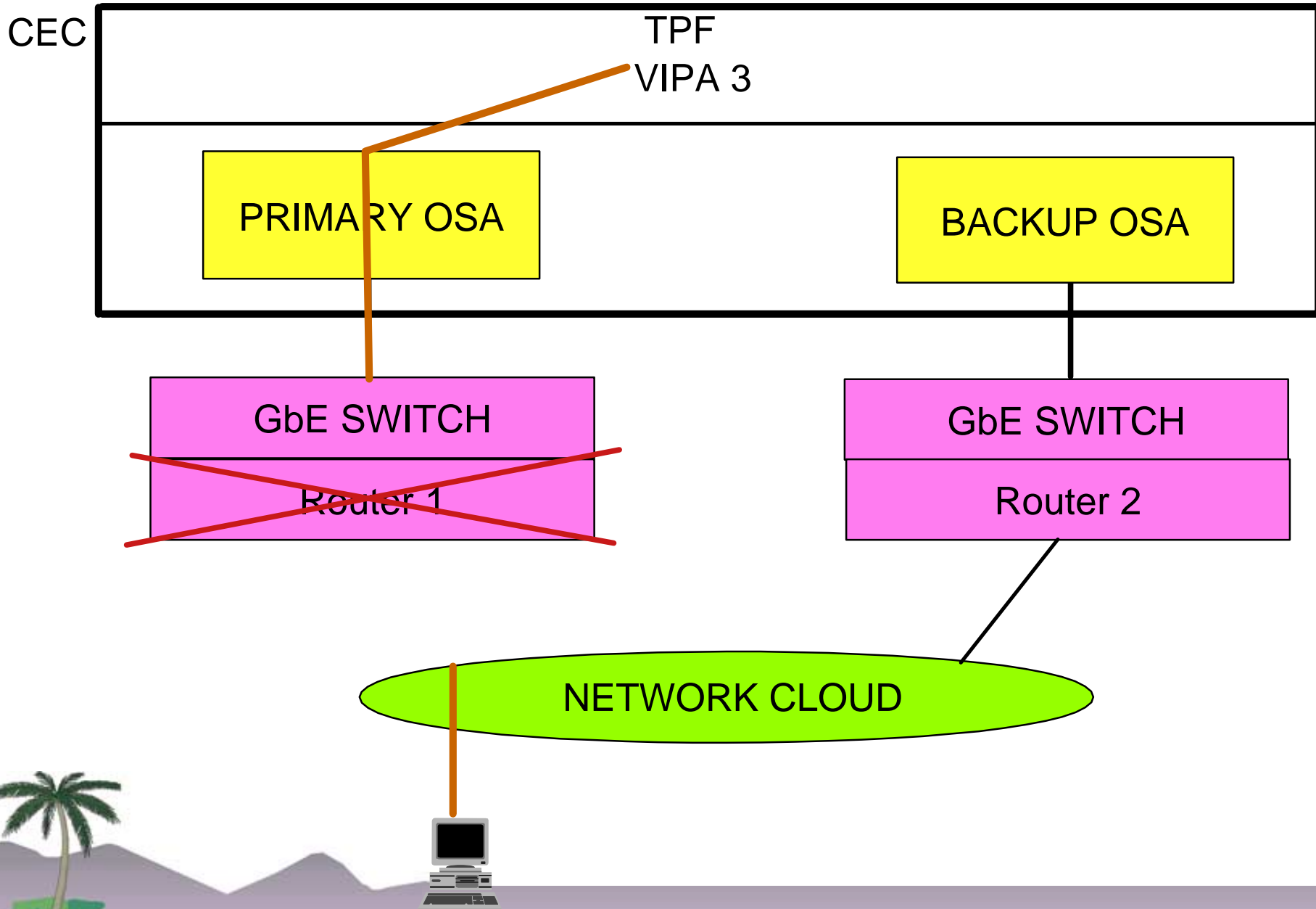
# Using Combination Layer 2/3 Switch/Router



# IP Connection through Layer 2/3 Switch/Router



# Layer 2/3 Switch Failure with Existing Logic

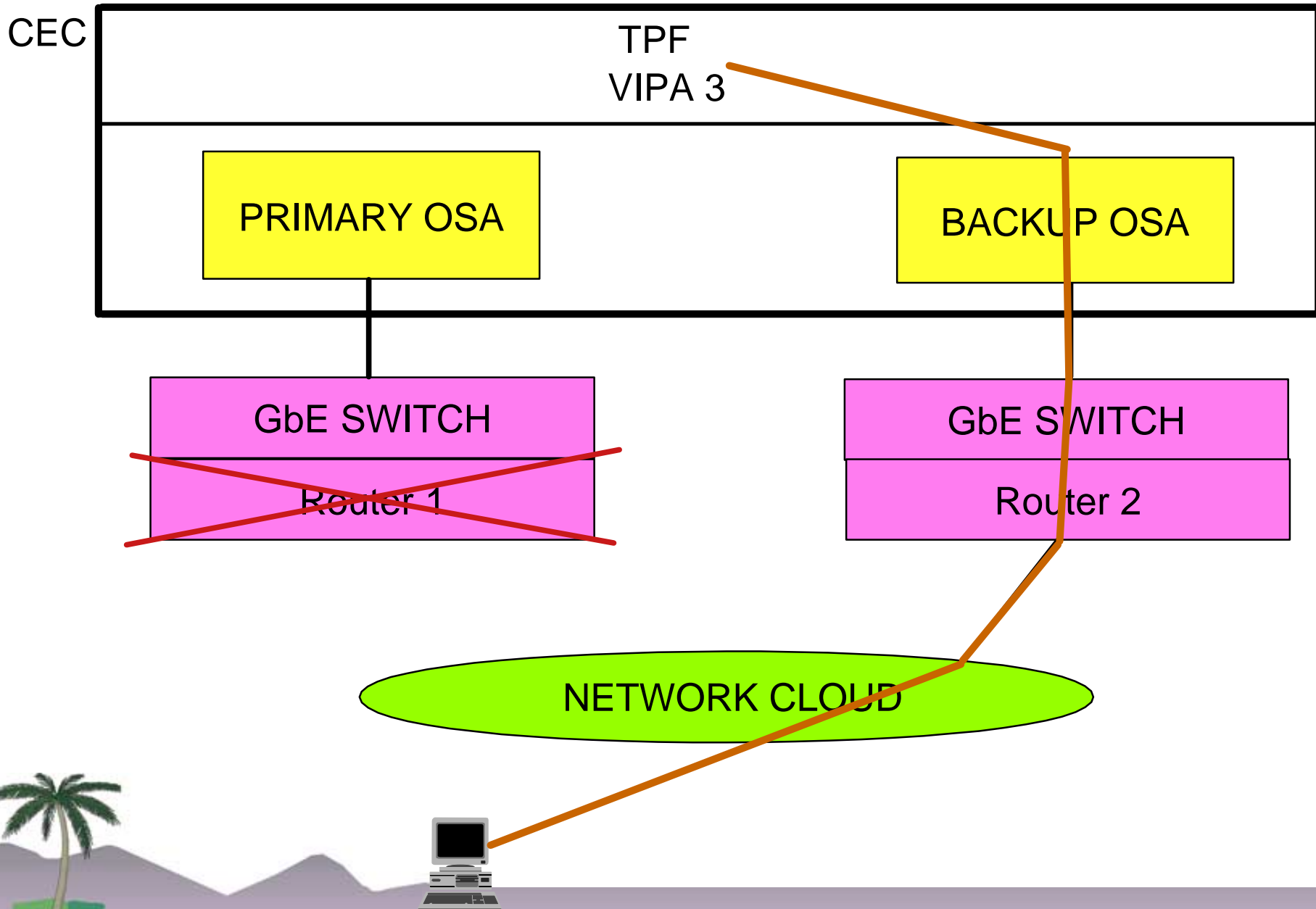


# Auto Swing Option

- New option on OSA definition
- When all default gateways fail, swings VIPAs to the backup OSA
  - ▶ Layer 2/3 Switch Environment.
- Better availability when all gateways fail
- Not necessary when OSA card is used solely for communication within the local network.
- Not necessary for separate switch and routers, if non-default routers exist.



# Layer 2/3 Switch Failure with New Auto Swing Option



# Movable VIPA with Force

## PJ28591



# Original Movable VIPA Support

- Ability to move a VIPA between processors in a loosely coupled complex.
  - ▶ Used for load balancing and/or availability
- Steps need to be serialized to keep network in sync
  - ▶ If the owning processor is active it must release the VIPA first.
- If owning processor is active but not responding, move of VIPA will not complete.



# Movable VIPA with Force

- May need certain IP addresses to always be active somewhere in the complex
- Owning processor taking a control dump or is IPL'ing
  - ▶ Want to move VIPA immediately
- New FORCE parameter on ZVIPA MOVE command
- Allows the VIPA to be moved even when owning processor is not responding.



# Questions

