



Global Technology Services BeNeLux

Virtual Switches, SEA and VLAN: how it works

Learn it through a nice journey in ZTRANS

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# Introduction

- ❑ VLAN topic has already been presented in excellent reference materials related to PowerVM
  - **SEA**
    - <http://ausgsa.ibm.com/projects/o/oneteam/public/Education/BrownBag/Brown%20Bag%20on%20SEA.ppt>
  - **VLAN Tagging**
    - <https://w3.tap.ibm.com/w3ki/download/attachments/931472/vlan.ppt?version=1>
    - <http://www.ibm.com/developerworks/systems/library/es-pwr5-virtualvlan/index.html>
  - **Redbook**
    - <http://www.redbooks.ibm.com/redpapers/pdfs/redp4194.pdf>
  
- ❑ The objective of this presentation is to complement it
  - explain what I learned thanks to teaming between VIO and network people
  - show how it works on a real example, playing role of IP packet
  - share my findings with graphics and animation
  - tell a nice story, with a happy end

# Basic terminology clarification

## ❑ VLAN = Virtual LAN

- **virtual network** of hosts that behave as if they are physically connected regardless of their switch connexion
- There is usually one to one correspondance between VLAN (layer 2) and IP subnet (layer 3)

## ❑ PVID = Port VLAN ID

- **Characteristic of the port** of a virtual or physical switch
- It will determine the handling of IP packet passing through it: tagging, untagging, dropping

## ❑ VID = VLAN ID

- **Tag of the IP Packet**
- encapsulated or removed when passing through a switch port

# Let's experiment the life of an IP packet ...

- ❑ by exploring the virtual and real networking worlds during a funny, wired journey
- ❑ and imagine that we are an IP packet
- ❑ An IP packet can be:

- “untagged” (no header with VLAN ID)

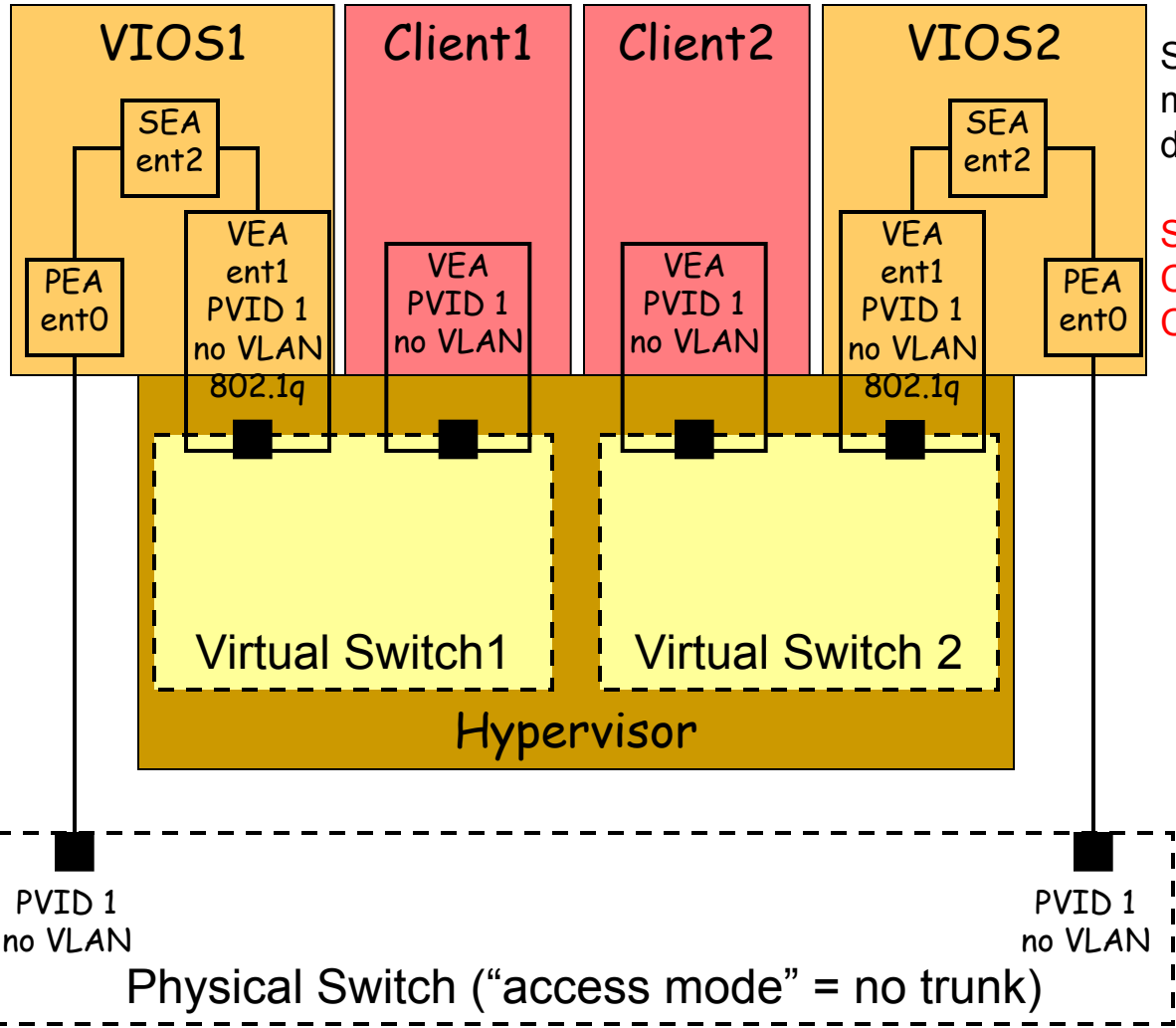


IP Packet

- tagged with a VLAN ID (= VID),  
got from a PVID (Port VID)  
(we are in Austin, TX)



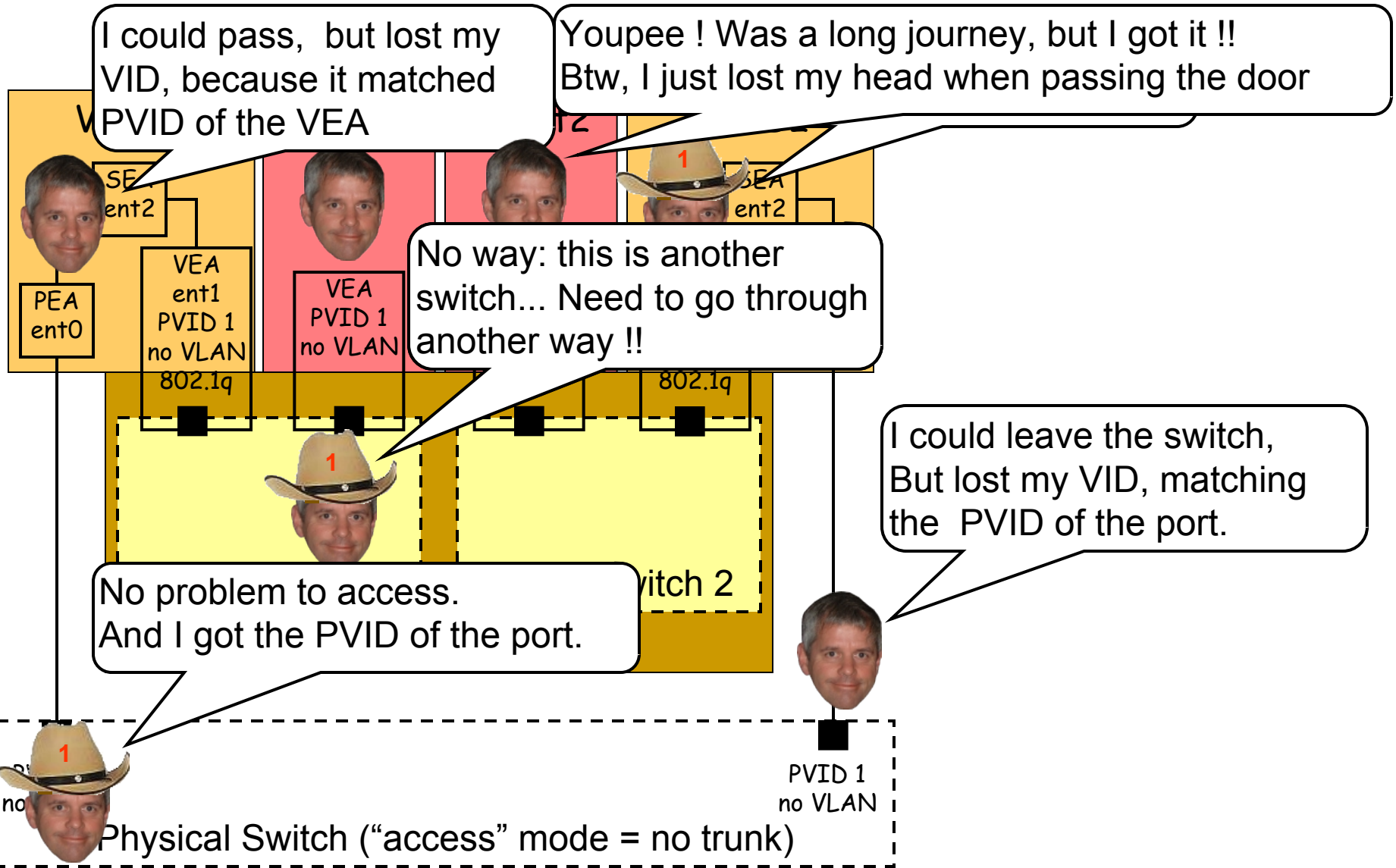
# This is the virtual and physical world I will explore



SEA virtual adapter ent2 was created by  
`mkvdev -sea - ent0 -vadapter ent1 - default ent1 -defaultid 1`

SEA in trunk mode (IEEE 802.1q)  
 Clients VEA in access mode  
 CISCO switch also in access mode

# Let's visit my friend Client2, who is closed to me

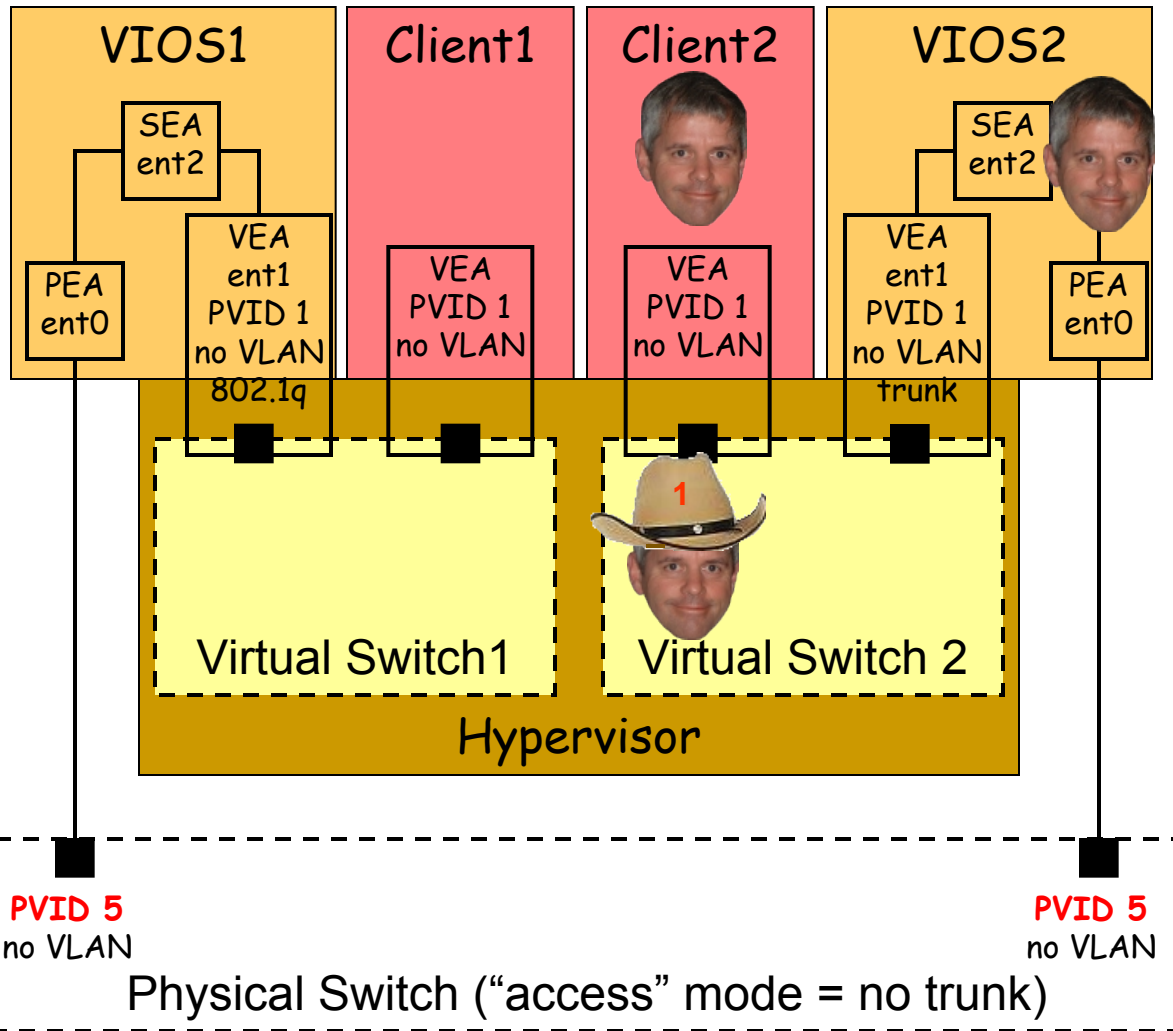


## So, this is what I learned so far:

- ❑ In an open, unsecure world (all switches have same, default PVID = 1), my freedom of move is mainly limited by the wiring (real or virtual switch connections)
  
- ❑ They all want to put me a hat, then to remove it.  
So far, it hasn't a big value. Probably something invented by network guys ...

(NB: in the mean time, these guys have detected some intrusion and changed the PVID settings of the Cisco switch)

Let's now go back to Client1 ...  
 I am so confident, since this time I know the way !



Fiddlesticks... !!!  
 The network guy changed something ...  
 I am dead ☹️

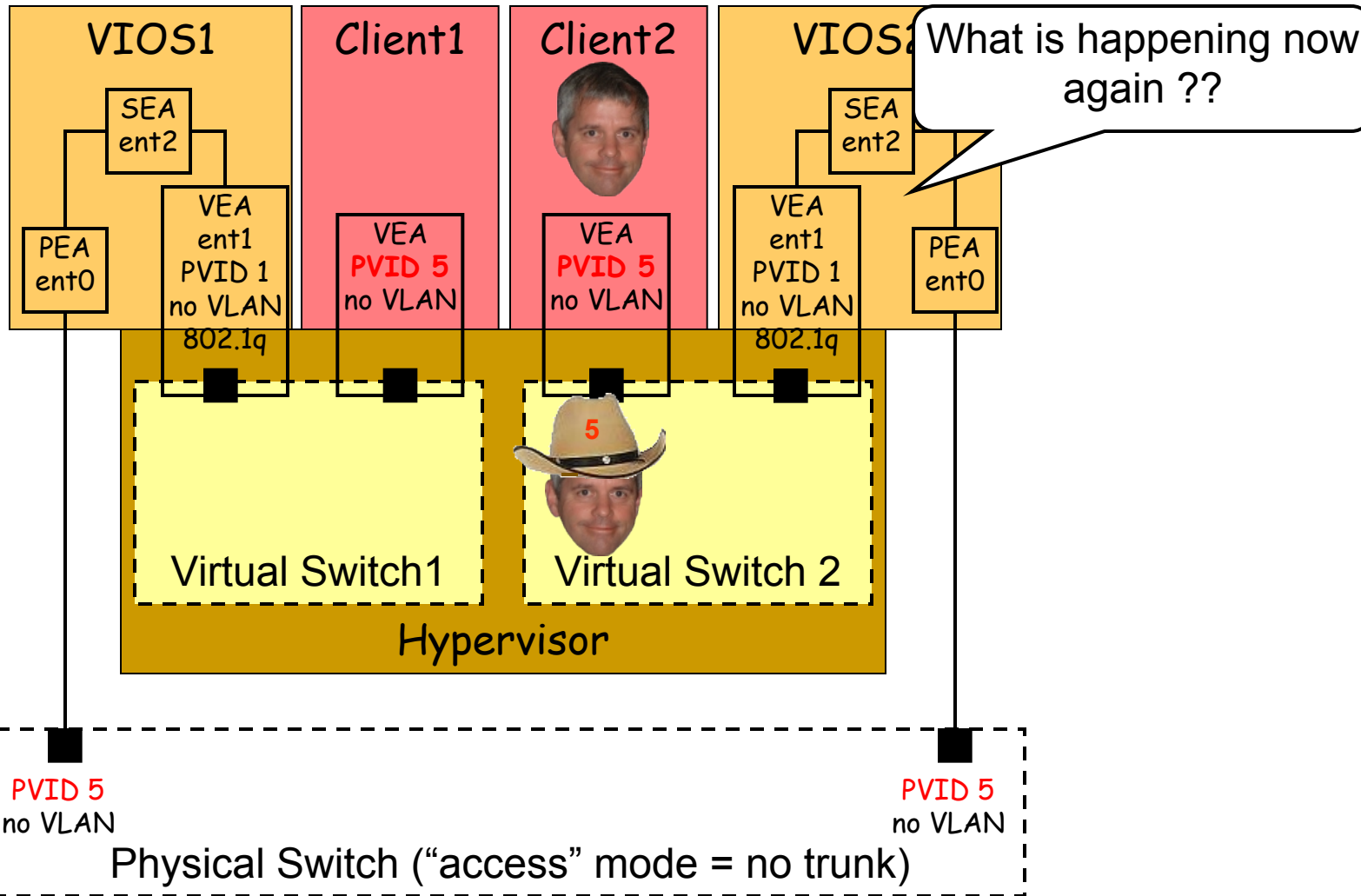




## So, this is what I learned so far:

- Never rely on network guys. But this, I already knew...
- Life of an IP packet is fragile ...They want to secure the world, but this at your own life cost !
- Before travelling around the world, always be very cautious: check that every port of the secure world will be safe to you
- Now they want to kill us, let's use their weapons :  
I will make sure I have the right tag, by changing PVID of my origin switch port

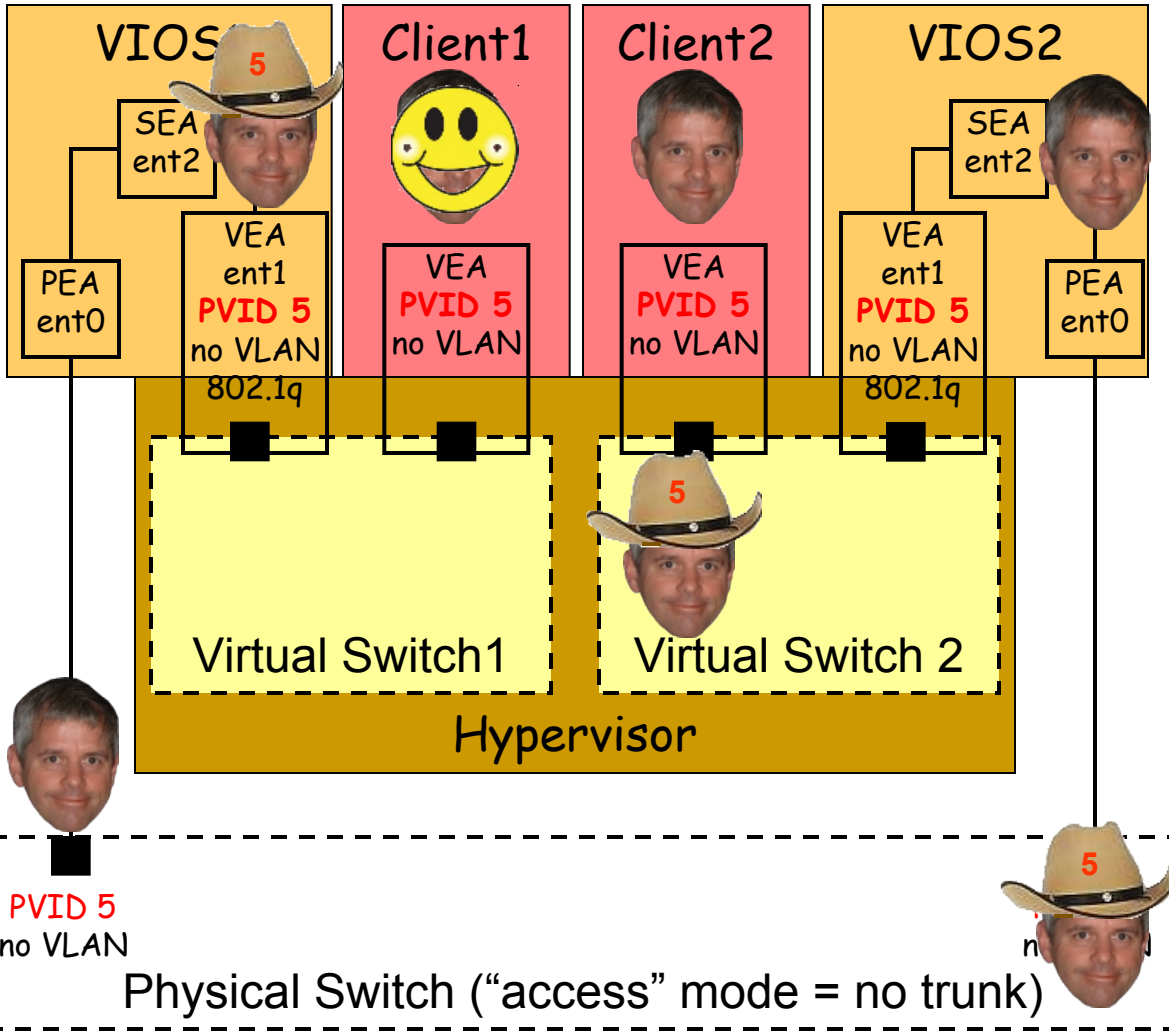
I am back. Fortunately, as I am very cautious, I had created some clones of Myself. So, I am now Dolly IP packet.



## So, this is what I learned now:

- I forgot to check the VIO port... And any mistake is fatal ☹️
  
- Never rely on your own guys either. You can be thrown away in your own country, and in virtual as well as physical world ...
  
- So, let's change also the PVID of both VIOS to 5

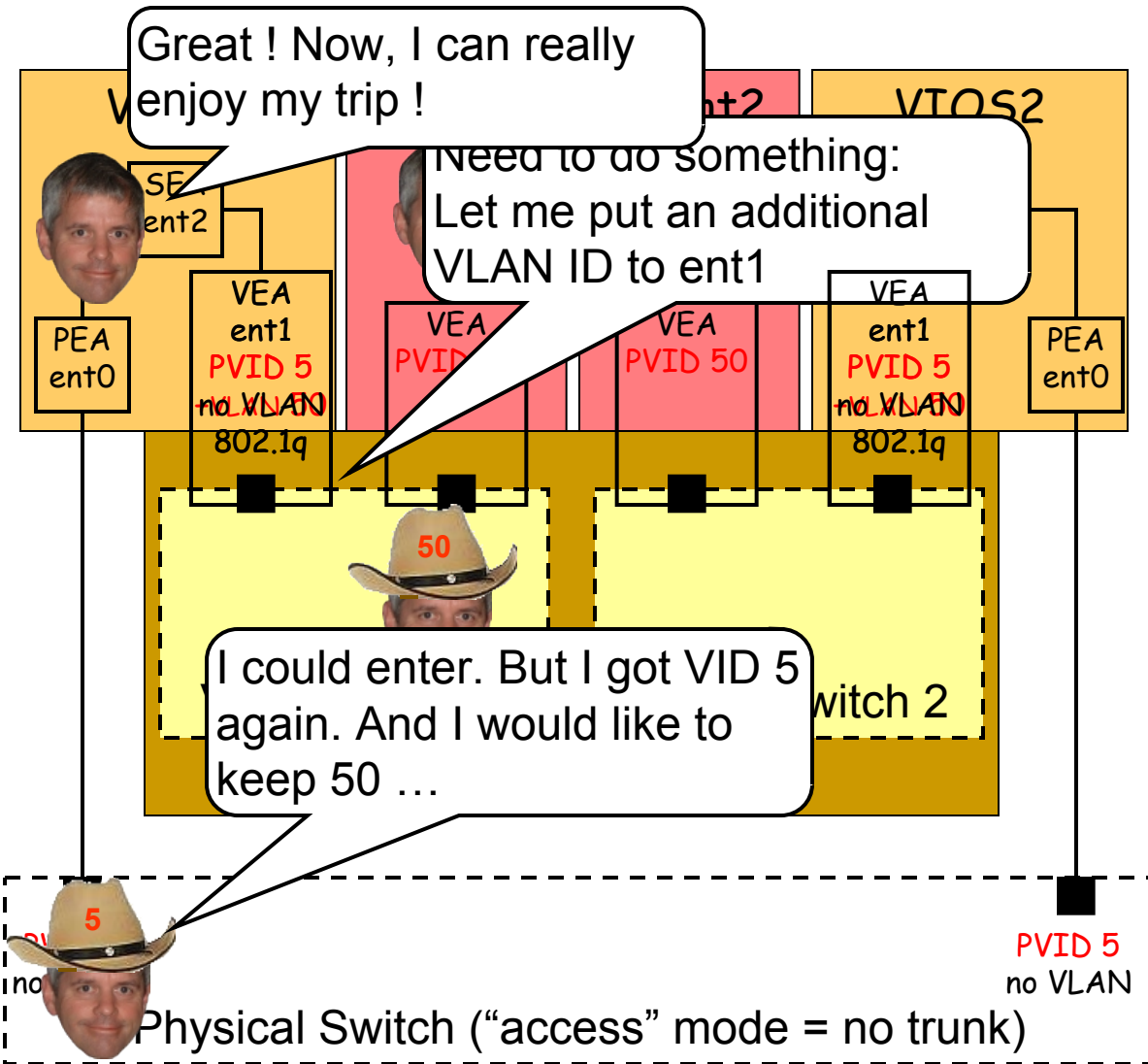
I already tested with PVID=1 everywhere, but let's quickly test 5. Who knows ? (twice bitten twice shy...)



## So, this is current status:

- Through life experience (the most valuable one), I got some knowledge on how PVID and VID work
  
- Let's now be more ambitious: VIO Clients would like to be on a separate VLAN (50), and still be able to talk together...
  
- I am wondering if I shouldn't sit together with network guys and transform them into partners, for managing the world more efficiently... I am afraid there is no other way

# Let's visit again my friend Client2

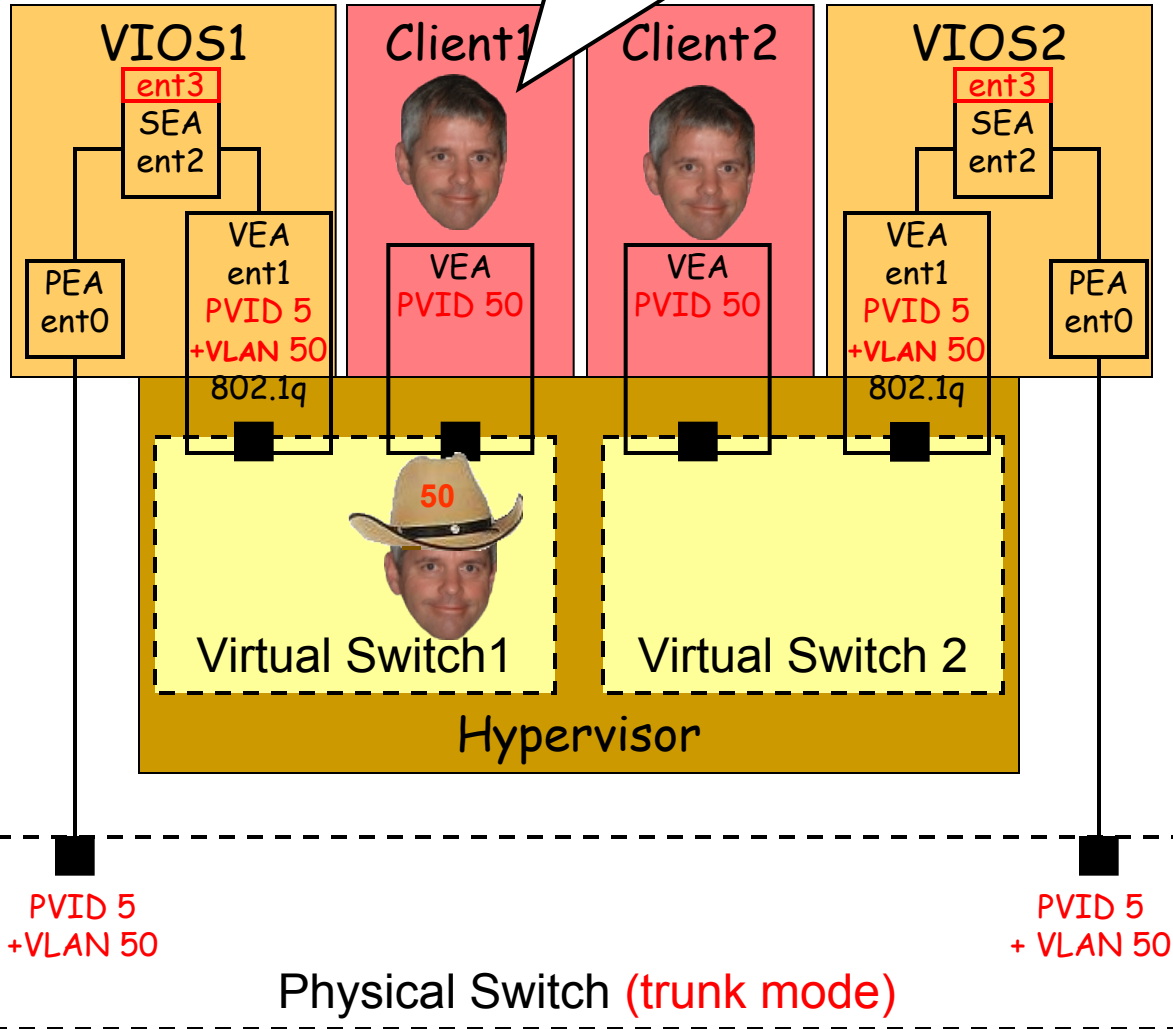


## So, what to do now ?

- I am now ready for one more step: get familiar with VLAN usage. One small step for an IP packet, one giant leap for packet mankind
- This time, I really need to discuss this with network guys...
- They explain me the following: in addition to allowing VLAN 50 on the Cisco switch, I should also change my VIOS settings, for allowing me to keep my VID 50 when leaving home
- I found this amazing ! The network guys now helping me to resolve my own VIO issues !??
- Actually, a new collaborative, efficient world is now happening, with good relationship and communication between all people !

# Let's visit my friend Client2, who is closed to me

So, let's start again...



Three actions are required:

1. Add VLAN 50 to ent1 in profile of both VIOS  
This allows me to pass ent1 (already done)
2. `mkvdev -vlan ent2 -tagid 50` on both VIOS  
This creates ent3 and allows my VID 50 to be kept
3. Set CISCO ports to trunk mode and add VLAN 50



# Conclusions

- ❑ It was a nice journey, where I learned a lot...
- ❑ I loved my role of IT packet
- ❑ IT packets are passing and dying. But human trace of nice teaming stay forever
- ❑ Thank you, ZTRANS, a jewel within IBM. Not only you are resolving Customer's issues. But you demonstrate a new collaborative world in IBM
- ❑ Movies, drawings and animations are more effective for communication and learning than using paper, whiteboard and vi

Thank  
YOU

