IPv6 Transition Issues
- From operational point of view -

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About this presentation

This is the first survey of IPv6 transition issues from operational point of view

Background :

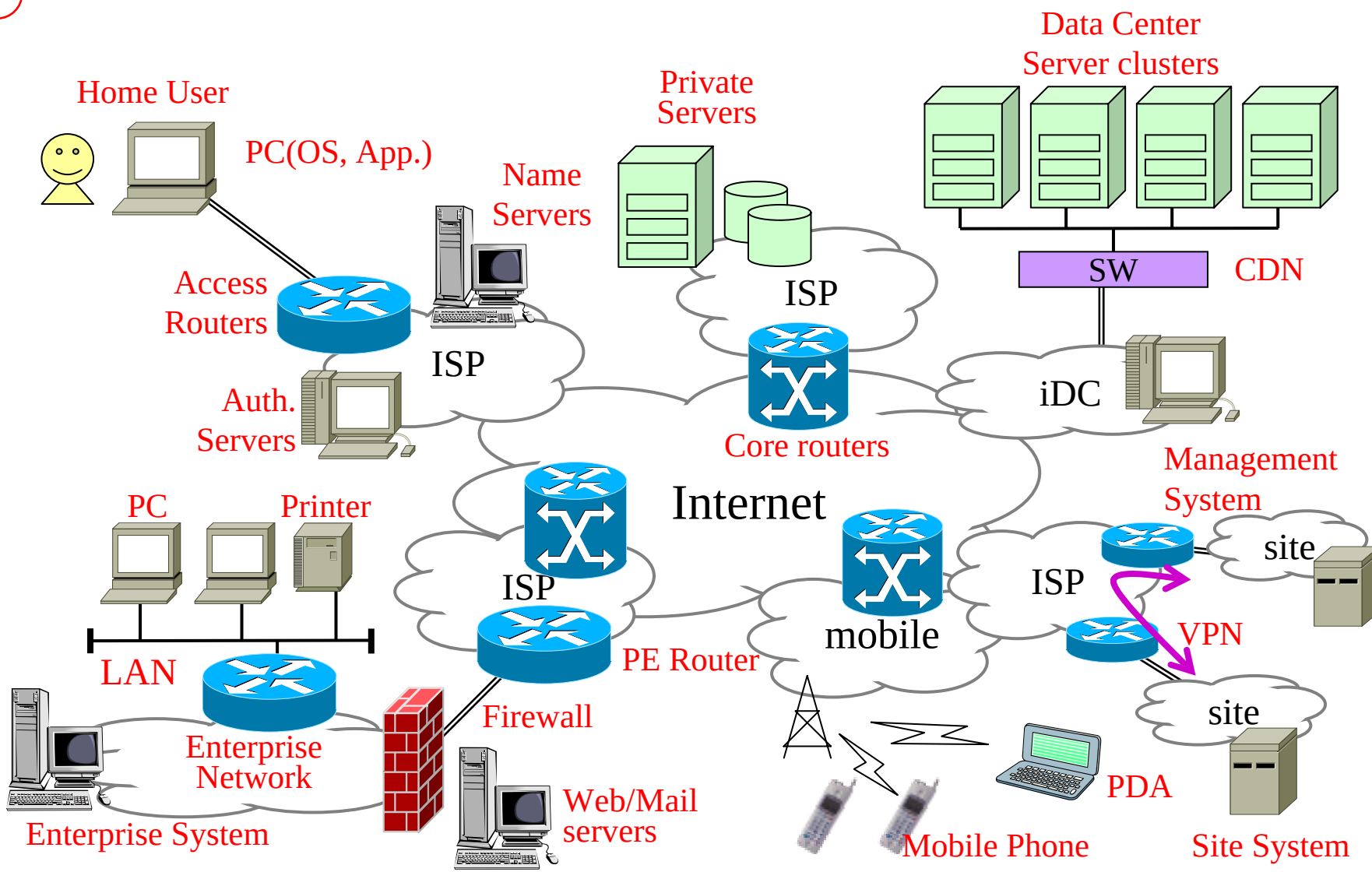
What do we need to think/worry about transition from IPv4 world to IPv6 world?

Goal :

Before the transition to IPv6 world:

- Describe transition story
- List issues up
- Brash up technical and discussion items

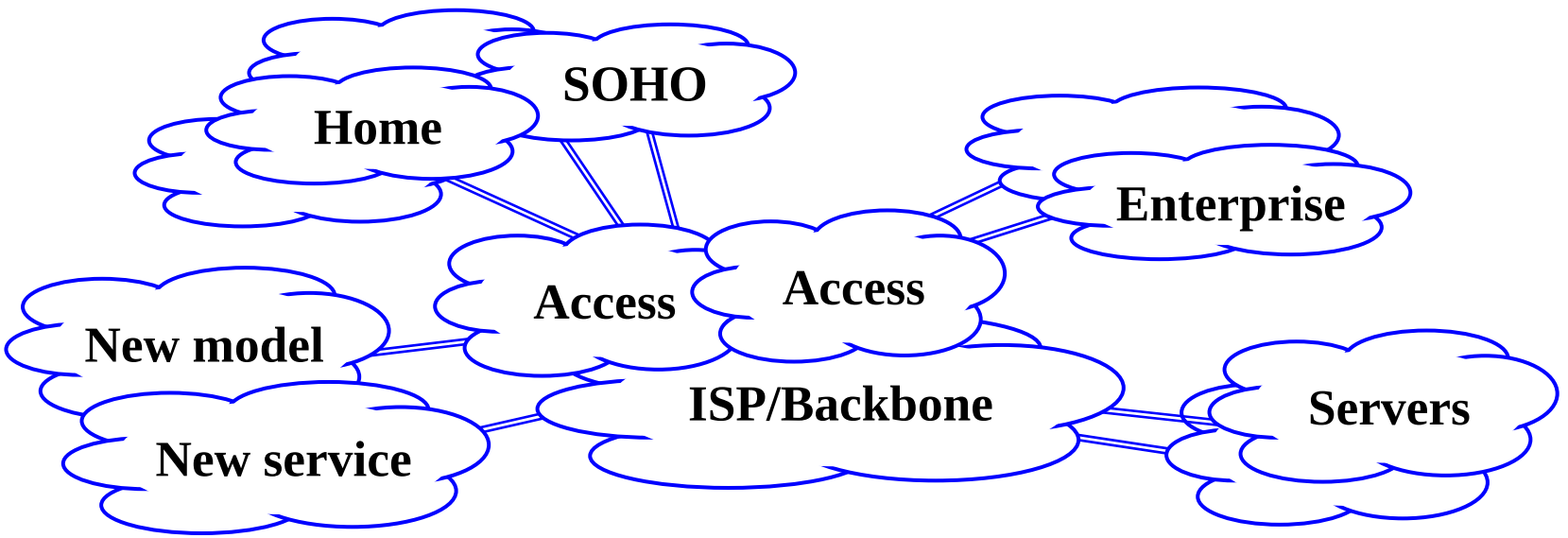
Where do IP technologies exist?



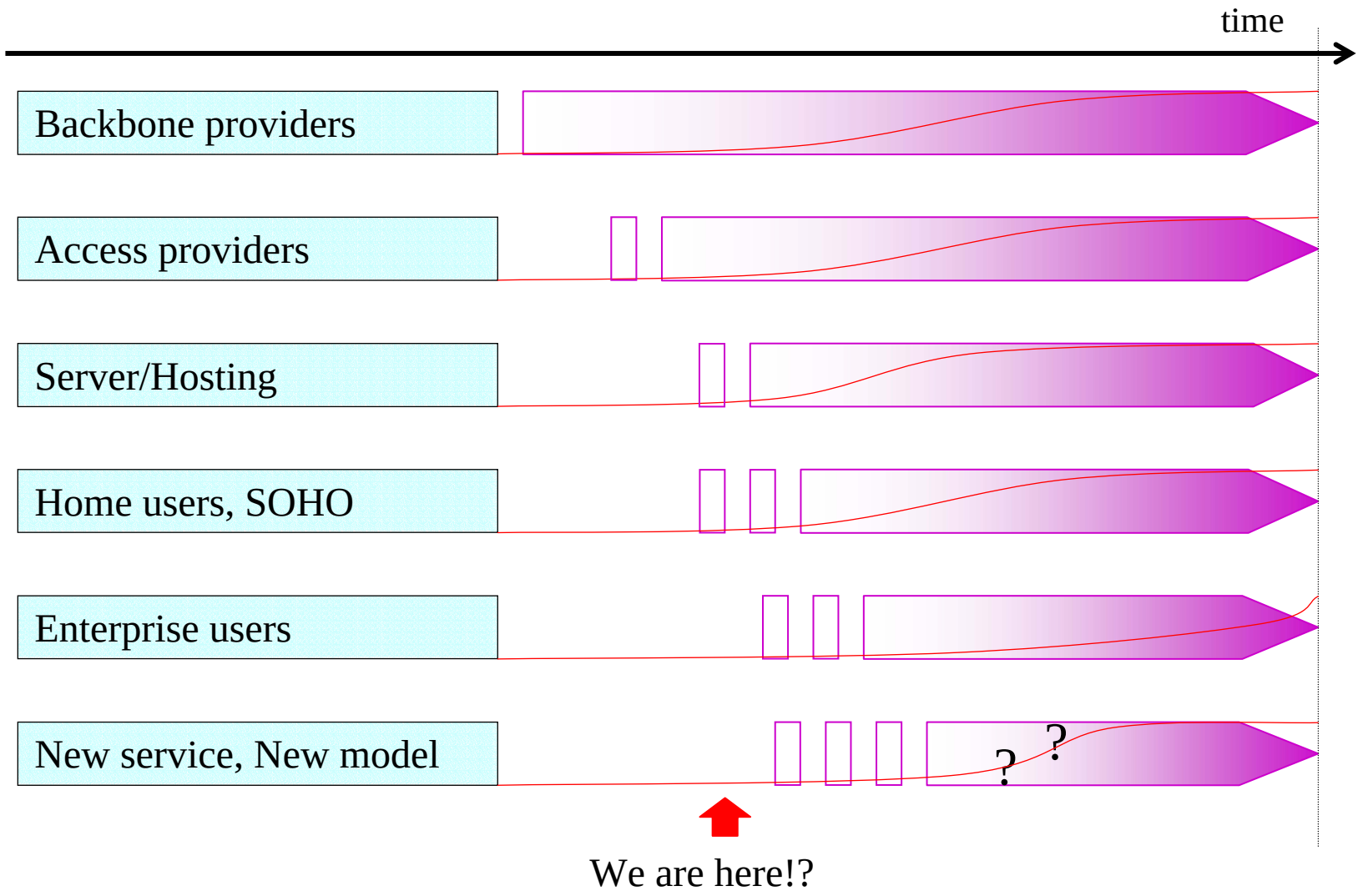
View points of discussion

Considering from following points of view

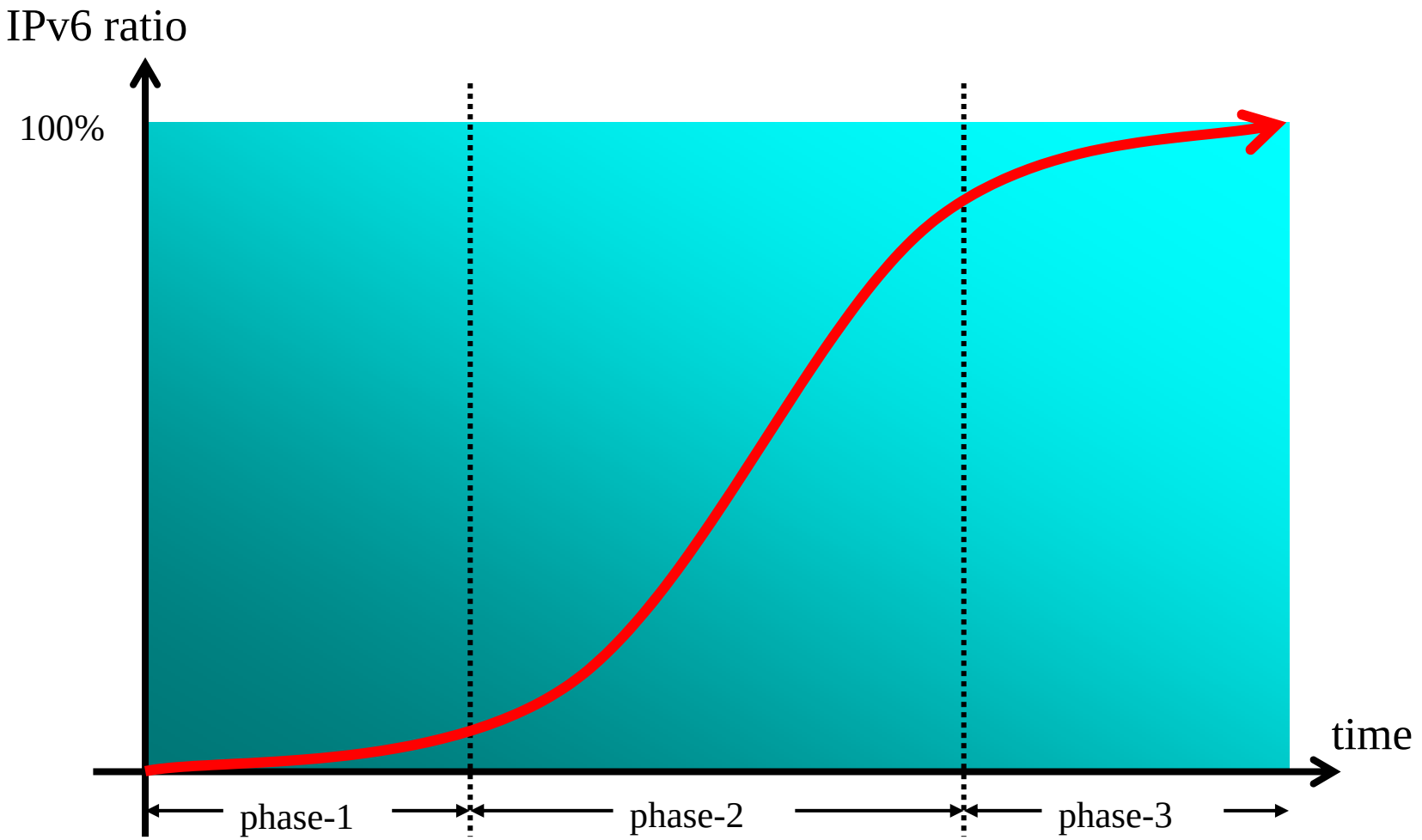
- Backbone Providers
- Access Providers
- Server/Hosting
- Home Users, SOHO
- Enterprise Users
- New service/New model



Transition Story (brief example)



Transition phases (example)



Considering transition phases

Defining transition phases: phase-1, 2, 3

Discuss transition issues for each phases

1. Initial deployment, v4:v6=9:1
   "Reachability/Availability"

We CAN use IPv6 applications!

2. Widely deployment, v4:v6=5:5
   "Quality/Stability/Functionality"

IPv6 is as stable as, or more stable than now

3. IPv4 is historical, v4:v6=1:9
   "Cooling IPv4 down!!"

IPv6 is huge world! many v6 only services

Phase-1 Transition issues

Backbone providers

v6 aware Core/Edge routers
IGP(OSPF/IS-IS) implementation
Almost ready, but...

Home users, SOHO

Dual stack home routers
Client OS (Windows XP?)
Basic applications （ Mail, Web, DNS ）

Access providers

Tunnel service boxes (routers?)
v6 access routers (PPP, DSL, etc...)
Some solution exist, but...

Enterprise users

Firewall (basic functionality)
Basic server applications
Registration system (ex. DNS, etc...)

Server, Hosting

Server OS (Unix? .NET server?)
Applications (Mail, Web, DNS)
Management tools (MRTG, SNMP MIB ）

New service, New model

What's happen?

Phase-2 Transition issues

Backbone providers

More and more stable Core routers
Transition scheme, Dual/MPLS/etc...
Scalable IGP routing protocol
New mechanism for hierarchical BGP

Home users, SOHO

Dual stack home network
Replacing OS/App. in a PC
Plug&Play (auto config.)
Mechanism for v6 only nodes

Access providers

IPv6 addressing scheme (policy/tech)
BAS, RAS, RADIUS for v6 users
IPv6 session from Whole sale access
Database (DNS/accounting/billing)

Enterprise users

Firewall products (P2P/PKI/etc...)
Operational mng./regist. systems
Enterprise systems for v6 nodes
v6 only phones/printers scheme

Server, Hosting

IPv6 load balancer (DNS faker?)
cache/splitter boxes (products)
Mgmt products (OpenView or others)
Production service of CDN v6

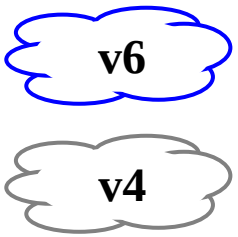
New service, New model

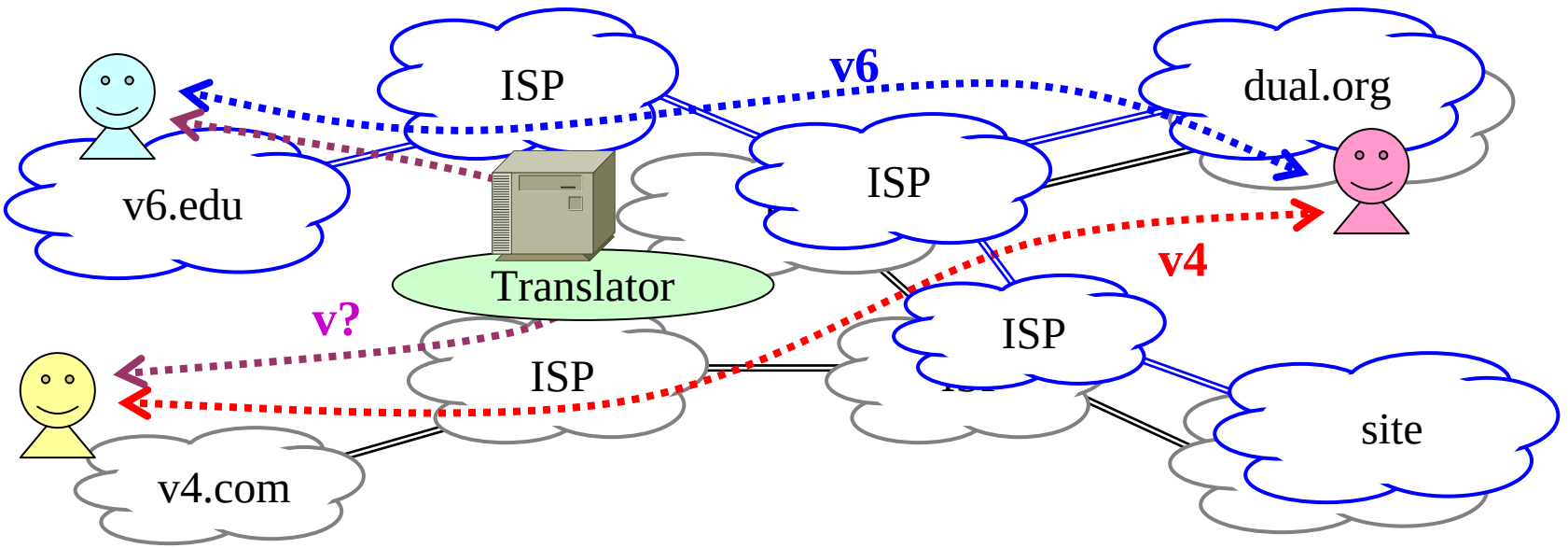
Cellular?
Internet oven?
Internet car?
Internet cow? sheep?

Phase-2 : Translator is required

Translator :

In Phase-2, both IPv6-only networks and IPv4-only networks exist in the same time. That is, they need a translator to communicate each other.





For the Phase-3

Nobody knows what we have to do, to reduce the # of IPv4 nodes or IPv4 communications

ISPs'/iDCs' transition is not so difficult.
Home users will replace their PCs in a few years.
But...

Enterprises' original systems, or vendor specific protocols may run, forever....

Conclusion

There are 6 view points in this presentation:

- Backbone providers
- Access providers
- Servers/Hosting
- Home users / SOHO
- Enterprise users
- New services / New areas

We defined brief IPv6 transition story (3-phases) from operational point of view

- Phase-1: initial deployment phase
- Phase-2: widely deployment phase
- Phase-3: cooling IPv4 down

and we discussed technical issues in each phases.