



IPv6: Protocol evolution for a Net revolution



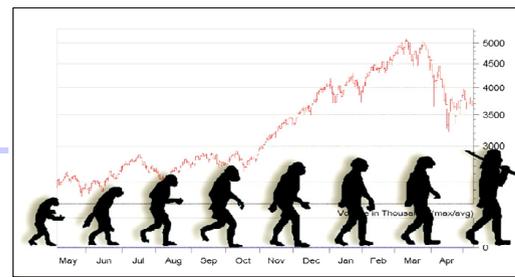
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6WIND Chairman
IPv6 Forum vice-president
IPv6 Task Force France Chairman

WSIS GENEVA 2003

Agenda

- **IPv6, a Net Revolution,**
- **Deployment advantages**
 - **WiFi**
 - **Standard devices**
 - **Peer to peer**
- **IPv6 Ready programme**
- **IPv6 Organisations**
- **6WIND**
- **Conclusion**

The IP Evolution



Only the Tip of the Iceberg



**< 10% IP penetration
ww – not yet a global
mass market**

**Broadband & Wireless are
just arriving**

- ✓ 1,2 B mobile telephone subscribers today are potential Internet service users
- ✓ Growth of DSL line: +30% in 6 months (47,6M – june 03)

Is there Another Solution To IPv6?

- **Yes if:**

- ✓ we don't want worldwide universal services
- ✓ only Private-NET services
- ✓ and INTER-NAT clusters via different agreements between ISPs
- ✓ we want to constrain new applications

- **So the RIGHT question is:**

- ✓ **What model for the future of the INTERNET?**



The New Generation Internet IPv6



End To End Connectivity



The New Internet

☺ **Why complicate the NET when we can
SIMPLIFY IT!**

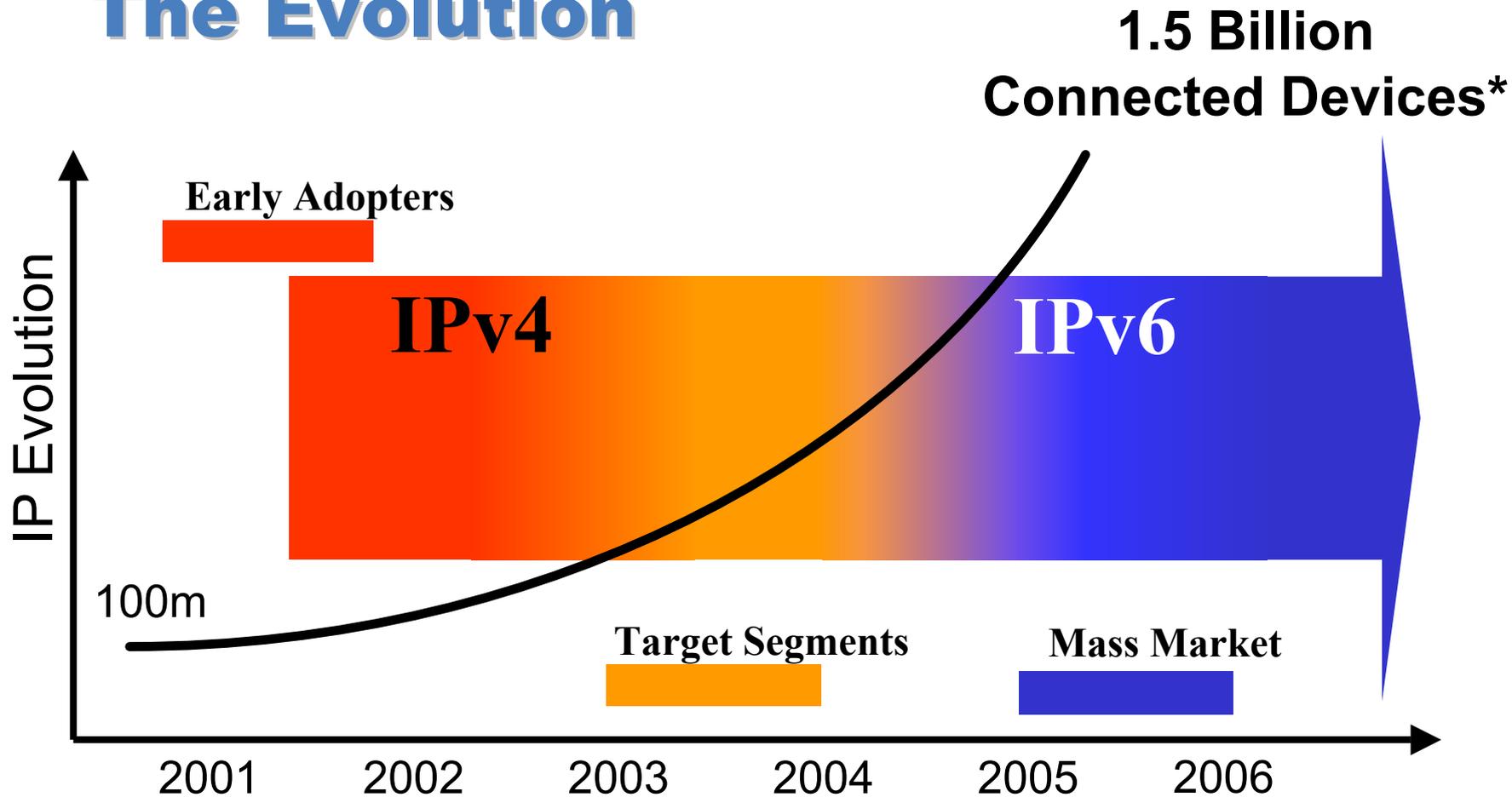


IPv6 Is The Answer!

FOR:

- **ALWAYS-ON broadband connectivity** - a necessary condition for deploying new applications & services
- **ADDRESS CAPACITY** to meet explosive device connectivity
 - ✓ Users (C-to-C)
 - ✓ Business (B-to-B; B-to-C)
 - ✓ Machines (M-to-M; C-to-M)

The Evolution

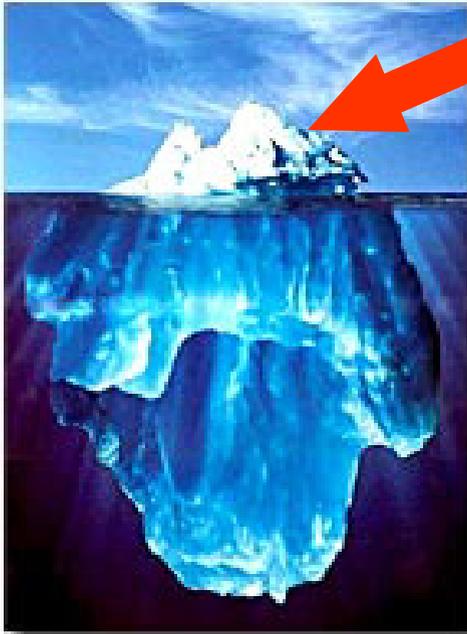


* Harbor Research Inc.

A Net Revolution



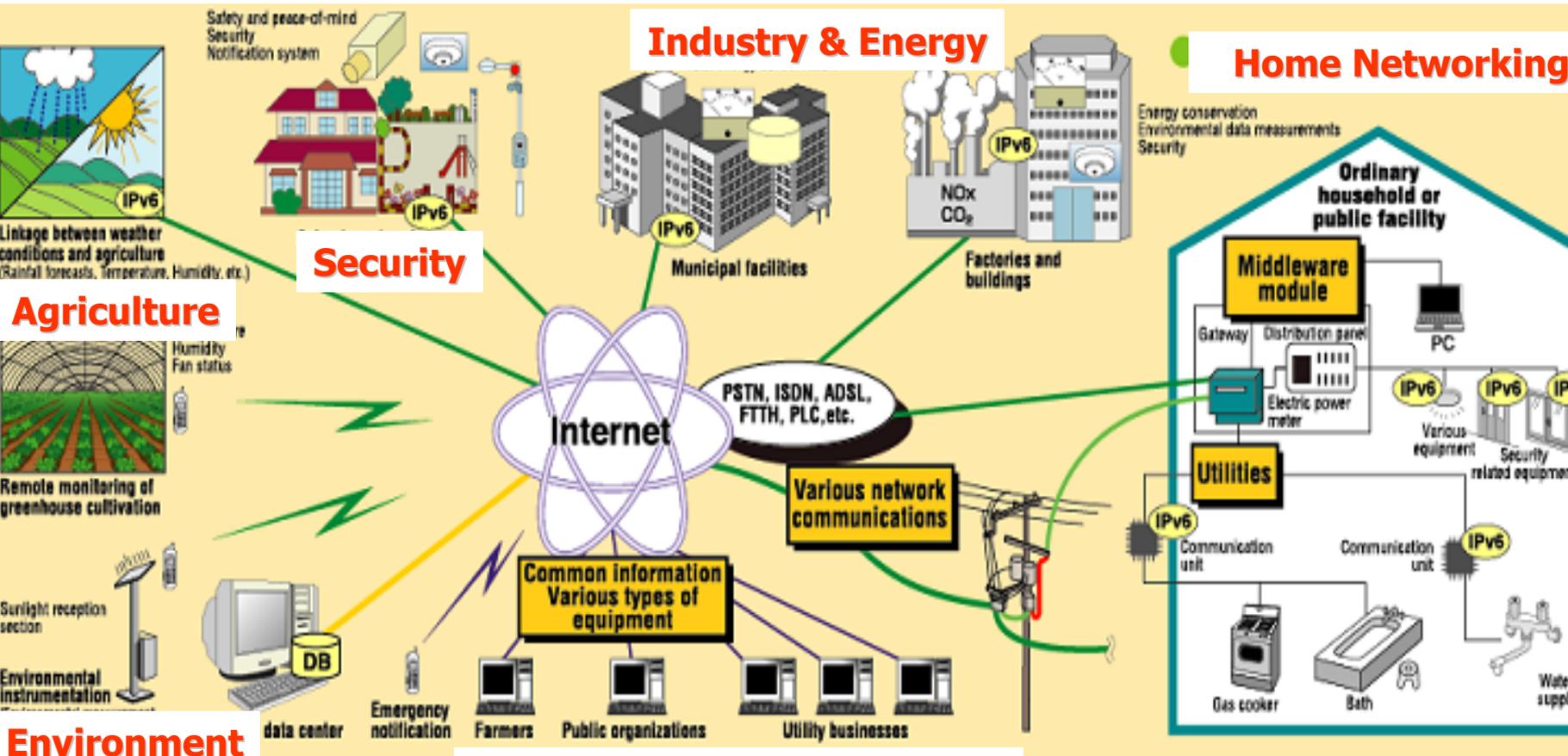
For the usages too!



**WEB,
Messaging,
P2P (audio, video)**

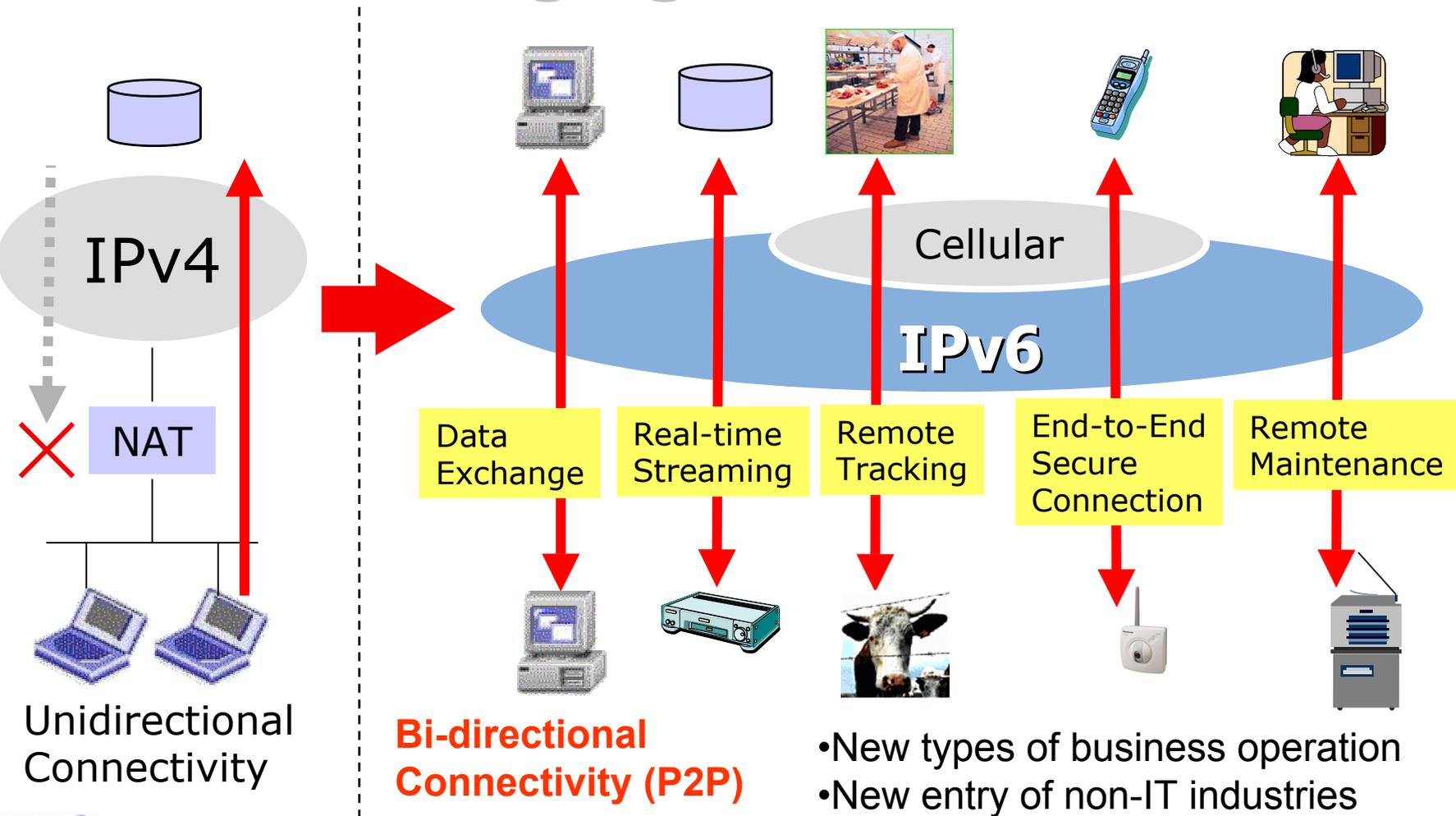
**Telephony/visiophony
Always-on » and new
Machine-to-machine
applications**

IPv6 enables Net to become Ambient



Public & Private Networking

IPv6: bringing back innovation



**Bi-directional
Connectivity (P2P)**

- New types of business operation
- New entry of non-IT industries

Building New Business Models

New revenue generation

Multi-purpose devices



Dedicated devices/systems



Large range of services
application oriented and user community oriented

**CAPEX/OPEX
optimisation**

Deployment Advantages of IPv6





Example 1

Public WiFi Networks

WiFi: Vector of IPv6 Deployment

- **Hotspots:** 12th (2002), 147th (2007)
- **WiFi-capable laptops:** 90% (2006) of all corporate laptops (source Visiongain)
- **Laptop and tablet PCs:** estimated 33m shipped for 2003



Like mobile phones, mobile PCs lead to new usages, and the customer will not accept limitation of use!

Top Considerations for Public WiFi

- **Flexibility**
 - **Scalability**
 - **Security**
 - **Billing Constraints**
 - **Costs**
 - **Legal Constraints**
- ✓ Application Constraints?
 - ✓ Number of Users?
 - ✓ User authentication, data encryption, user profile
 - ✓ Link with billing systems
 - ✓ Customer support
 - ✓ Monitoring User Activity



The Key Issue: Managing IP Addresses!

Use of Private Addresses: Expensive & Inefficient



Client-Server applications
+
VPN IPsec
P2P, Games, Chat...

IPv4

DHCP + NAT + Private @
DHCP + Global @ is not often possible

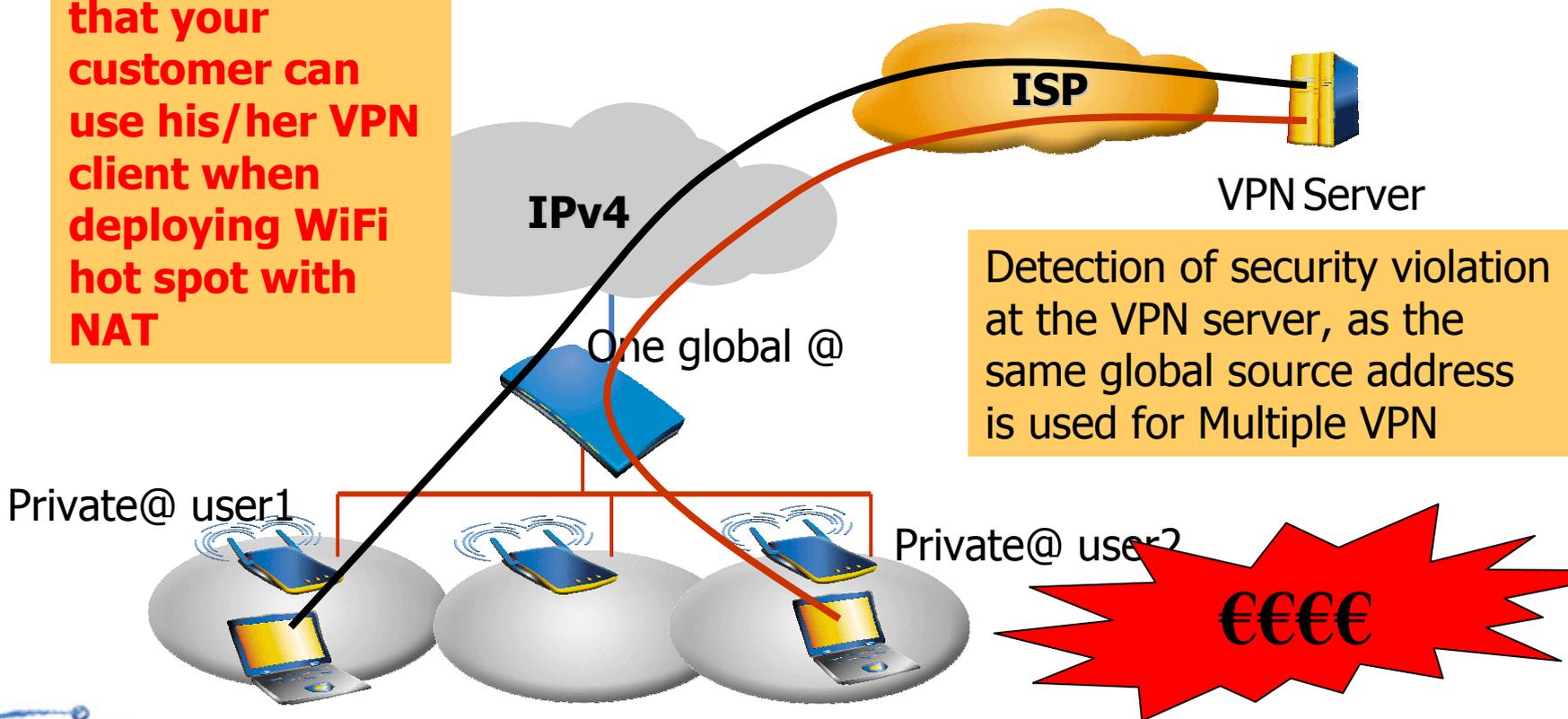
IPv6

Global @
RA + Prefix delegation (opt)

**Global Addresses = Flexible & Cost-Effective
Wireless Access**

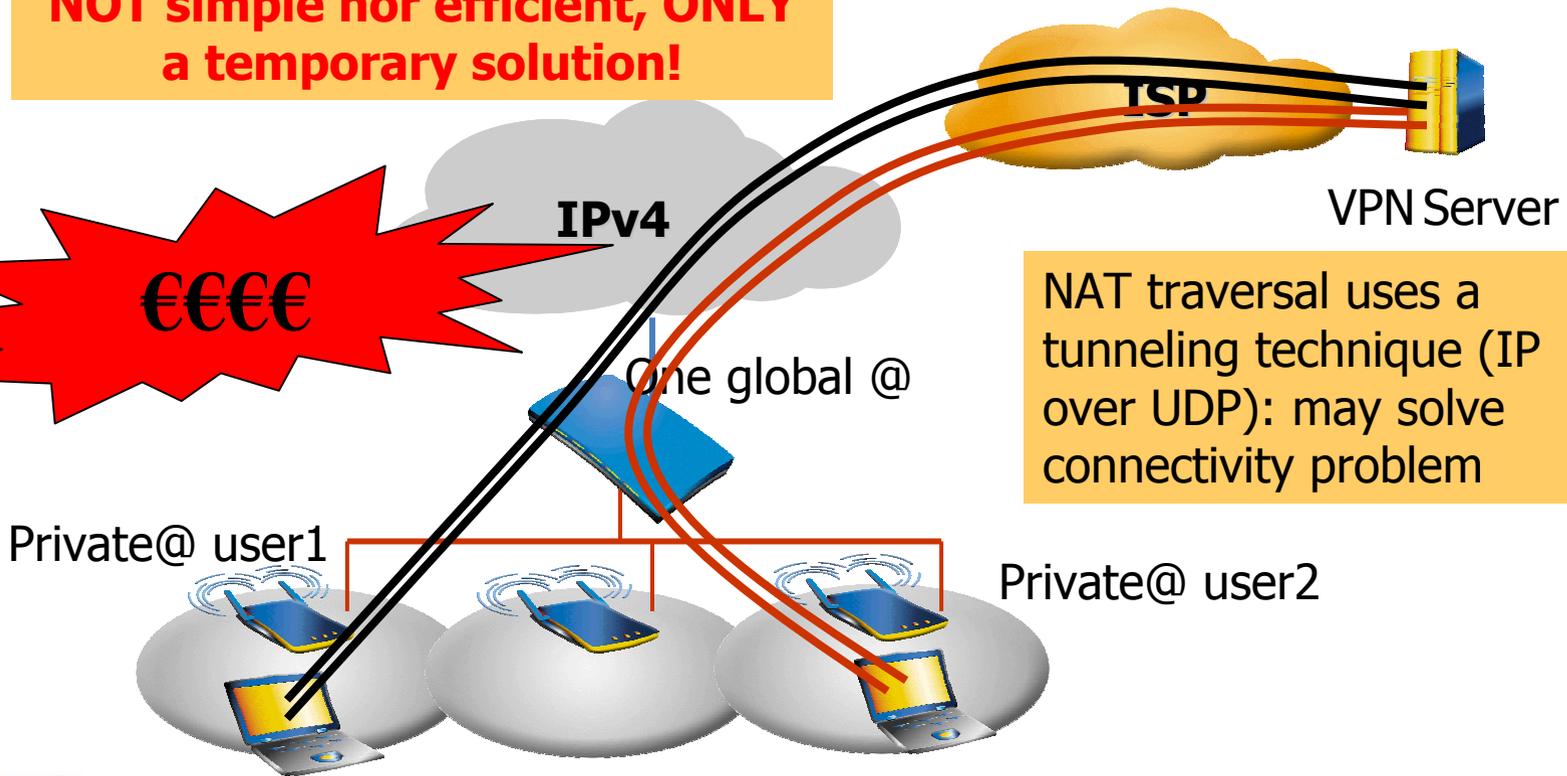
No Guarantee of Service Availability with IPv4+NAT

No guarantee that your customer can use his/her VPN client when deploying WiFi hot spot with NAT



The IPv4 Solution: Building Blocks

Using UDP as a level 2 protocol:
NOT simple nor efficient, ONLY
a temporary solution!



No WiFi without v6 !



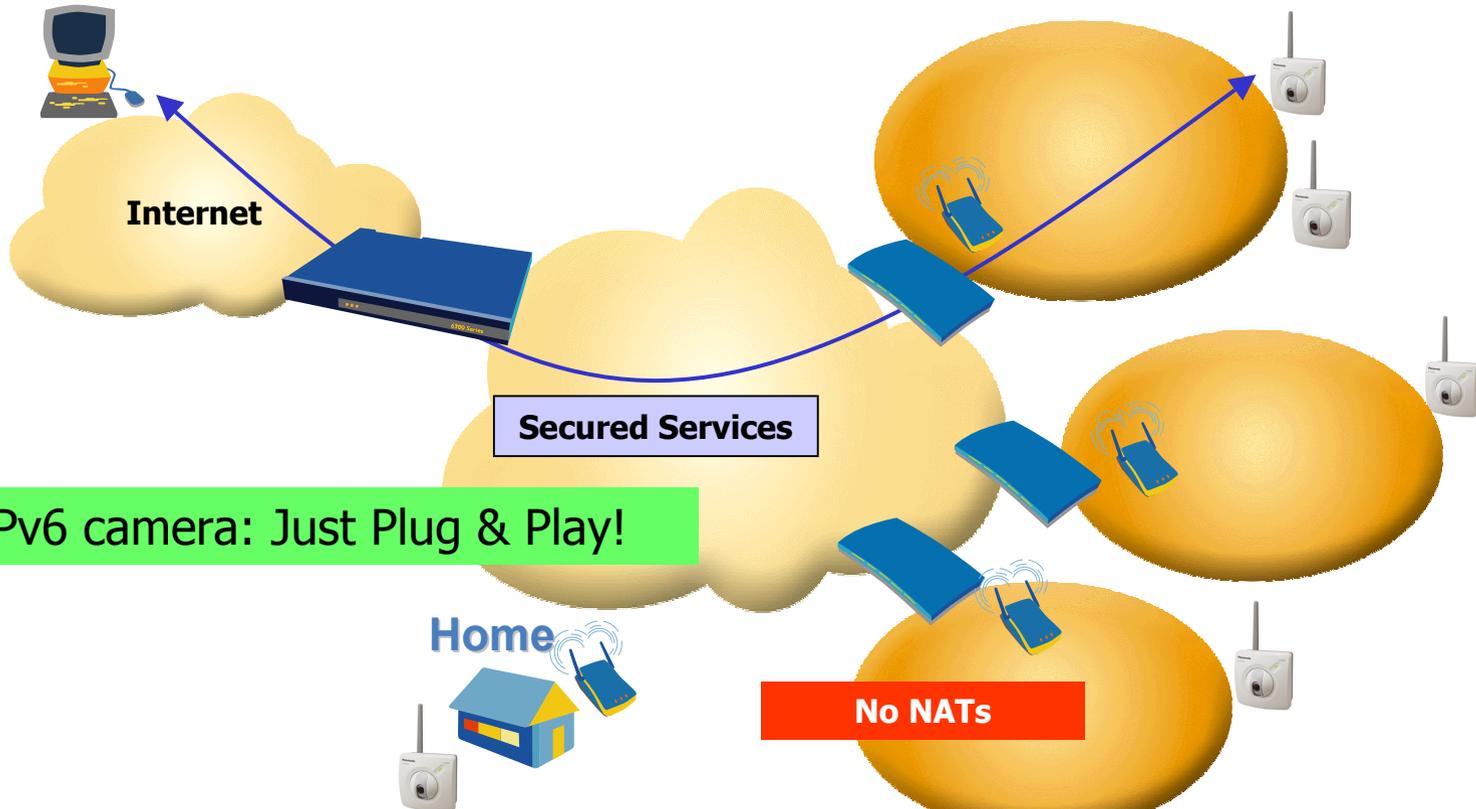
- **No extra cost to offer IPv6 in addition of IPv4 services**
- **A way to start the training of the technical team and to study the information system evolution**
- **Most wireless devices will be IPv6 ready soon**
- **A « lab » for study new business cases**
- **Available IPv4/IPv6 solutions integrating IPsec VPN features and all transition mechanisms**



Example 2

Zero-configuration devices

Remote Control of Devices



IPv6 camera: Just Plug & Play!

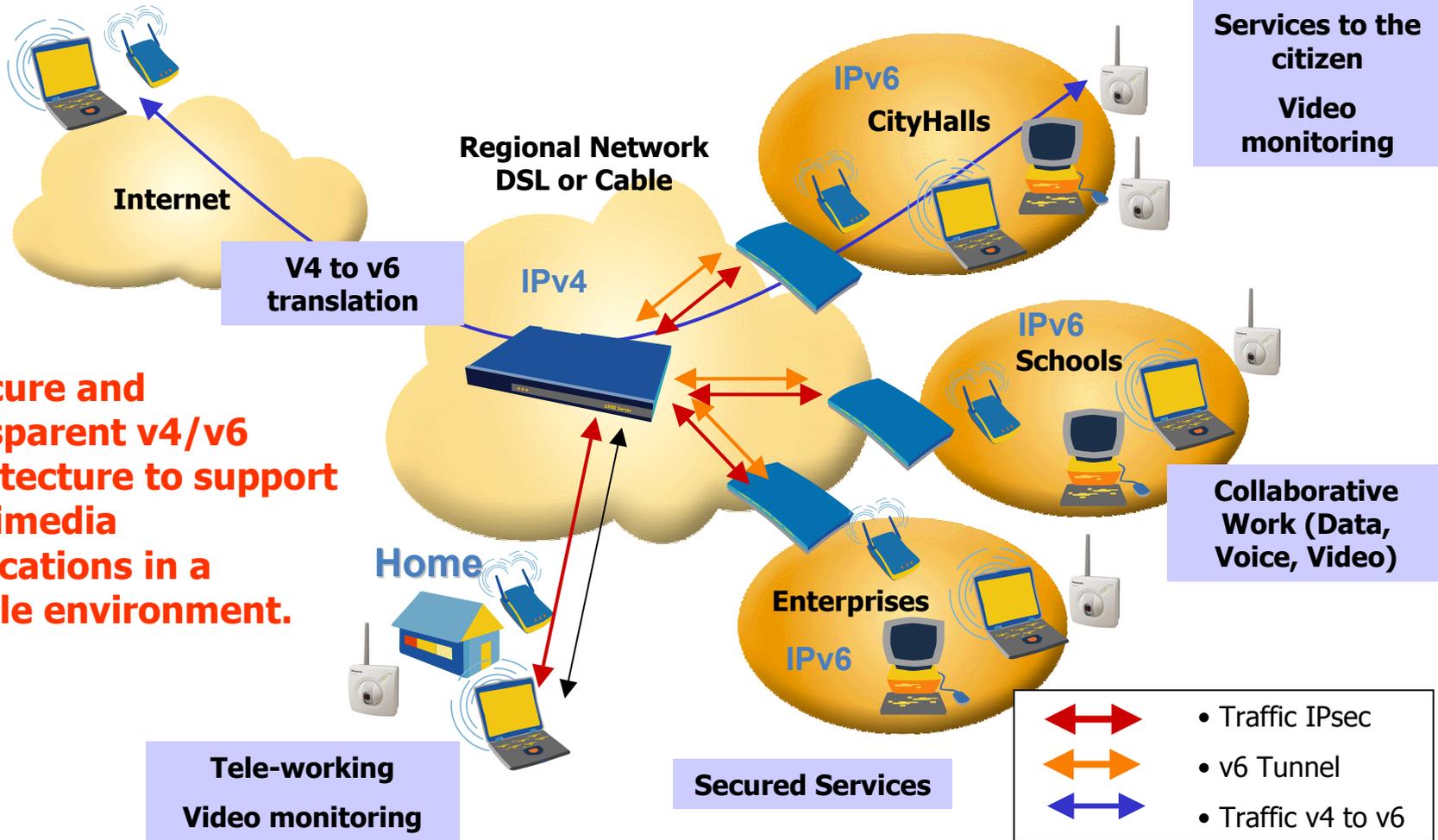
Home

No NATs

Video monitoring

IPv4 camera: configuring the NAT on the local site adds to real costs on Man Power!

IPv4/v6 integrated services



A secure and transparent v4/v6 architecture to support multimedia applications in a mobile environment.

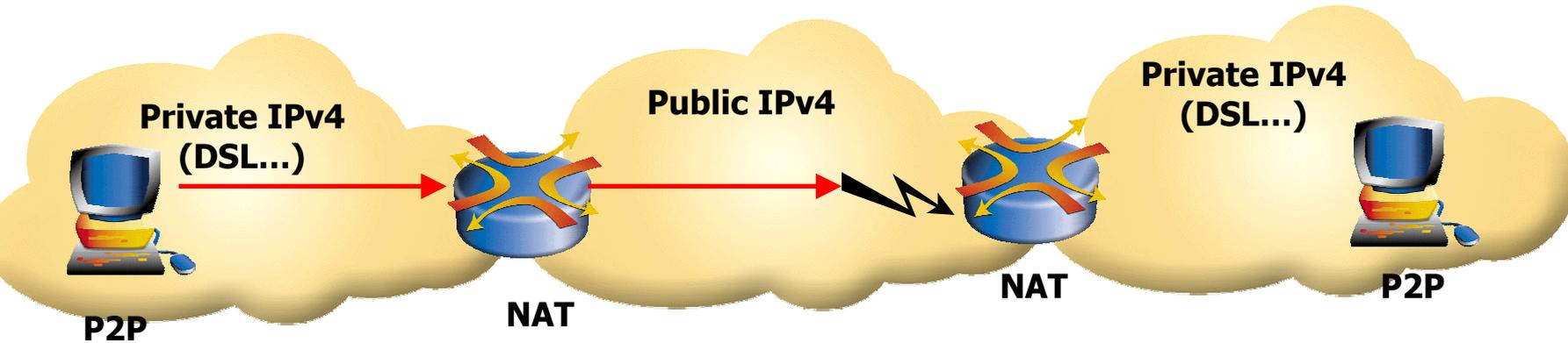


Example 3

Peer-to-Peer (P2P)

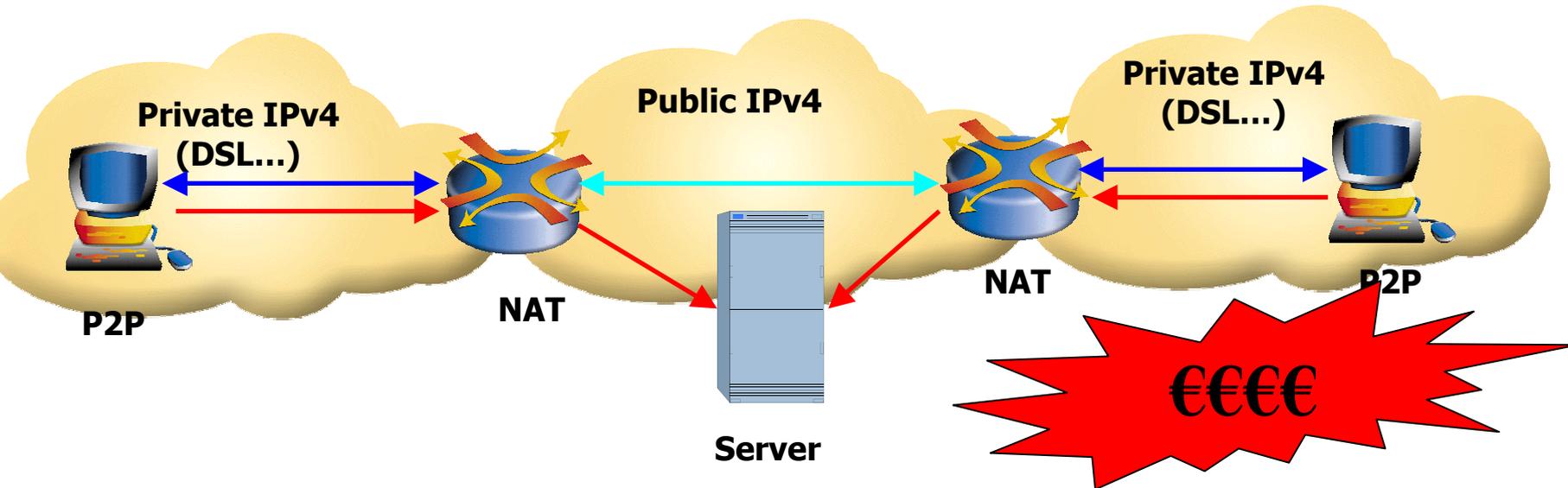


P2P Applications and NATs



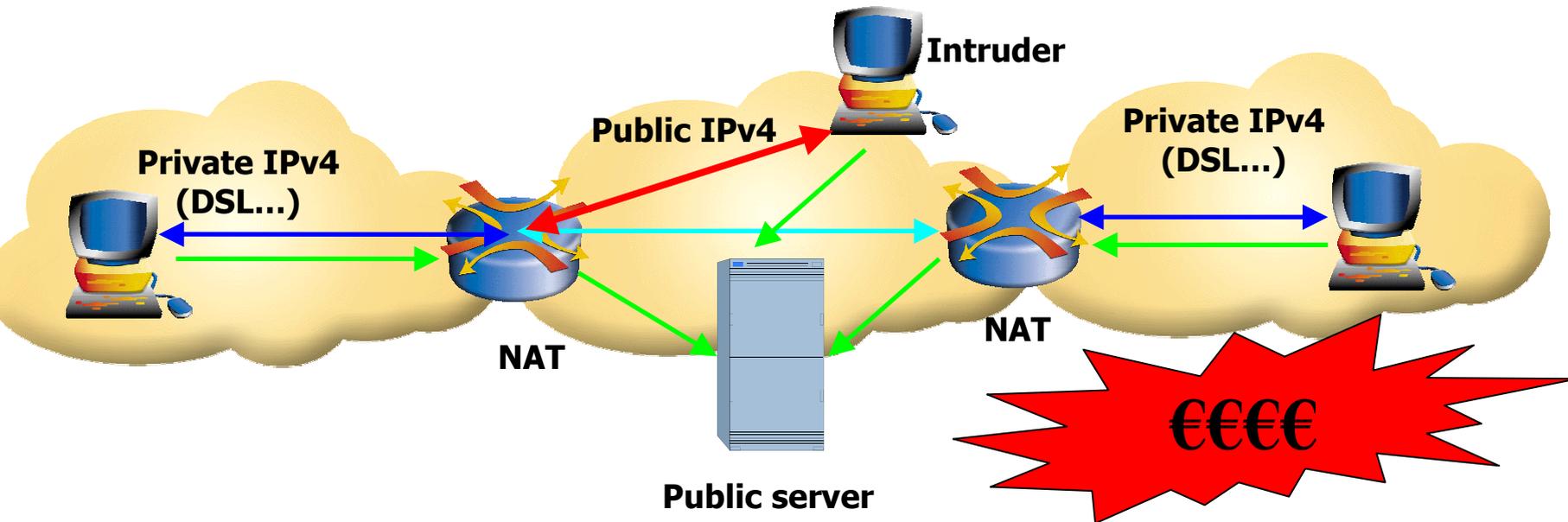
- **NATs break end-to-end**
- **End-to-end communications = telephony, remote diagnostic control, secured camera surveillance, gaming, etc.**

Solution with IPv4



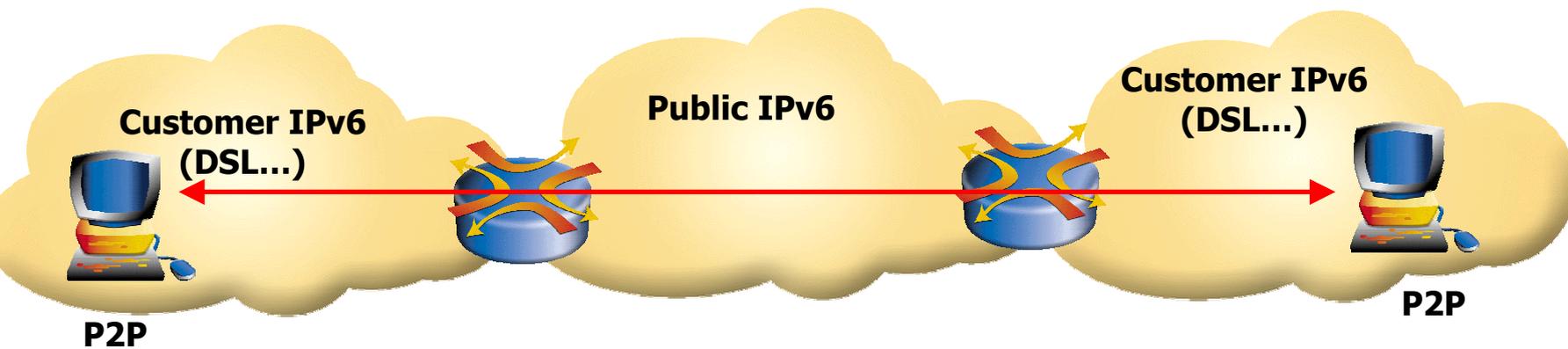
- **Use an intermediate server**
- **Complicated solution, often proprietary**
- **Operational costs**

Security Problems



- **Applications opens a hole in the NAT automatically!**
 - ✓ Control is very difficult
 - ✓ The association is available in the public server.
- **An intruder may use it!**

IPv6 based solutions

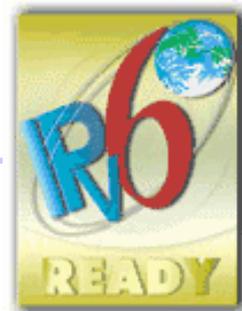


- **Simple and flexible solution**
- **No server required**
- **Cheaper to implement and operate**
- **Security and billing can be design for all P2P applications (authentication server)**

Microsoft 3 degrees

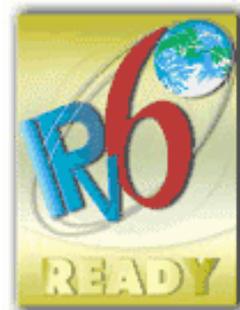
- **A P2P application based on P2P SDK**
- **3 degrees is a P2P application connecting small dedicated user groups (current beta test application on Windows XP SP1)**
- **Runs IPv6 natively**
 - ✓ Runs on native IPv6 address if available on the host
 - ✓ Or:
 - If IPv4 addresses are public addresses, 6to4 is used
NATs are not supposed to be in the way
 - If IPv4 addresses are private addresses, Teredo is used
NAT is likely in the way.
- **<http://www.threedegrees.com>**

IPv6 Ready Programme



IPv6 Ready Logo Program

- **large number of IPv6 implementations**
 - ✓ Routers, host, devices
- **Interoperability is as a critical feature**
 - ✓ Multi vendors, multi applications
- **Global & unique logo programme**
 - ✓ ETSI (EU), UNH (USA), TAHI (J)...
- **IPv6 is available and ready to be used**



Two phases

- **Phase 1**

- ✓ indicates the product includes IPv6 mandatory core protocols and interoperates with other IPv6 equipments
 - **FIRST LOGO HOLDERS ARE APPROVED**
 - See <http://www.ipv6ready.org/>



- **Phase 2**

- ✓ Definition of test profiles with associated requirements for specific functionalities

- **Methodology**

- ✓ Conformance tests
- ✓ Interoperability tests



And to conclude...

Invest In the Right Technology



- **IP is seen as the application convergence layer**
 - ✓ All legacy systems and all new systems will be IP based
- **IP is seen as the network convergence layer**
 - ✓ All new communication systems are designed to implement efficiently IP communication
- **Do you think you can continue to design systems using an “end-of-life” critical component?**

Move TODAY to IPv6, and create innovative services!



THANK YOU QUESTIONS?

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