How and Why have millions of sites been already IPv6 ready?

- IPv6 Deployment Status Report in Japan -

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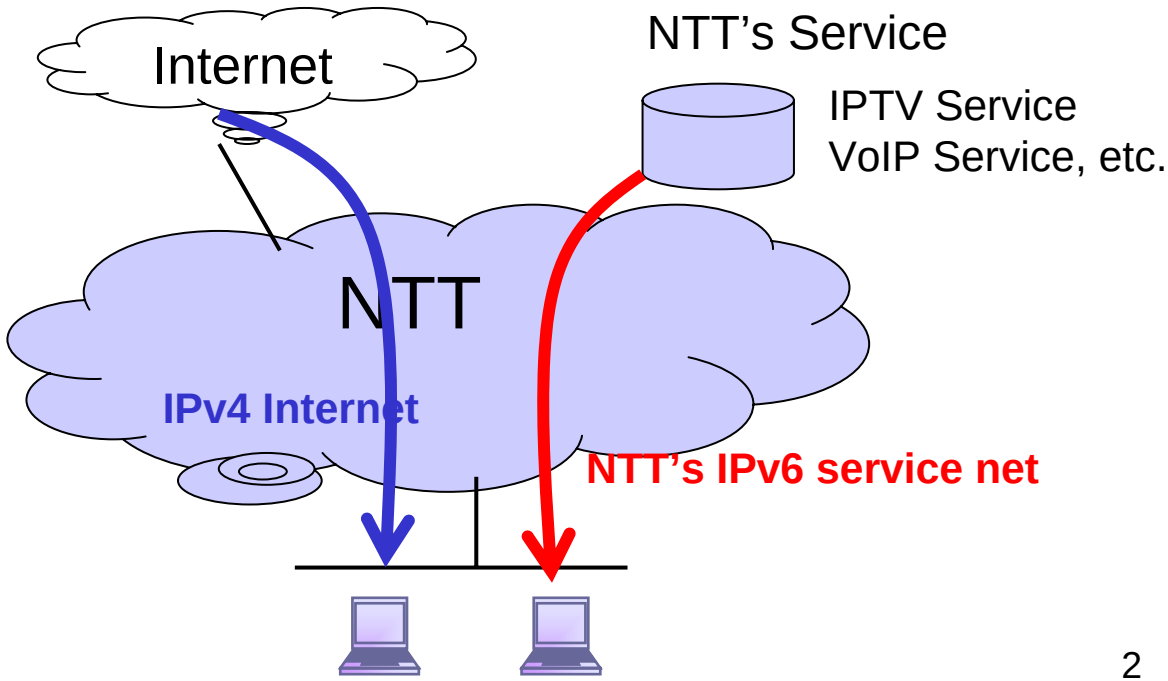
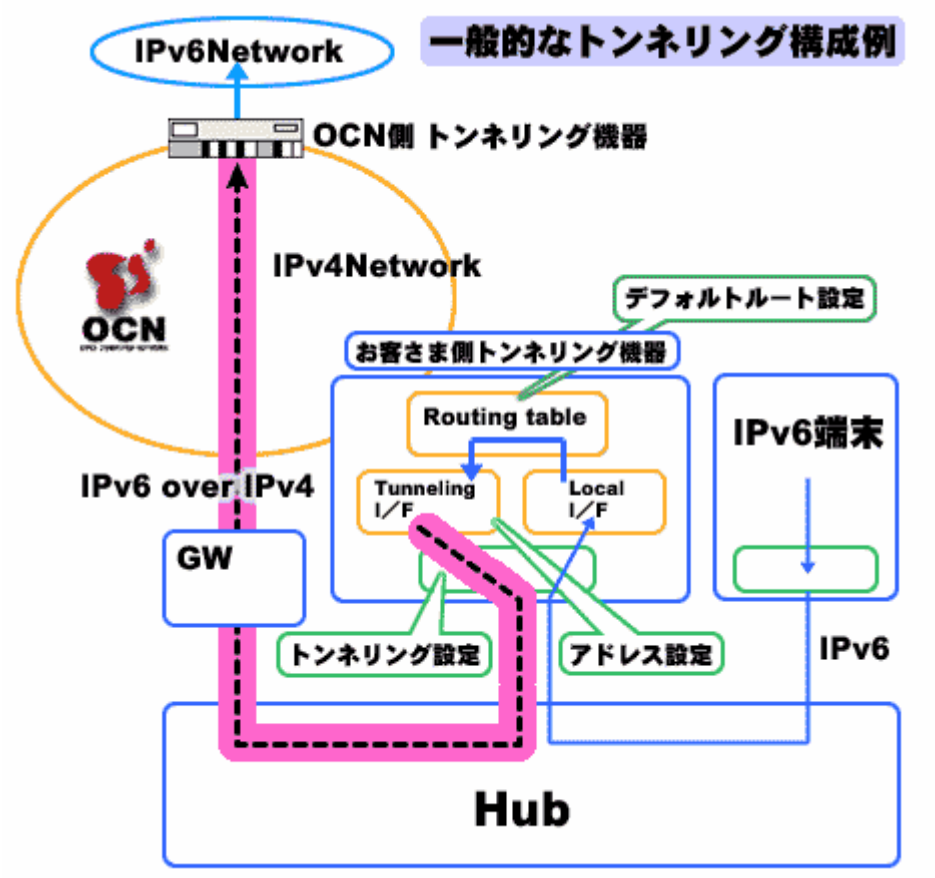
Telecom Carriers have started IPv6

- NTT West started new Internet Access service in 2005.
  - Includes IPv6 service network
    - Multicast enable
    - Closed network
  - They don't let customers know anything about IPv6.
  - NTT East follows in 2007
- Nearly two millions customers
- Why IPv6?
  - Manageability
  - Future extensibility
  - Multicast



ISPs Start Services

- Some ISPs already have started IPv6 commercial services
  - OCN IPv6 tunneling service
    - Extra $3.00



OCN's IPv6 Tunneling Service

Solving Chicken-Egg Problem

- There are one simple answer.

- Infrastructure comes first.
- Applications follow.

IPv6 Multicast solutions

- Live Lesson Services to remote sites in prep-schools (Becare, inc.)
  - High quality streaming with low cost
  - More than 1/100 cost reduction compared to using satellite network

- Earthquake Flash Report System(NTT Communications)
  - It reports that earthquake of intensity x will come in y seconds.
  - To be Urgent, Real-time
  - Unicast doesn't work

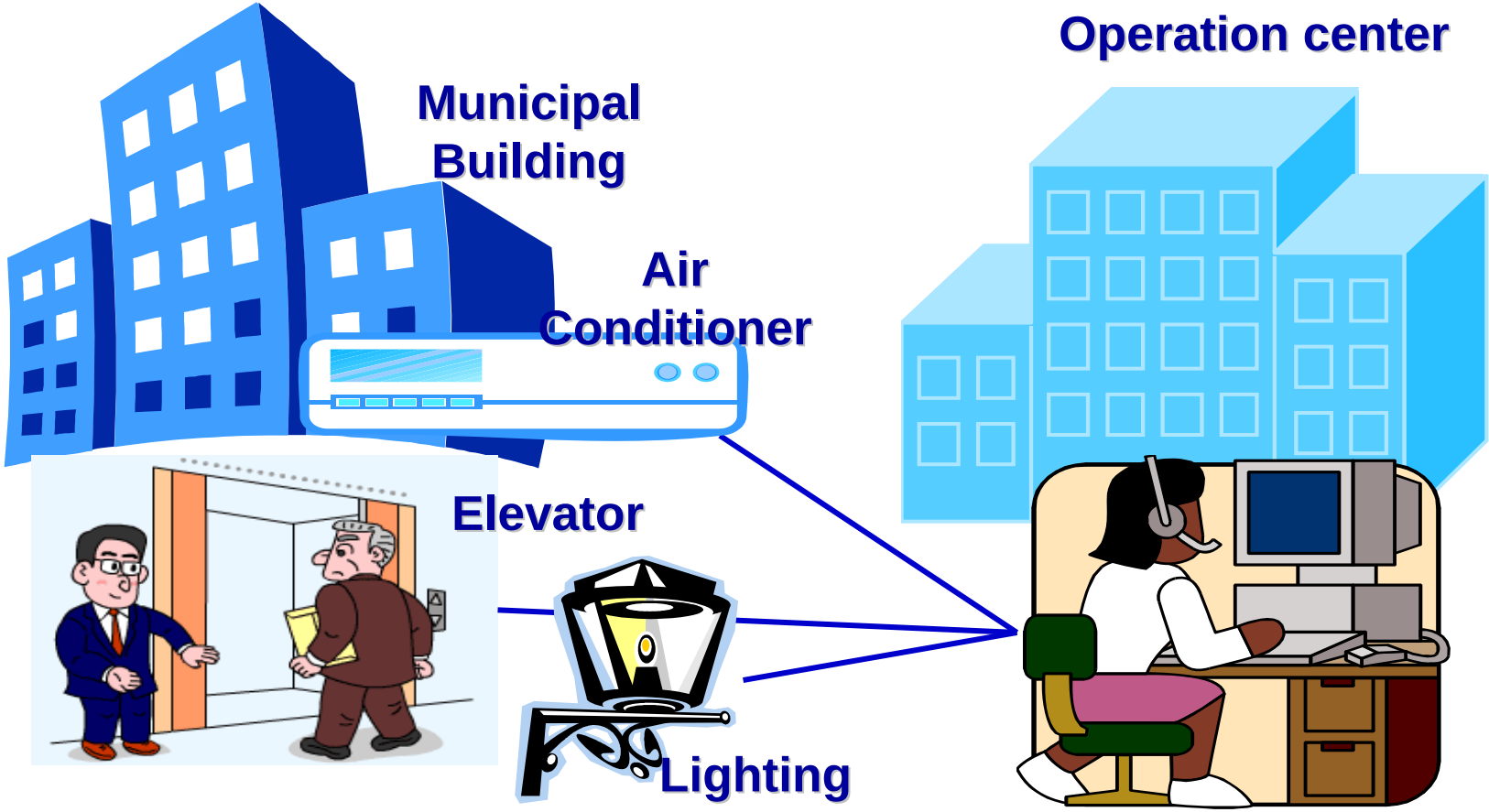
- Information delivery system to convenience stores (FamilyMart)
  - Delivers campaign info, sales manuals updates, etc from the headquarter.
  - IPv4/IPv6 dualstack in 6,000 stores
  - Solution from satellites to Broadband & Multicasts saves costs

授業配信（Becare）

フレッツフォン（NTT東）

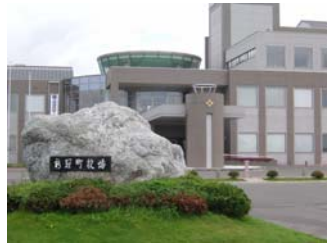
キオスク端末（Familymart）

IPv6 Building Facility Management



- **Implementing a total building management system by using abundant IPv6 addresses in some cultural facilities.**

IPv6 Information gathering system in Disaster recovery



City Hall

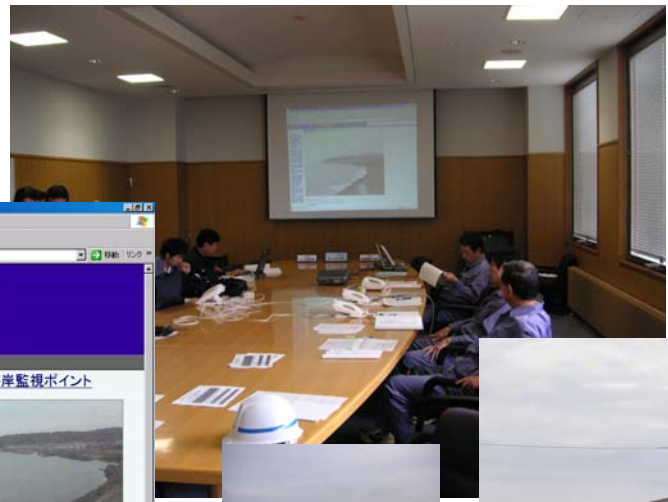
In the past, many tsunami and floods attacked the city.

Before the system

Sending persons to disaster (dangerous) spots with special wireless equipments

IPv6 Information system

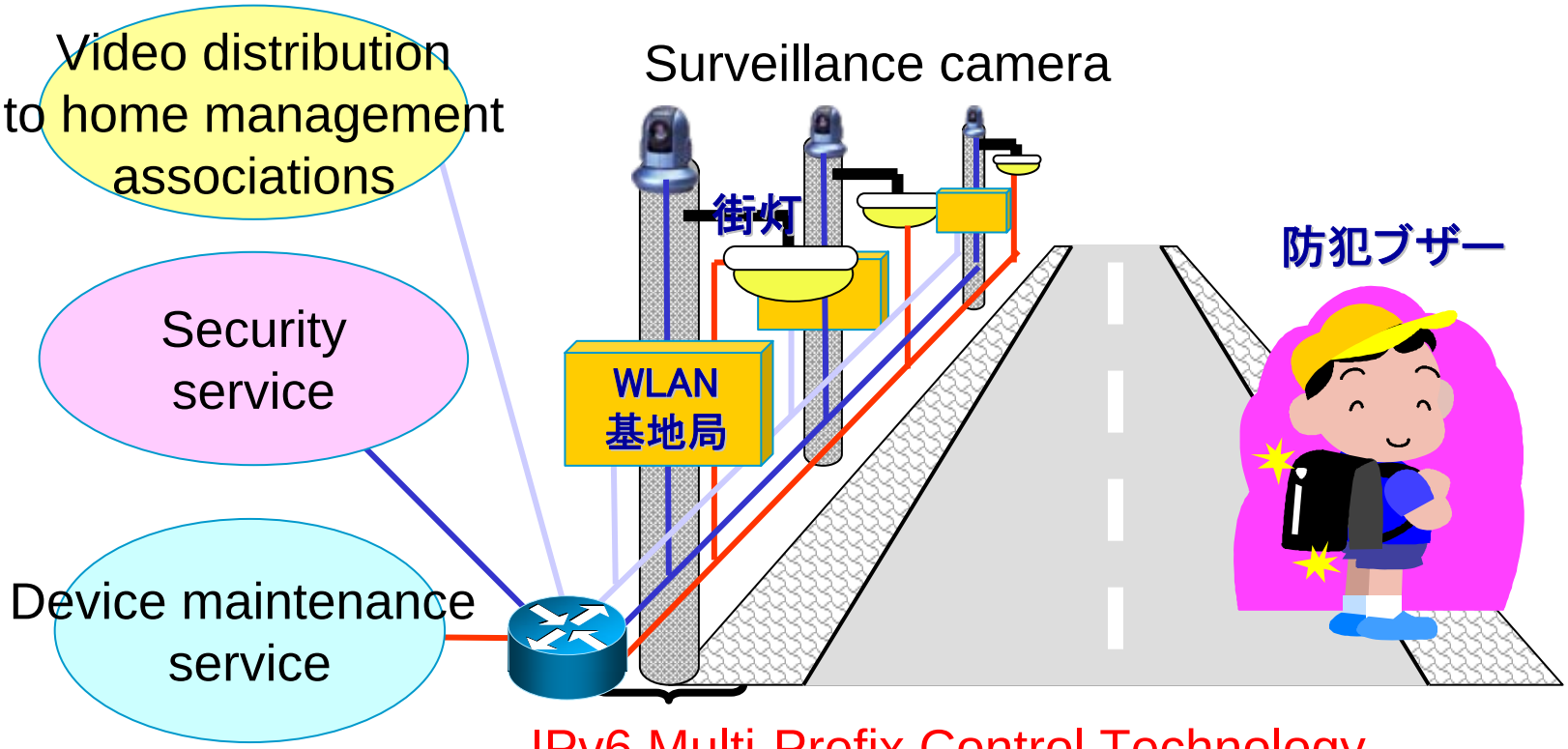
Headquarter can directly view what's happening from surveillance cameras and PDAs given to residents



Surveillance camera

右のカメラ／電柱は海岸脇に設置

IPv6 Security Town



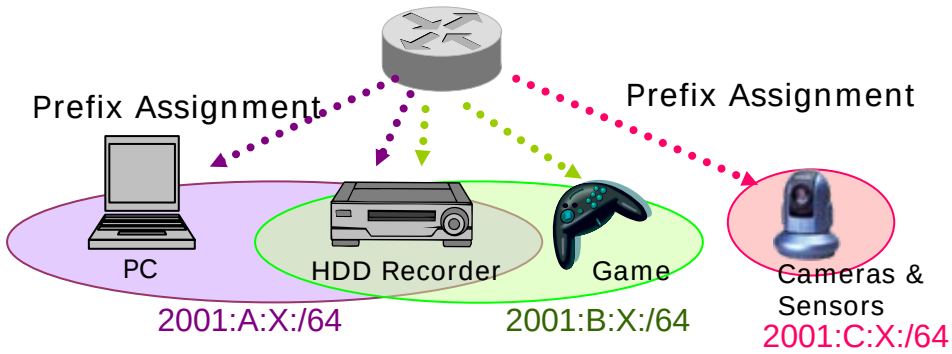
IPv6 Multi-Prefix Control Technology

One device belongs to multiple IPv6 networks.

- Implementing a security town service system by simultaneous control functions of multiple connections and automatic setting functions of IPv6.

Multi-Prefix Control Technology

- Controls multi address prefixes and provides multi logical networks in a single LAN
  - Address Prefix per a service and/or per a security level
    - Terminal with an address prefix can't access another with different one unless prefixes are routed
  - No implementation necessary in terminals
  - Assumes IPv6 because the way to use IPv4 address is limited
  - IPv6 global unique address brings various advantages such as
    - Plenty of addresses for plenty of terminals/devices
    - Address-based service management/terminal management
    - Multi-address/services for a single terminal



Deployment Models

- Motivation for IPv6 Deployment has been modeled as following three.

1. Smooth Transition
2. Forced Deployment
3. Solution-Oriented Deployment

Smooth Transition

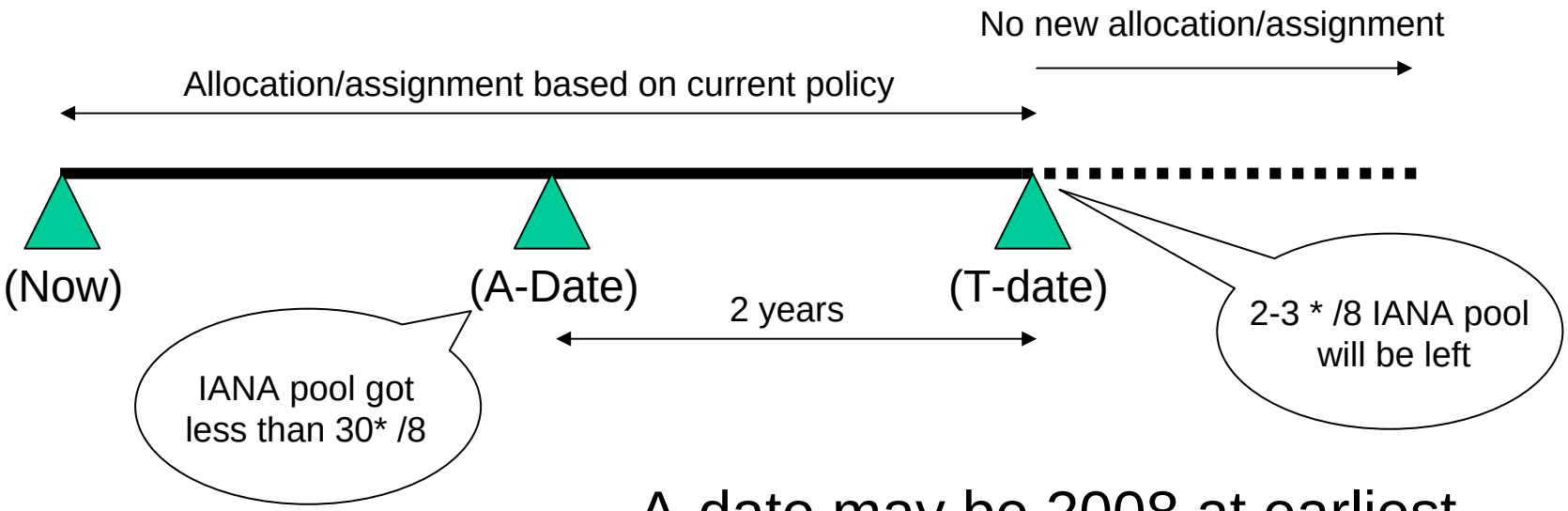
- To enable IPv6 at system renovation time
  - No extra cost needed
  - Will take 5-7 years to transit to IPv6 gradually
  - Some enterprise networks, especially IPv6 companies, do this.

Forced Deployment

- Japanese government mandates IPv6 for governmental networks by the end of FY2008.
- IPv4 address exhaustion will force ISP to IPv6.
  - It is not an issue of increasing revenue but that of business continuity.
  - 2011 is not far at all.

JPNIC's Draft Policy

- JPNIC is proposing "IPv4 countdown policy"
  - Announce the day in which the IANA pool becomes less than 30*/8 (A-Date)
  - Terminate new allocation/assignment from RIR on the day (T-Date) exactly 2 years after A-Date



A-date may be 2008 at earliest

Solution-Oriented Deployment

- System is introduced as a solution which solves a problem users have, regardless of the version of IP.
- There, IPv6 is chosen because IPv6 implementation has some advantage over IPv4.
  - Cheap
  - Easy
  - Fast
  - Extensible and flexible
  - Especially so In the long run
- Deploy IPv6 as better protocol in a new system.

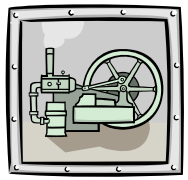
Implication of 3 models

- Who gets merits from IPv6?
  - End users don’t care about IPv6.
  - Implementers can get advantages of IPv6 in some situations.

- Stop looking for what IPv6 only can do.
- Stop commenting “this can be done by IPv4”
- Look for where IPv6 can do better, instead.

Learn from the history

- Watt's stream engines triggered a lot of innovations and changed the worlds.
- How?



- Horses could do the same things as stream engines did.
- There were many other engines what could do the same things. In a sense, Watt's was an improved technology.
- But, Watt's could do the same things much better.

- Tens of years later, big innovation happened with invention of locomotive as an application of steam engines.

- Then IPv6?

Thank you very much!

Any questions and comments to
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