# How and Why have millions of households been already IPv6 ready?

## - IPv6 Deployment Status Report in Japan -

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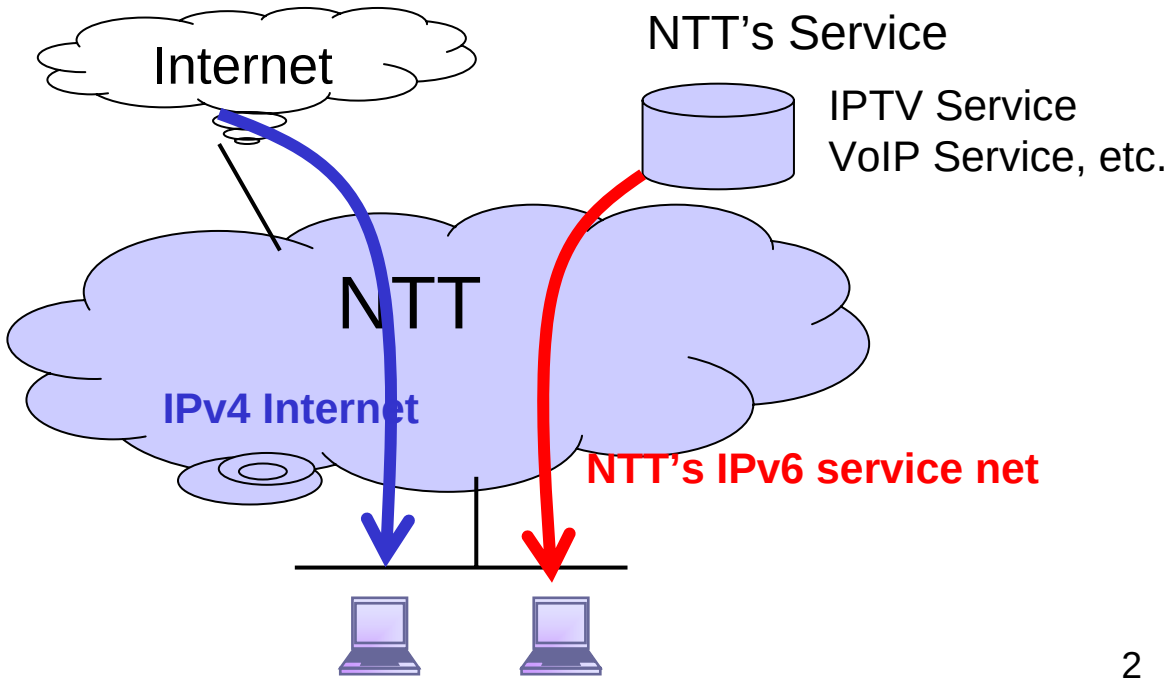
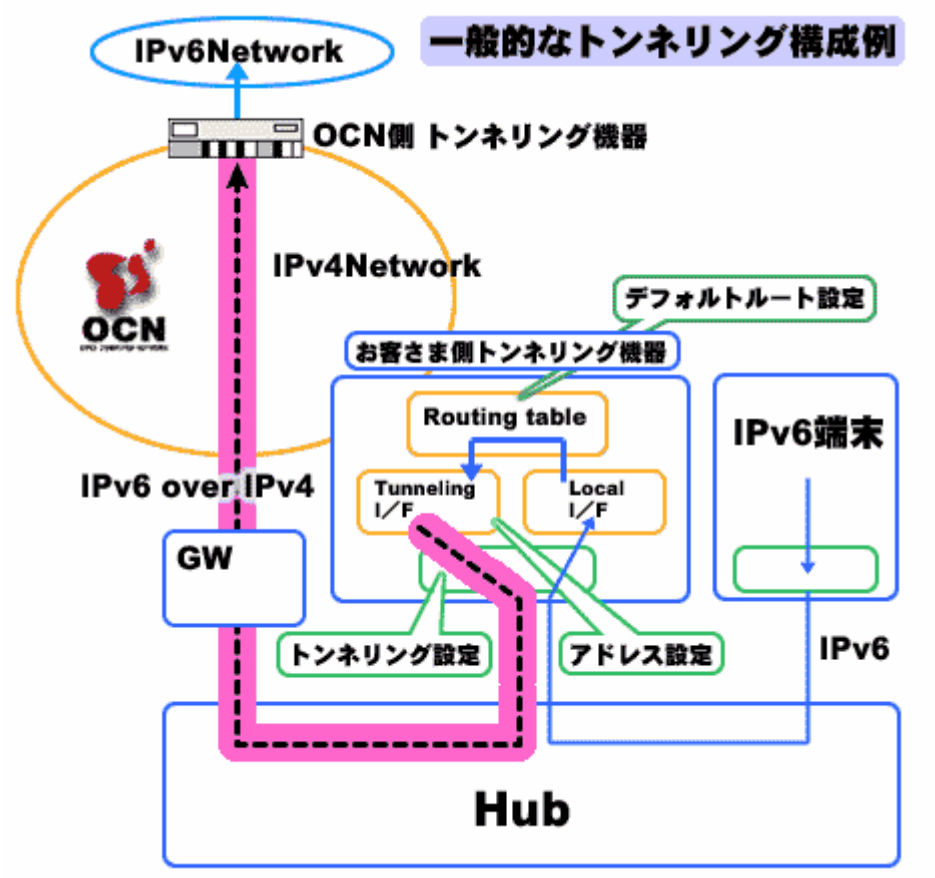
# Telecom Carriers have started IPv6

- 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.
- 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

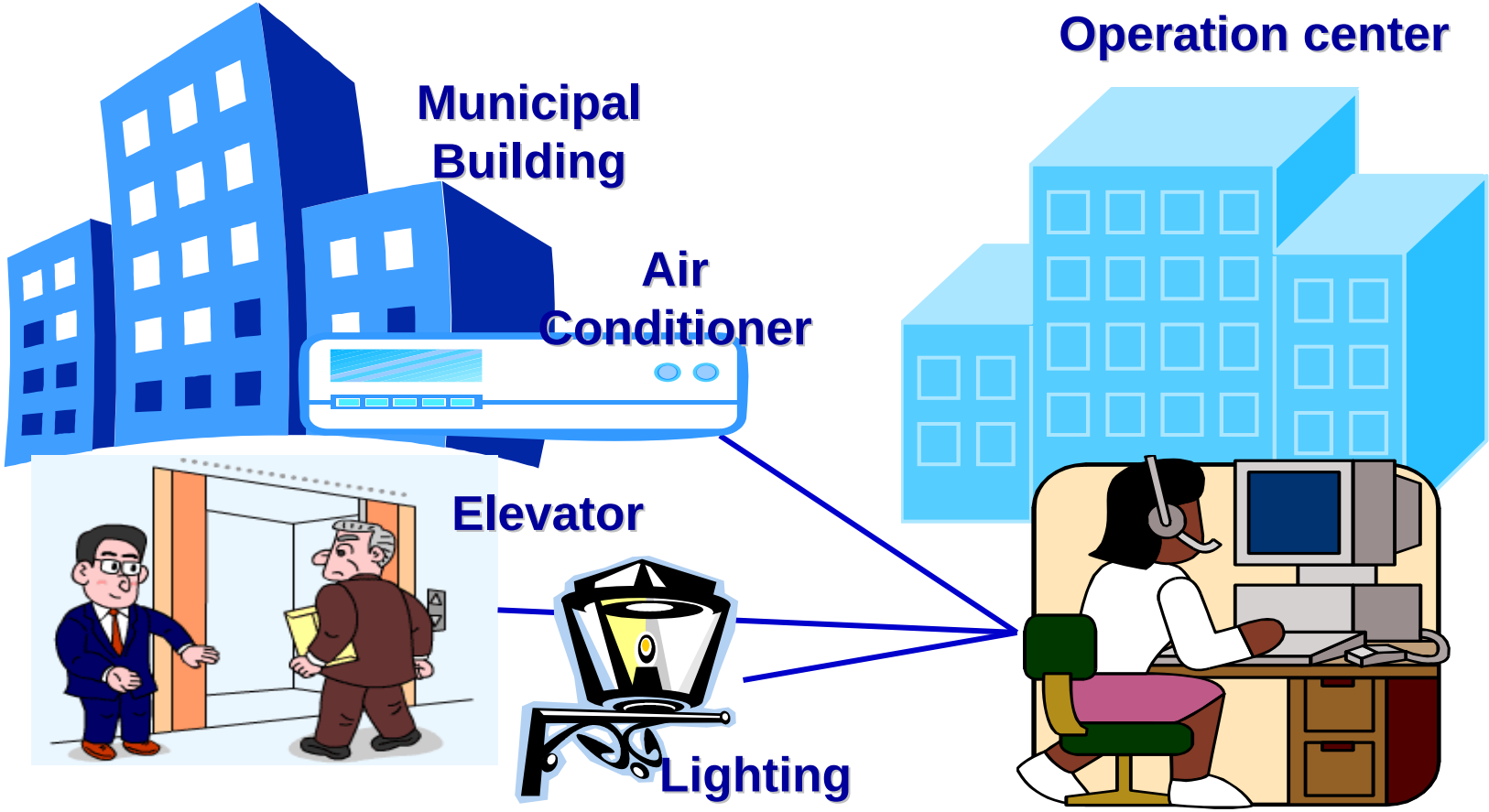
- Information delivery system to convenience stores (FamilyMart)
  - Delivers campaign info, sales manuals updates, etc from the headquarter.
  - IPv4/IPv6 dualstack in 6,000 stores
  - Solution from satellites to Broadband & Multicasts saves costs

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

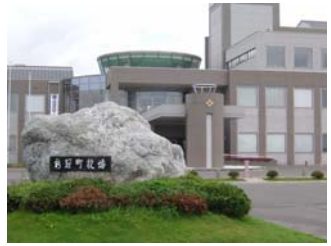



- **Implementing a total building management system by using abundant IPv6 addresses in some cultural facilities.**

# IPv6 Information gathering system in Disaster recovery

## Before the system

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

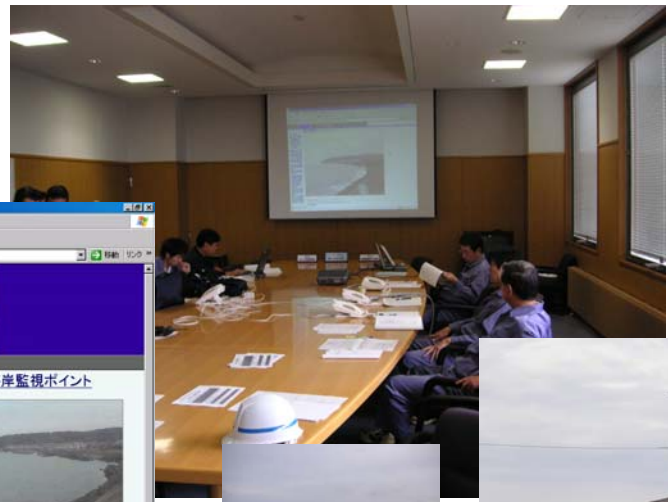


City Hall

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

## IPv6 Information system

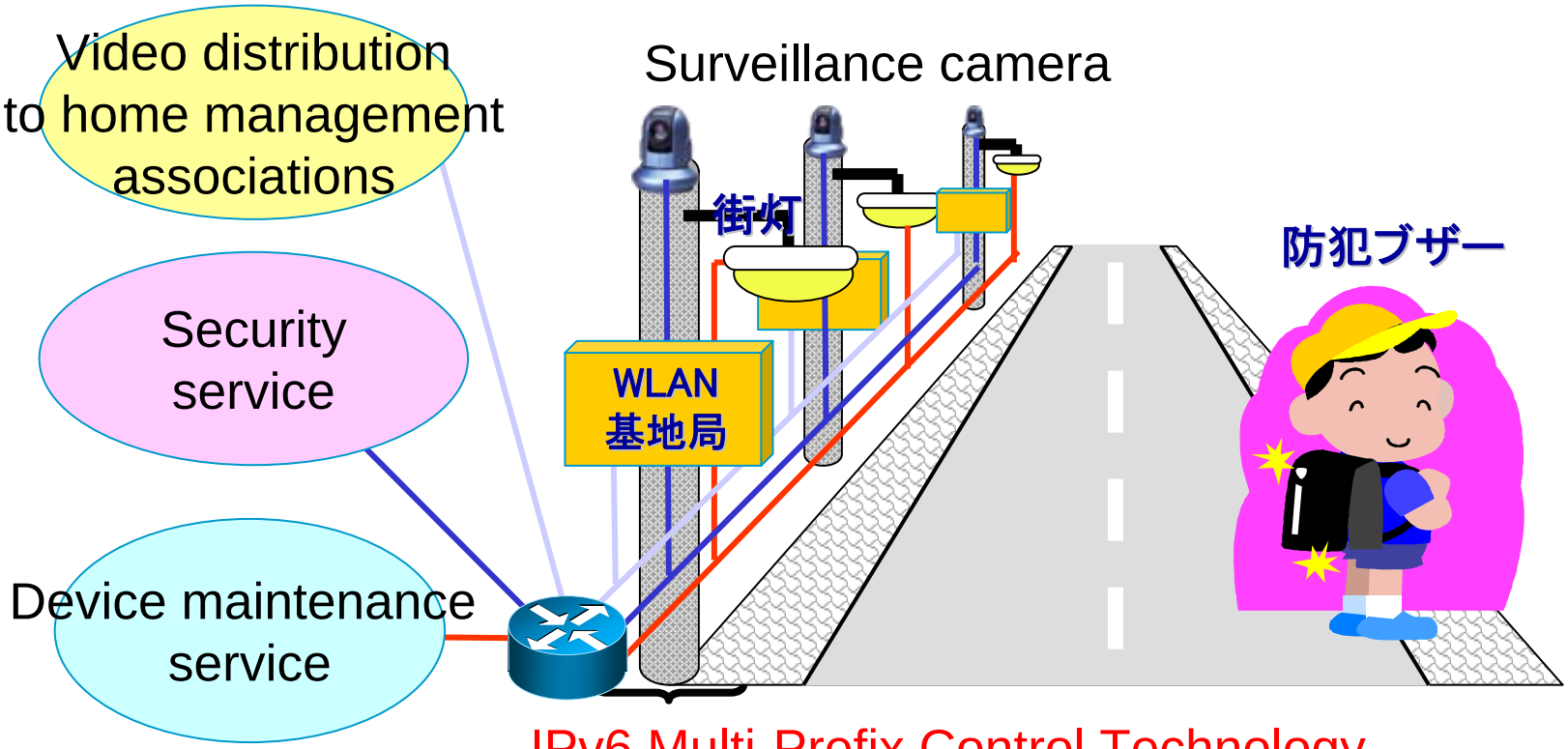
Headquarter can directly view what's happening from surveillance cameras and PDAs given to residents




Surveillance camera

右のカメラ／電柱は海岸脇に設置

# IPv6 Security Town



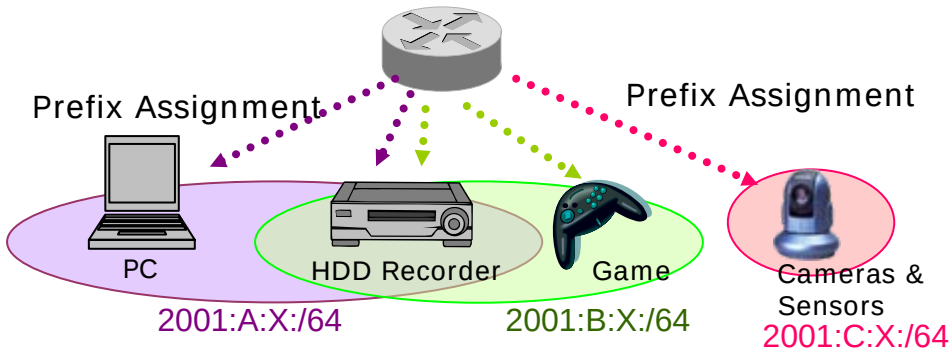

IPv6 Multi-Prefix Control Technology

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

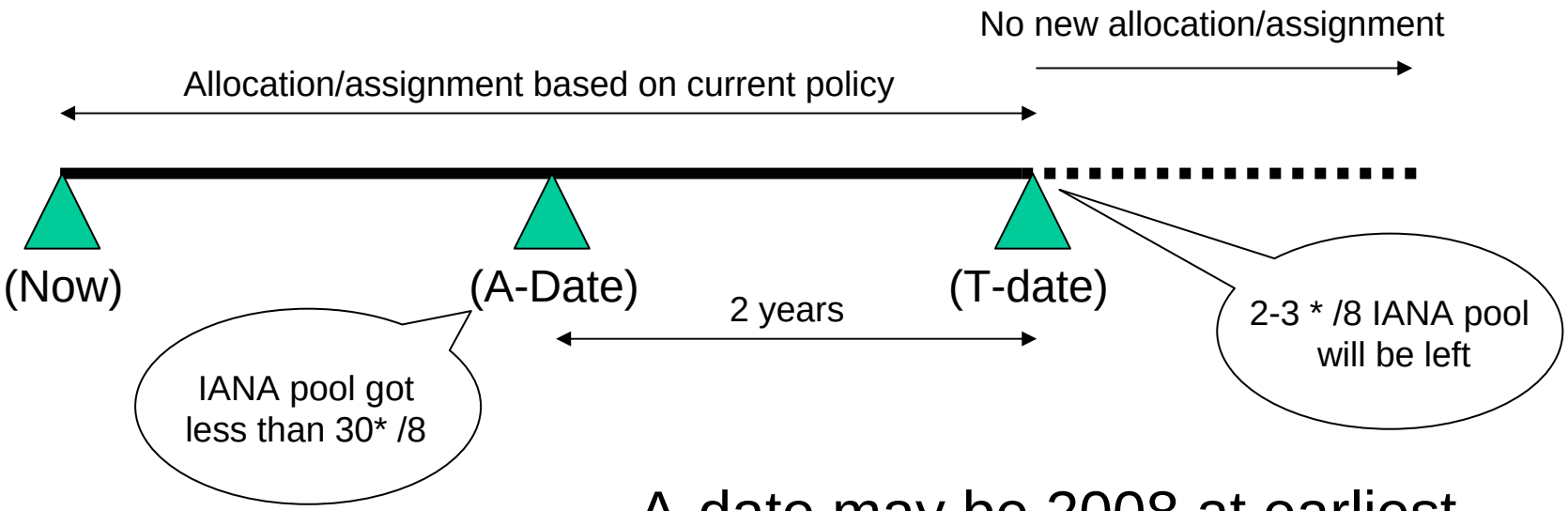
- To enable IPv6 at system renovation time
  - No extra cost needed
  - Will take 5-7 years to transit to IPv6 gradually
  - Some enterprise networks, especially IPv6 companies, do this.

## 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.

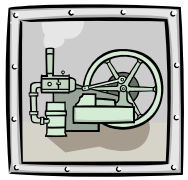
# Implication of 3 models

- 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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