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# **IPv6/IPv4 XLATE Trial Service for sharing IPv4 address**

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# What we talked before

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- **in APRICOT 2009 @ Manila**
  - **I had a presentation about IXP's consideration to IPv4 address exhaustion.**
  - **I think that IXPs should give ISPs a solution to IPv4 address exhaustion.**
    - **First impact of the exhaustion will be expanding subscriber ISPs.**
      - e.g. many ISPs in developing countries.
    - **IXP is gathering site for ISPs**
      - **Very suitable for IPv4 Address sharing point.**

[Reference]

[http://www.apricot.net/apricot2009//images/lecture\\_files/what\\_can\\_ixps\\_do\\_about\\_v4\\_exhaustion%2B.pdf](http://www.apricot.net/apricot2009//images/lecture_files/what_can_ixps_do_about_v4_exhaustion%2B.pdf)

# What we will talk here

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- **in APRICOT 2011 @ Hong Kong [here]**
  - **JPIX started offering trial service for JPIX customers since last summer.**
    - **Trial user applications are now being accepted.**
  - **I'd like to introduce in this presentation...**
    - **Introduction of trial overview**
    - **Implementation and present status**

# Agenda

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- 1. Service Overview**
- 2. Service Implementation**
- 3. Trial Service Status**
- 4. Future Plans**
- 5. Request for Comments**

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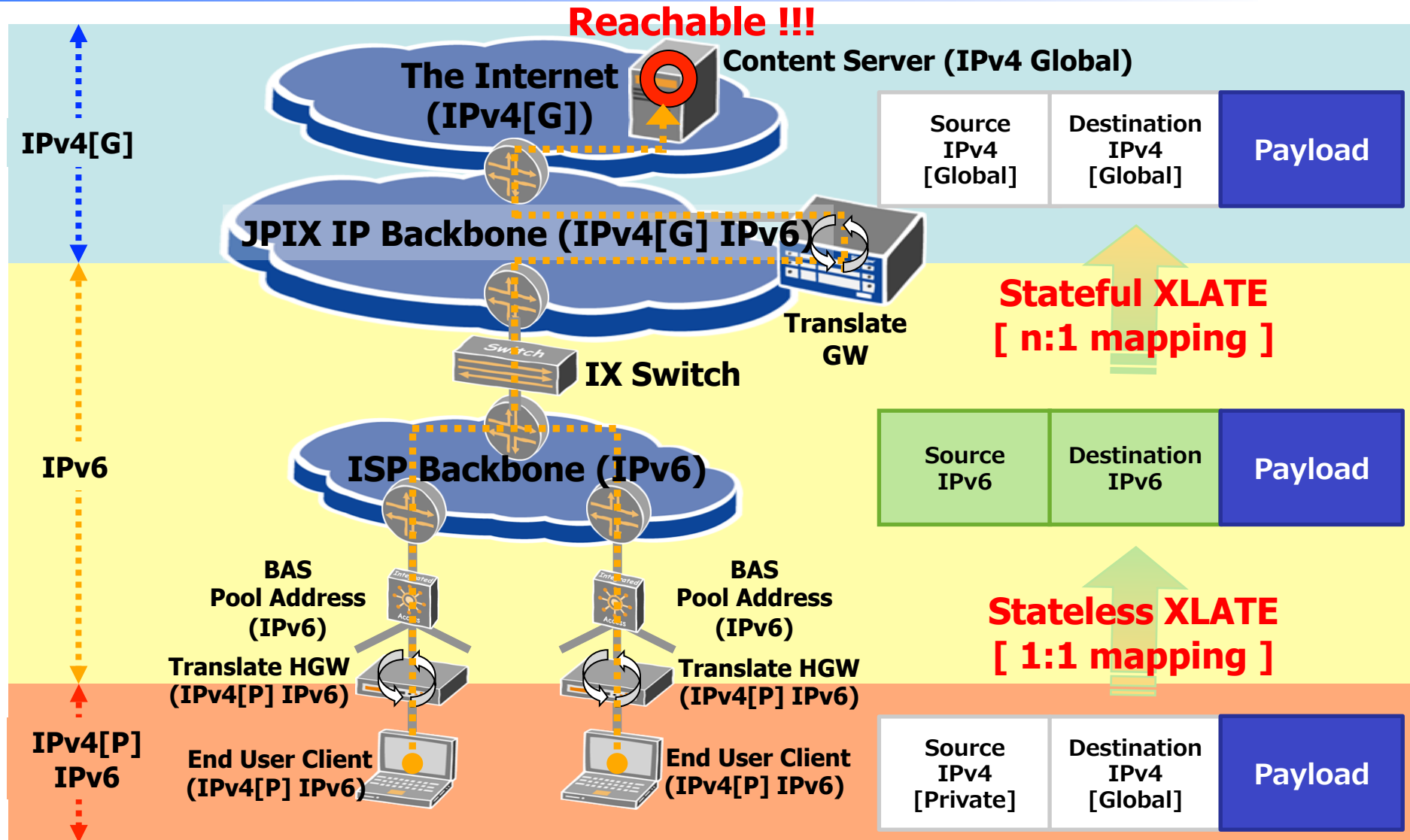
- **Review of JPIX Motivation**
  - **Shortage of IPv4 global address is coming just right now!**
    - **RIRs' IPv4 address pool exhaustion at 2011 early.**
    - **ISPs would run out of IPv4 assignment pool for end-users in late 2011 or early next year.**
  - **In small and local ISPs, it is not easy to solve IPv4 address exhaustion in only their own backbone network.**
    - **ISPs' new action item is heavy! and many! (IPv6 deploy, IPv4 share, DNSSEC, Content Block ...etc?)**
    - **IXPs should support small ISPs to survive in IPv4/IPv6 transition period by outsourcing of sharing IPv4 address!!**

- **Purpose**
  - **This solution can provide IPv4 connectivity to IPv6 end-user's host.**
  - **This trial service is implemented by XLATE technology.**
    - **XLATE is standardized as a IPv4/IPv6 address family translation Algorithm in IETF behave WG.**
    - **These Internet Drafts will become RFC standards track soon.**
      - **draft-ietf-behave-v6v4-xlate**
      - **draft-ietf-behave-v6v4-xlate-stateful**

- **XLATE technology**
  - **draft-ietf-behave-v6v4-xlate**
    - <http://tools.ietf.org/html/draft-ietf-behave-v6v4-xlate>
    - Stateless translation between IPv4 and IPv6, and between ICMPv4 and ICMPv6.
    - This translation algorithm translates between IPv4 and IPv6 packet headers only.
  - **draft-ietf-behave-v6v4-xlate-stateful**
    - <http://tools.ietf.org/html/draft-ietf-behave-v6v4-xlate-stateful>
    - Stateful NAT64 translation, which translates between IPv4 and IPv6 packet headers.
    - The public IPv4 address can be shared among several IPv6-only nodes.



# Service Overview



- Translate GW : Translating IPv6 to IPv4 (Stateful XLATE)
- Translate HomeGW : Translating IPv4 to IPv6 (Stateless XLATE)

# Agenda

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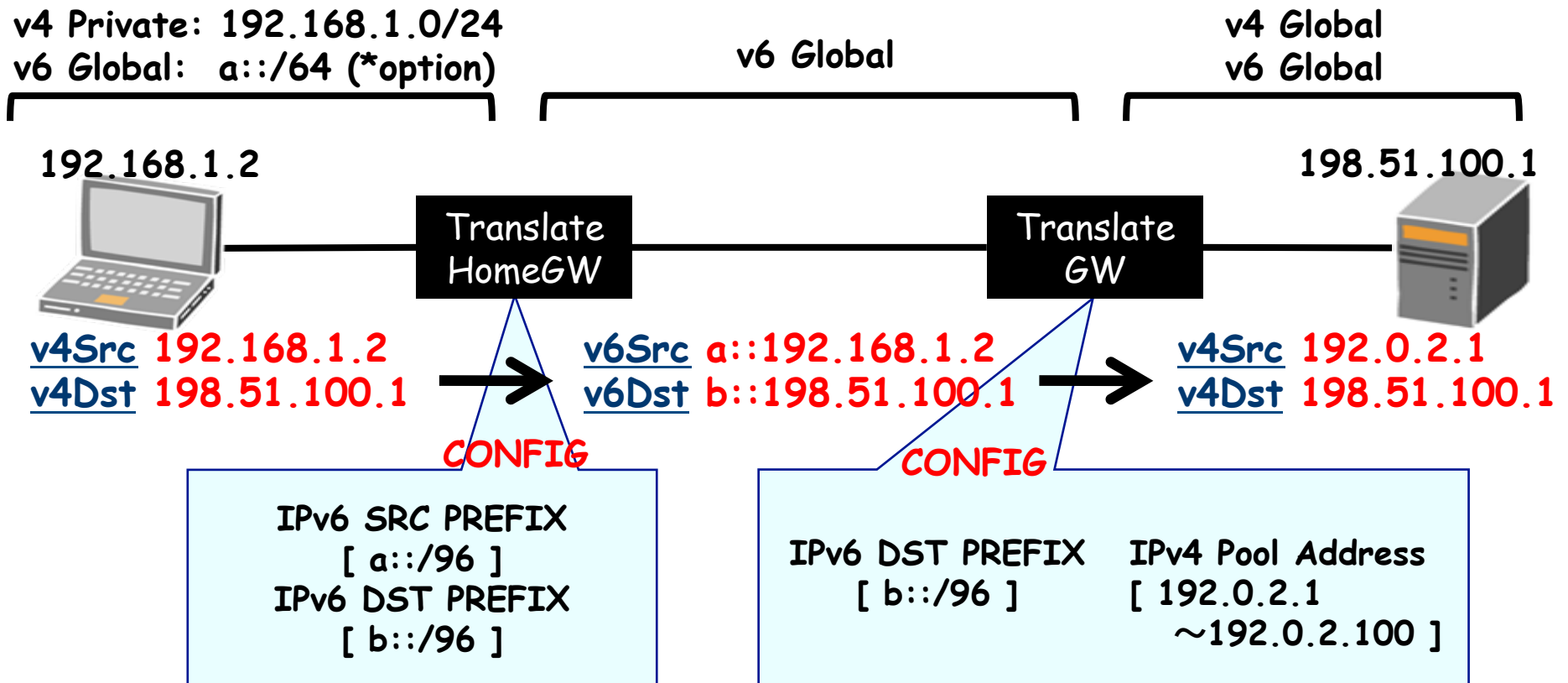
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# Service Implementation

- **Translate GW**
  - **This Gateway is installed in IP backbone network.**
  - **Implemented Stateful XLATE**
  - **IPv4 global address pooling for sharing among ISPs**
  
- **Translate HomeGW**
  - **This Home Gateway (CPE) is installed in ISP subscriber (ISP end user) premises.**
  - **Implemented Stateless XLATE**
  - **Translate HomeGW rental to each ISPs participating this trial service for free.**

# Service Implementation

## IPv4[P] --> IPv6 --> IPv4[G] Address Translation Flow



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# Trial Service Status

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- **Number of trial service users**
  - **Broadband Internet Provider : 6**
  - **CATV Internet Provider : 2**
  - **Hosting, Contents Provider : 3**
  
- **We can continuously accept trial service users.**
  - **This service is confined to JPIX IX members. sorry...**
  - **We would like to give feedback about the experiences and idea.**

- **Current comments from trial service users.**
  - **About this service**
    - End users can access the IPv4 Internet without regard to only IPv6 access line.
    - ISPs can adopt effective solutions against IPv4 address shortage.
  - **About Translate HomeGW**
    - Compact size is good.
    - Easy to configure IPv4/IPv6 translation statement.
  - **About service operation and user support.**
    - Concerned about method of Translate HomeGW delivery.
    - Concerned about address mapping log survey.

- **Traffic stats at Translate GW**

Space to put graph...

- **Address mapping stats at Translate GW**

Space to put graph...



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# Future Plans

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- **Feature extensions**
  - **ICMP in ICMP**
  - **Hairpinning on Translate GW**
  - **Translate HomeGW auto configuration**
- **Improvements**
  - **Throughput performance**
  - **Health check for Translation (for operation issue)**
- **Trial service's knowledge**
  - **Growing knowledge and information for publicly introducing.**

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# Request for Comments

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- **Consideration about IPv6/IPv4 XLATE**
- **Consideration about JPIX's status**
- **Any comments.**

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# Thank you !