IPv6 and Ubiquitous Home, Office and Mobile Networks

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Ubiquitous World
Mega Trend

Convergence of Mobile, Home, Office Network
Seamless Network ➔ Connected All ➔ Network Freedom

Degree of Networking
High

Low

Stand-alone Devices

Digital Convergence

Mobile N/W

Home Office

Mobile

Home Office

Homogeneous Network

Ubiquitous Computing

- Pro-active Computing
- Wearable Computing
- Pervasive Computing

1999
- PC, HHP
- Stand-alone

2002
- B/B + Mobile
- Separated Networks

2005
- All IP
- Seamless Network

2010
- +Sensor N/W + AI
- Context Awareness
Human Centric Technology

Always Connected

Anything is a device

Context-Aware

Seamless
Seamless

Handover & roaming in Heterogeneous networks

Network Seamless

Device Seamless

No service interrupt during device changing

Provide personalized content delivery services based on user’s situation.
Context-Aware

Health Monitoring System for Senior

Provide the best services which meet the situation

Recognize ubitizens or the situation

Location-based service using GPS

NTT DoCoMo

< Human >

Intelligent Table

Phillips: LiMe

< Environment >

Ubitizens: Ubiquitous Citizen
Sensor Network

Safety Monitoring

Environmental Monitoring

Military

Health Monitoring
Ubiquitous Service & Business

- U-Commerce
- ITS
- Location-Based Service
- U-Health
- Sensor Network
- U-learning
- U-Government Service
- Telemetry
- U-Home Service
Ubiquitous Network Functions

Networking Globalization

Convergence of Sensing and Network

Core Component => Network, Multi-Function

IPv6 Features

- Network Addressing
  - Enough Address space
  - Simple address for sensor
  - Address Auto-configuration
- Security Supporting
- QoS Supporting
  - Congestion/flow control
  - Low Latency and Delay
- Host Mobility Management
- Network Mobility Management
- Ad-hoc routing
- Energy conserving
- Ease of Network Management
  - Self Organization
  - Service Discovery
IPv6 & Ubiquitous Network
IP address Needs for Connectivity in any devices

Need for IP Addresses

- Automation system
  - Burglar system
  - Heating
  - Electricity
  - Remote monitoring

- Personal devices
  - Mobile phone
  - Laptop computer
  - PDA
  - MP3 player
  - Web browser pad
  - Digital camera
  - Sensor devices

- Home electronics
  - Personal computer
  - TV
  - Micro-oven
  - Set-top box
  - Video player

- Vehicles
  - Car
  - Sailing plane
  - Train
  - Aeroplane
IPv4/IPv6 Comparison

IPv6

- Enough Address Space (128 bits)
- More Efficient Routing
- Scalable QoS
- Scoped Address
- Mandated IPsec
- Multihoming Enabled
- Improved Method to change ISPs
- Reduced Management Requirements
- Better Mobility Support

IPv4

- Exhaustion of IPv4 Address Space
- Lack of Security
- Maintenance of Routing Tables
- Manual/Stateful Address Configuration
- Lack of QoS
- Lack of Mobility
- Problem of NAT Usage
- Ubiquitous N/W
- Inadequate

Scalable QoS

Ubiquitous N/W Friendly
Paradigm Changes with IPv6

- Sensors
  - Apply to all devices

- Intelligence of devices and networks

- Human-oriented age:
  - communication between Any-device in Anytime, Anywhere

Person
Home
Global
IPv6-based UB Network Environment

- Education Device
- Home Server
- IPv6
- Smart Cooker
- Family Doctor
- Mobile Phone
- Mobile PC
- Mobile Network Printer
- Messenger
- Home Appliance
- Automobile
UB Network: Home

Ad Hoc Network

IPv6

HB WPAN

Ubiquitous Server

IPv6

LR WPAN

WPAN

UB Sensor

Ubiquitous Server
Guarantee the mobility of US

IPv6 Mobility

Wireless Connectivity

Connect multiple US through network

Move

UB Sensor
Ubiquitous Server
An Industry Perspective
Network Convergence and UB

Mobile
Wired → Wireless
Integration of Wired/ Wireless

Convergence
Network convergence → PSTN, Internet Wireless Network, Broadcast network

Intelligent
Voice/character recognition
Automatic Translation

High Speed/Broadband
Giga/Tera-bit
Optical Network FTTH
The IT839 Strategy

8 New Services
- WiBro
- DMB
- Home N/W
- Telematics
- RFID
- W-CDMA
- Terrestrial DTV
- Internet Telephony (VoIP)

3 Infrastructures
- Broadband convergence N/W (BcN)
- Ubiquitous Sensor N/W (USN)
- IPv6

9 IT New Growth Engine
- NG Mobile Communication
- Digital TV
- Home N/W
- IT SoC
- Next-Generation PC
- Embedded S/W
- Digital Contents
- Telematics
- Intelligent Service Robot
WiBro (Wireless Broadband) in Korea

- High Speed Internet Connection (Max. 30Mbps)
- Anytime and anywhere, on the move or at a standstill
- Launch of Commercial Service in 2006

• High Speed Internet Connection (Max. 30Mbps)
• Anytime and anywhere, on the move or at a standstill
• Launch of Commercial Service in 2006
Samsung’s Ubiquitous Vision

Realize Ubiquitous World with Samsung Any-X solution

Any-X

Any Time
Any Where
Any One
Any Device
Any Media

. . . .
IPv6 as Any-X Enabler

IPv6 as Any-X Enabler

IPv6 Network

IPv6 Devices

IPv6 Technology

Context-Aware

Any-X

Core Network

Mobile Network

Office Network

Home Network

Core Components

Routing

Mobility

Multi-Homing

Security

QoS

Address Auto-configuration
Thank You !