



Experiences through

Collaborative activity to overcome IPv4 address exhaustion



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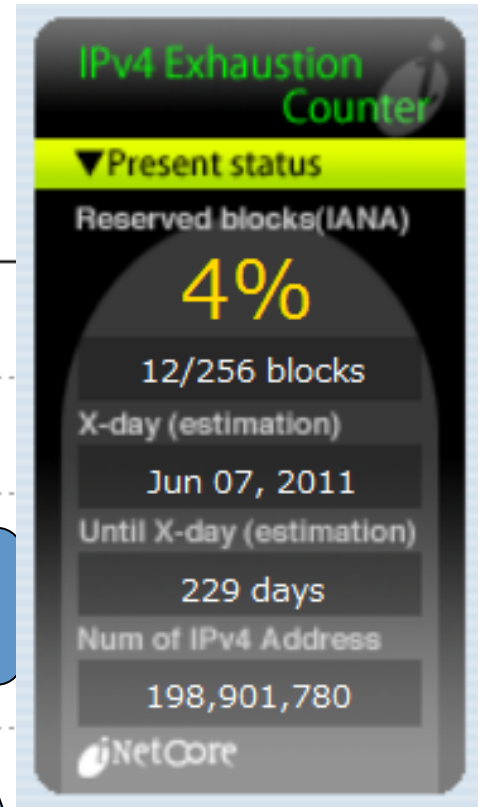
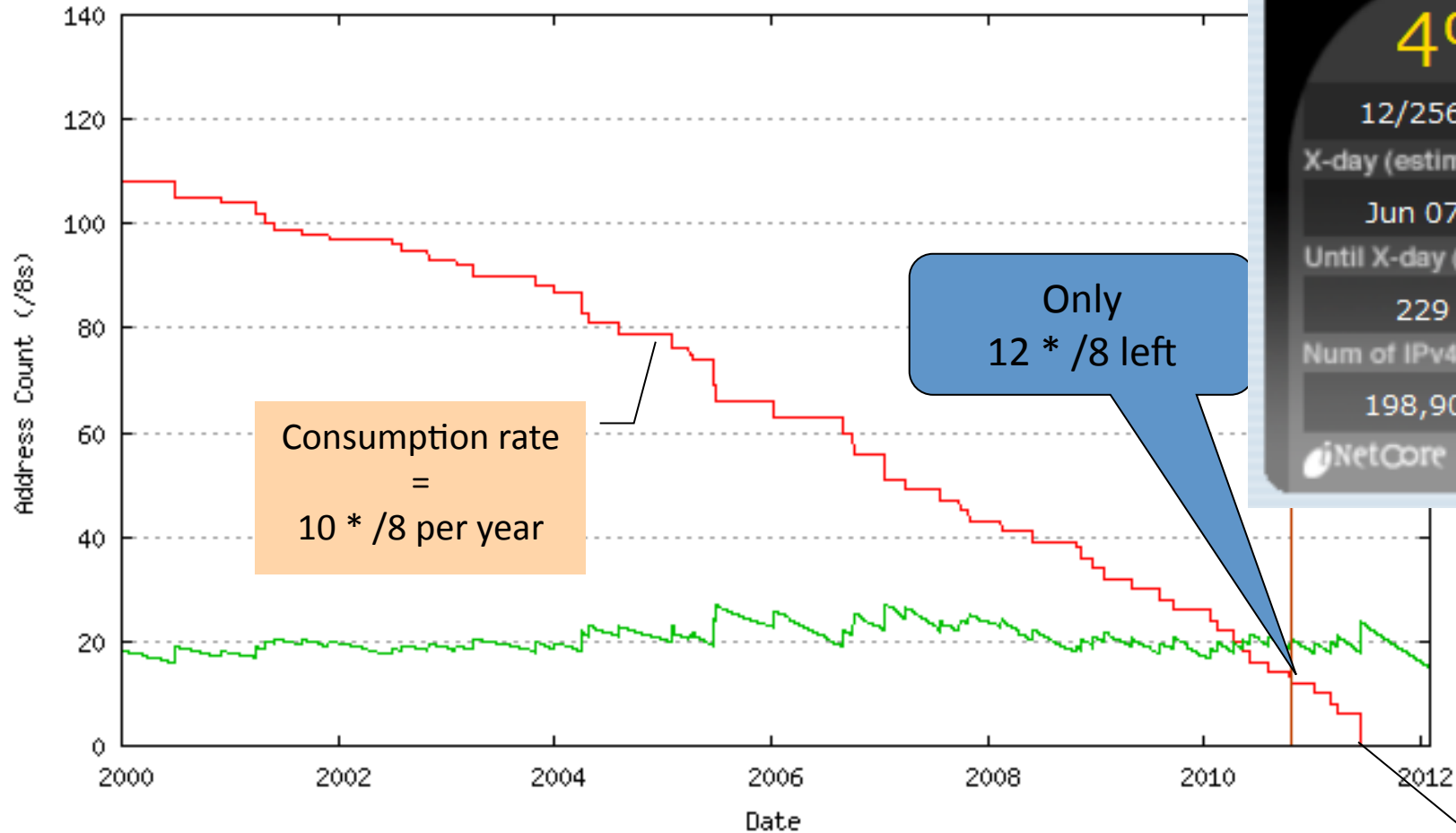
Executive Director, IPv6 Promotion Council of Japan

Director, WIDE Project

Director, Japan Data Center Council

IPv4 Address Pool will be exhausted

June 2011



Geoff Huston : IPv4 address space report
<http://www.potaroo.net/tools/ipv4/>

Projected IANA
pool exhaustion =
June 2011



<< happened in last few months >>

1. MoU for IPv4 address depletion activities :

completed: **Thailand, Singapore, India, Malaysia**

on-going: Indonesia

3. Indian IPv6 Roadmap Release Function by Ministry of Communications & Information Technology with **a lot of mobile carriers/providers**

<http://pib.nic.in/release/release.asp?relid=63382>

“shall” start the IPv6 service by ISP before Dec.2011.

“shall” start the IPv6 e-Government before March 2012.



What is our goal ; toward the “Eco-System”

- Back-Ground (i.e., concerning and thread)
 - There are many systems/networks with IP
 - Still, there are many non-IP systems/networks
 - Networks and Systems are tend to be Fragmented...
- Objective and Goal
 - Avoiding the fragmentation of IP systems/networks
 - Encourage the collaboration among sub-systems
 - Explore the “Eco-System”, that deliver the cheapest system deployment , while delivering innovations.

Geekなページ: [速報] YouTubeがIPv6に対応! - Mozilla Firefox

http://www.geekpage.jp/blog/?id=2010/1/29/2

Geekなページ

ブログ Twitter プログラミング web作成 プロトコル

My旅コレクション

TOP > ブログ > [速報] YouTubeがIPv6に対応!

[速報] YouTubeがIPv6に対応!

YouTubeが本日よりIPv6対応しています!

ただし、www.youtube.comがIPv6化したわけではなく、ストリーム部分のIPv6化のようです。YouTubeでの配信は、v12.lscache8.c.youtube.comのような感じの配信用サーバのAAAAレコードを見るとIPv6化されているのFGDNを知るには、www.youtube.comの各映像表示のJavaScriptを見て下さい。

本日より、Google over IPv6環境ではYouTubeが大量に見えるかも知れません。

```
> dig -t AAAA v12.lscache8.c.youtube.com
; <<>> DiG 9.4.3-P2 <<>>
```

完了

YouTube Turns on IPv6 Support, Net Traffic Spikes - PCWorld - Mozilla Firefox

http://www.pcworld.com/article/189276/youtube_turns_on_ipv6_support_net_traffic_spikes.htm

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- Software

YouTube Turns on IPv6 Support, Net Traffic Spikes

Carolyn Duffy Marsan, Network World

Feb 2, 2010 6:32 am

Email Print RSS 0 Comments

5 diggs digg it ShareThis

34 Yes 1 No

Recommendations

Google has quietly turned on IPv6 support for its YouTube video streaming Web site, sending a spike of IPv6 traffic across the Internet that has continued from last week until Monday.

Industry observers appeared to be surprised by the move.

GoTo Remote Support

Dell La

Google, YouTube, and
SONY for
“SONY UNITED”

What should we do.

0. Declaring we are going to “Next Phase”
1. Sharing the knowledge and experiences
2. {sharing} Testbed for education/training and system development experiences, for capacity building
 - (*) IPv6 Forum will have a logo for educational material
3. Infrastructure development
 - a. DNS, including DNS-SEC
 - b. Interoperability, including smart objects
4. Traffic data collection, analysis and sharing
5. Explore new continents , e.g., Green by IPv6

Programs run by IPv6 Forum

- “IPv6 Ready Logo Program”

- Identifying the readiness of equipments

- Core, IPSec, DHCPv6, MIP/NEMO, SIP, MLD, SNMP/MIB

- Extending to embedded system, e.g., smart objects

- IMS, 6Lowpan, {SmartGrid}



- “IPv6 Enable Program”

- Identifying the readiness of Services



- “Education Certification Logo Program”

- Educational material

- Engineer and Trainer



Programs run by IPv6 Forum

- “IPv6 Ready Logo Program”

- Identifying the readiness of equipments



We may want to define common specification and criteria among APEC countries, while avoiding proprietary domestic definition.

- “Education Certification Logo Program”

- Educational material

- Engineer and Trainer



How we should implicate

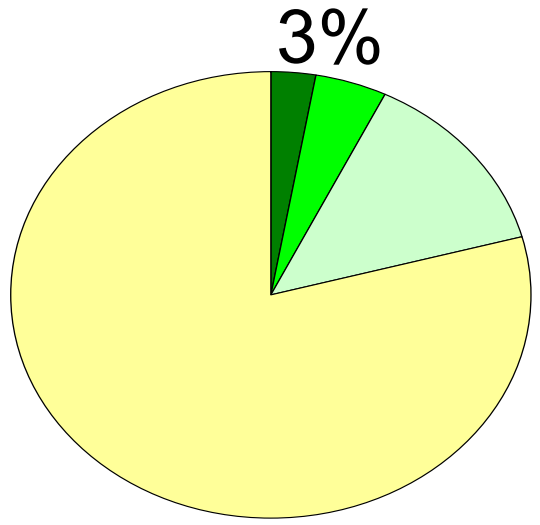


- As a Business Opportunity
 - Innovation, revolution and creation of businesses regarding the system and network industry.
- As a Risk Management
 - Preferential treatment for the existing operators will be hard
 - Even existing operators (i.e., ISP, ASP) will experience the difficulties
 - Expectation to “IPv4 address trading market” would be of risk.
 - System, network and service security issue

IPv6 Introduction into corporations in USA

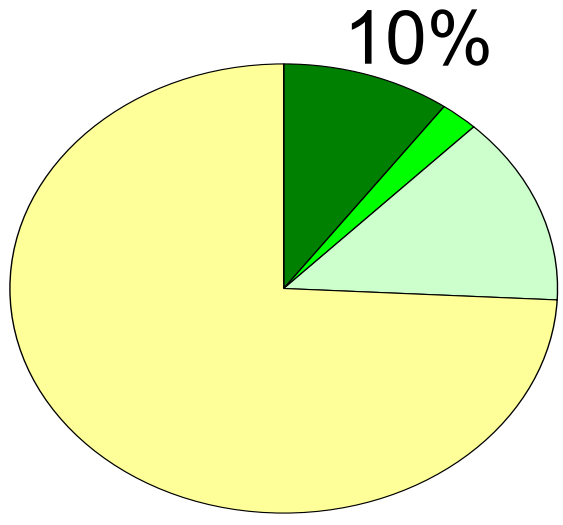
Source : 

As of April 2008



Total ; 111

As of June 2009

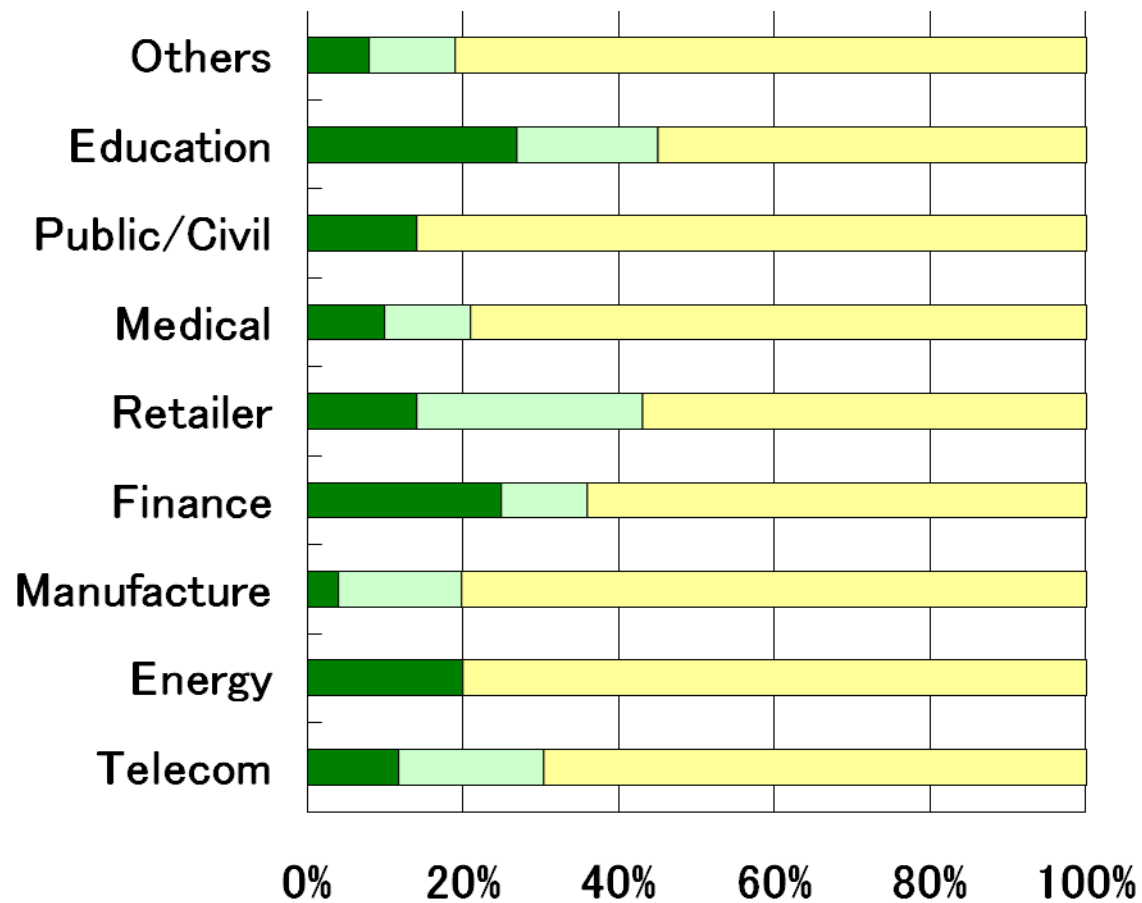
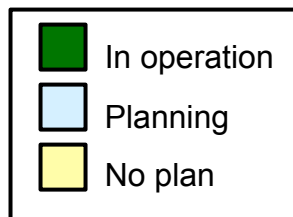
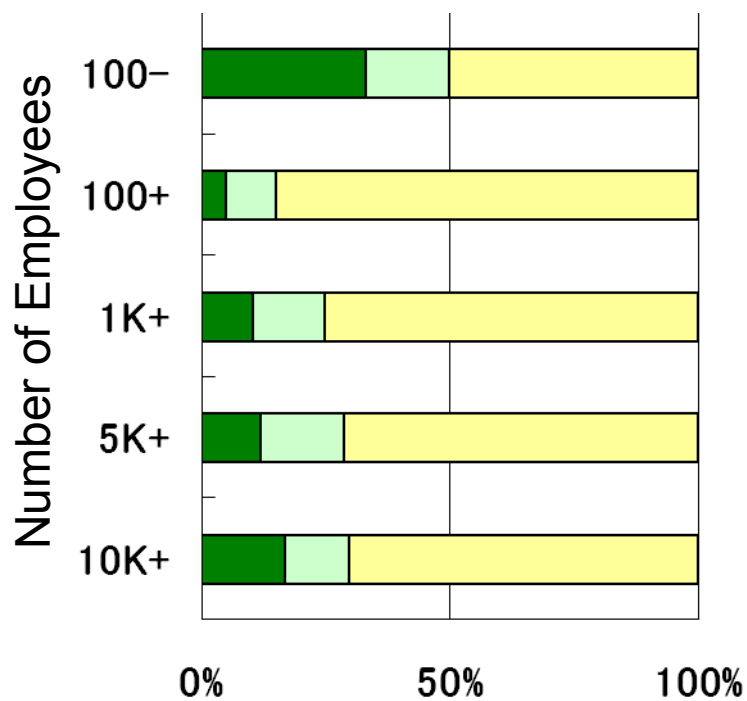


Total: 139

IPv6 Introduction into corporations in USA (as of June 2009)



Source : CISCO



New continent *for* ICT industry, business opportunities *by* ICT

- Contribution of revenue by ICT industry in the GDP is less than 10%.
- More than 90% revenue in GDP is come from non-ICT industries.
- Almost all the companies, including non-ICT industries, depend on ICT technology on their corporate operation.
- How to use the ICT defines the marketing power and operating power of companies.



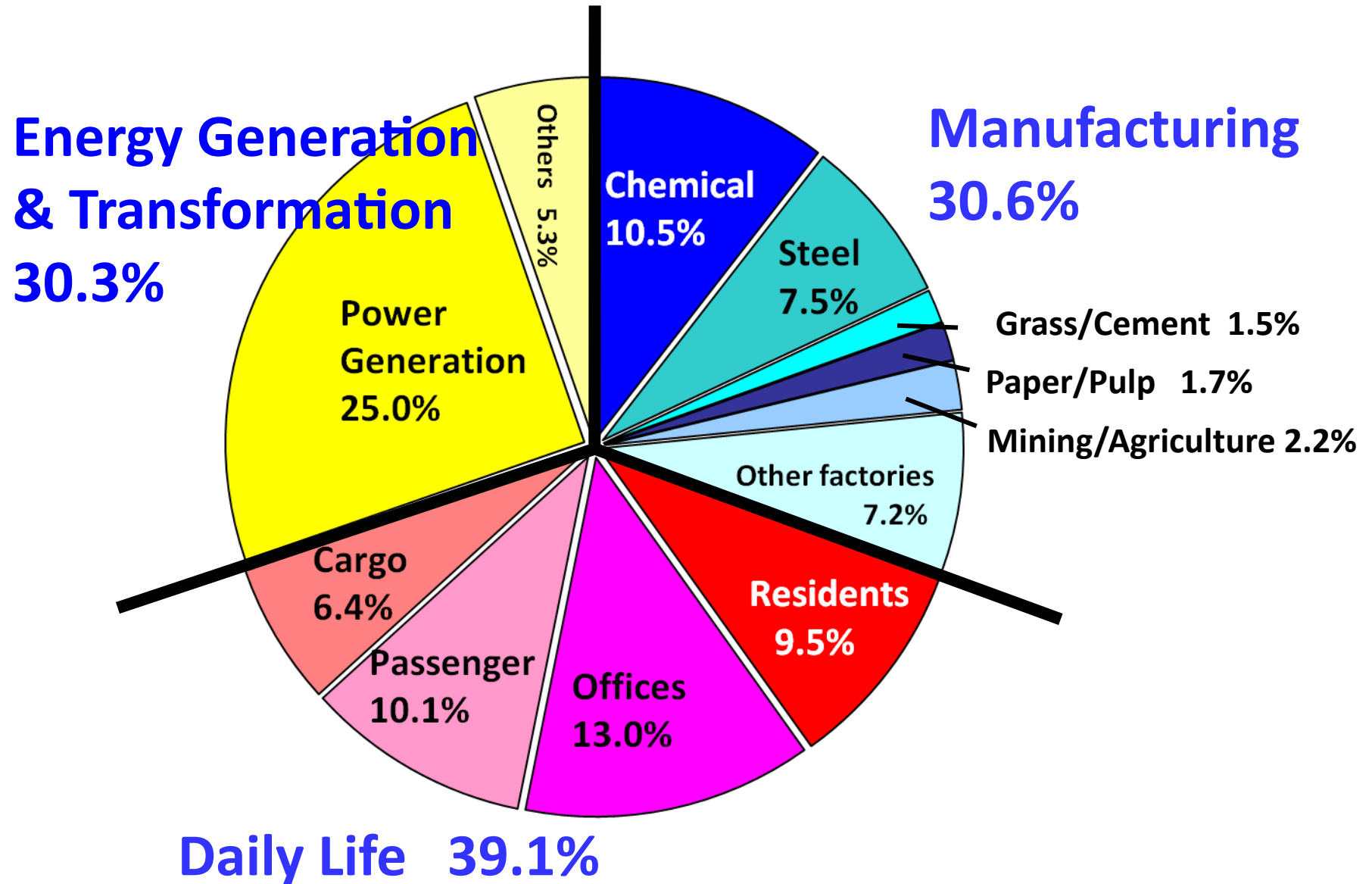
Toward Metropolitan Design for smart and sustainable innovations



<http://www.gutp.jp/>

Source : Hiroshi Komiyama, Ph.D, MRI Ltd.,

Japanese Energy Consumption in 2005

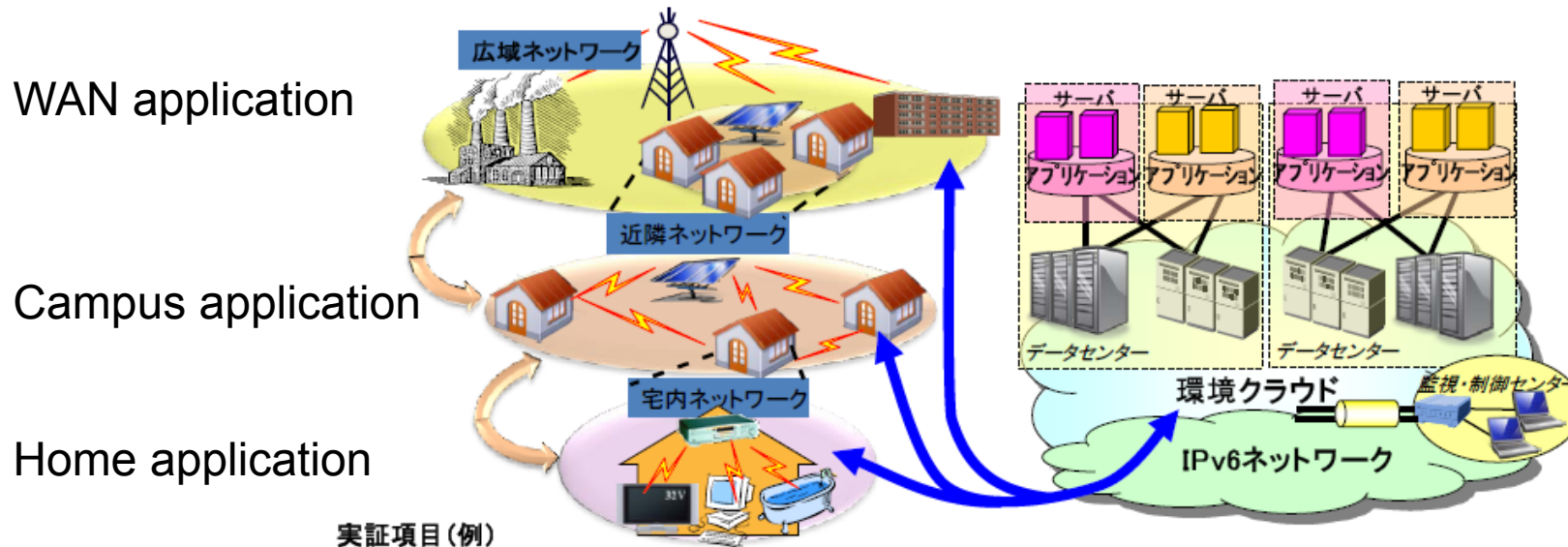


MIC Japan will promote cloud computing with IPv6 for smart city

IPv6を用いた環境分野のクラウドサービスの実現に向けた実証実験

環境負荷軽減型地域ICTシステム基盤確立事業 (21年度第2次補正予算額20億円)

環境にやさしいまちづくりを支援するため、最先端のICT技術を利用し、各地域特性に合わせたICTシステム基盤を構築・実証する。これによって環境負荷軽減のために必要な技術基準を確立し、地域資源の生産と消費の最適化を推進する。



実証項目(例)

地域の特性に合ったネットワークの組合せを検証

地域で利用可能な周波数帯(ホワイトスペース)を用いた実証

環境クラウドにおけるデータの管理・保護のあり方を検証

環境クラウドにおけるセキュリティの課題について検証

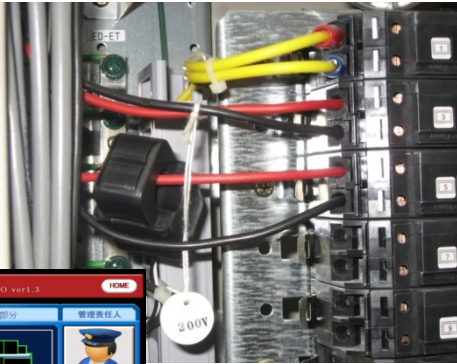
必要な技術基準の確立
(ガイドライン等の策定)

Green Univ. of Tokyo Project

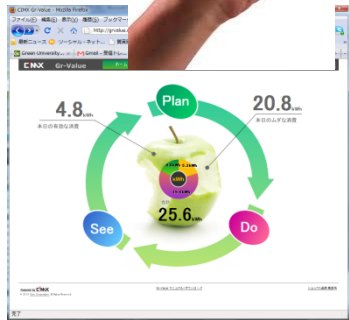
- Building No.2, Hongo Campus
 - Established in June 2008.
 - Targeted reduction;
 - 15%=\$4M USD (in 2012), 50%=\$30M USD (in 2030)
 - 12 floor high, R&D and R&E activities
 - Established October 2005, Start of Operation in March of 2006
 - More than saving energy
 - Forming R&D consortium



Smart Meter



With iPad/iPhone



Smart Lights



Smart HVAC



Smart Kiosk



A yellow scroll graphic with a blue outline, featuring a vertical strip on the left side and a small circular detail at the top right corner. The text is centered on the scroll.

Strategic collaboration with
China Team
Testbed and Standardization

中日緑色IT合同 清華大学 設置風景



Similar consortium has been established by Tsinghua (清華大学) University in Beijing (China), supported by MIC



大型ディスプレイ東芝REGZA 52'



大型ディスプレイとタッチパネル

China-Japan Joint Green IT Project

湖南精密農業 Agriculture (「両型社会」建設)



実施場所：
湖南省長沙市百果園農業ハウス

- ・センサー(温度、湿度、日照、CO2、土壌の監視測定)
- ・農作物成長リアルタイムビデオ監視制御システム
- ・灌漑自動化制御システム
- ・天窓、遮光ネット、ファン……自動制御システム
- ・農業知能制御プラットフォーム

清華大学FIT Green Campus/Building) (グリーンキャンパス)



実施場所：
会議室、共用エリア、廊下、配電室

- ・灯光明明、LED照明制御システム
- ・共用エリアビデオ監視制御システム
- ・センサー(人感、温度湿度、照度)
- ・空調改造
- ・配電室改造
- ・可視化集中制御監視測定(遠隔)

中関村ソフトパーク Green Industrial Park (イノベーションハイテクパーク)



実施場所：
IDCマシンルーム、共用エリア、廊下、駐車場

- ・灯光明明、LED照明制御システム
- ・共用エリアビデオ監視制御システム
- ・センサー(人感、温度湿度、防犯照明)
- ・IDCマシンルーム空調改造
- ・電力システム改造(スマートメーター)
- ・可視化集中制御監視測定
- ・駐車場管理

Toward Global Standardization; FIAP to IEEE1888 and ASHREA BACnet



Approved Feb.2011



On going

IEEE SA - 1888-2011 - IEEE Standard for Ubiquitous Green Community Control Network Protocol - Mozilla Firefox

ファイル(E) 編集(E) 表示(V) 履歴(S) ブックマーク(B) ツール(I) ヘルプ(H)

http://standards.ieee.org/findstds/standard/1888-2011.html

IEEE 1888

最新ニュース m ソーシャル・ネット... 質実剛健 日本経済新聞 asahi.com : 朝日新... Bloomberg.co.jp - ... 毎 毎日 j p - 毎日新聞...

質実剛健 x [mixi] x asahi.com : 朝... x 日本経済新聞 x Results for '1888' x IEEE SA - 188... x

IEEE STANDARDS ASSOCIATION Contact FAQs standards.ieee.org only GO

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IEEE STANDARD
1888-2011 - IEEE Standard for Ubiquitous Green Community Control Network Protocol

STATUS:
Active Standard ?

Working Group: [UGCCNet - Ubiquitous Green Community Control Network Working Group](#)
Oversight Committee: BOG/CAG - Corporate Advisory Group
Sponsor: IEEE-SA Board of Governors

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完了

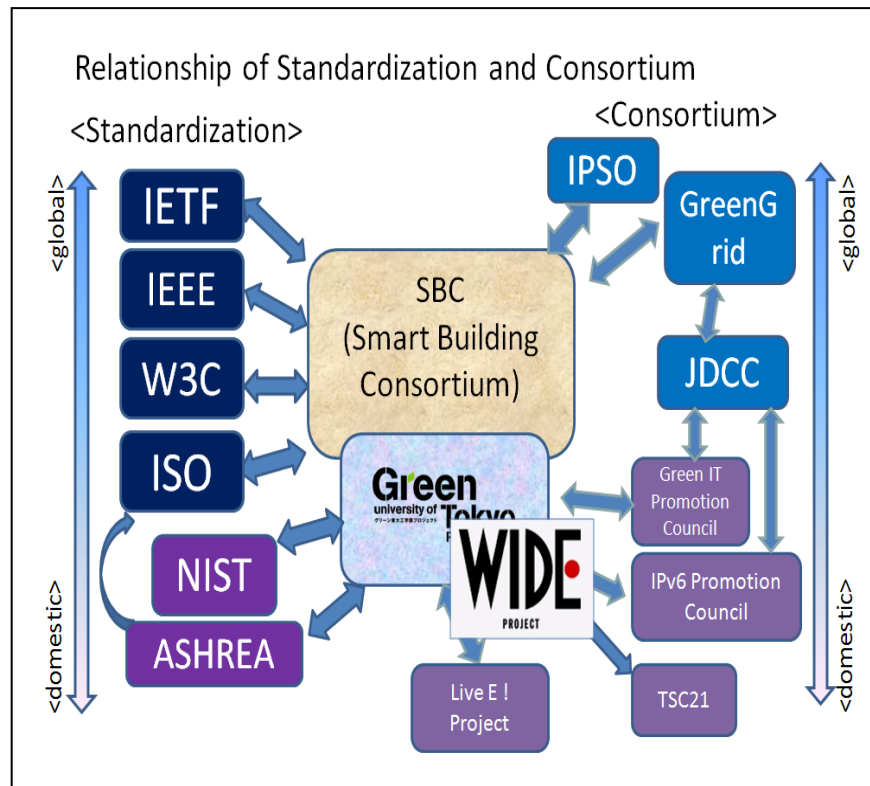
http://standards.ieee.org/findstds/standard/1888-2011.html

Activities toward global standard

1. Not domestic, but global
2. Practical; implementable, interoperable, deployable
3. Sustainability, i.e., Eco-System

- Invitation of stakeholders (new faces for us)
- Testbed operation
- Interoperability of IoT/SO

- ① China-Japan Green IT
- ② NIST B2G
- ③ IEEE P1888
- ④ IETF/W3C
- ⑤ ASHREA BACnet (ISO/IEC)
- ⑥ IPSO
- ⑦ IPv6 Forum
- ⑧ The Green Grid
- ⑨ ETSI INT, IoT
- ⑩ SBC(Smart Building Consortium)



SmartGrid e.g., <http://www.ipso-alliance.org/>



Design of “Smart” City

人(Human-being)		都市(City)	
脳+頭骸骨(Brain)		Cloud Computing	
	頭骸骨(Skull), 血管(Blood vessels)		Data Center
	神経(Brain nerves)		Servers, switches
神経(Nerves)		Internet	
各器官(Organs)		Facilities (i.e., Things)	
	骨等(Bone)		Building(構造体)
	センシング器官(Sensor)		Sensor
	筋肉(Muscle)		Actuator

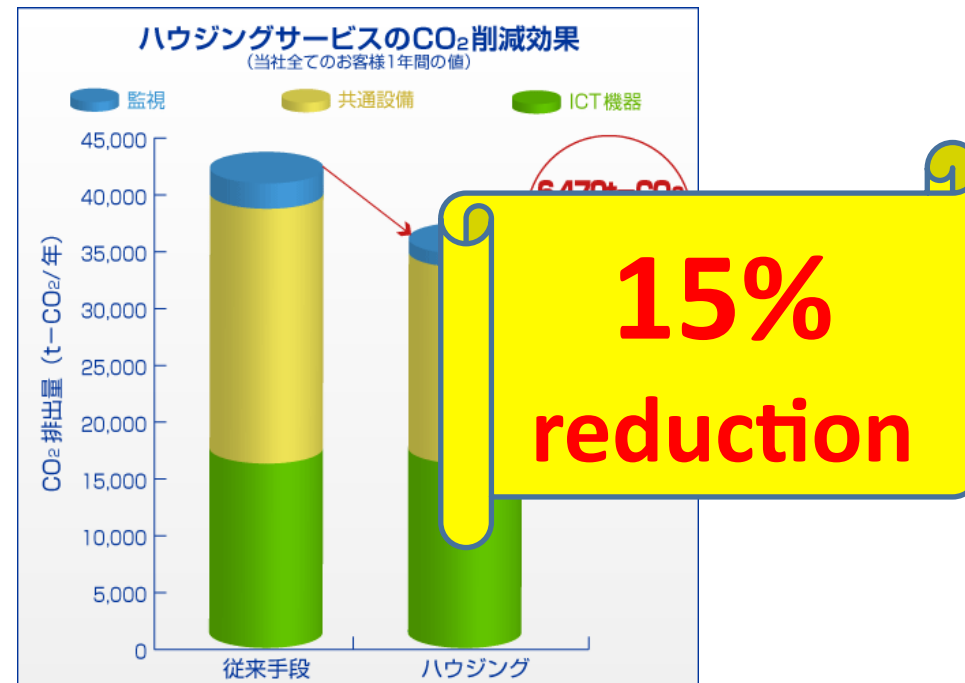
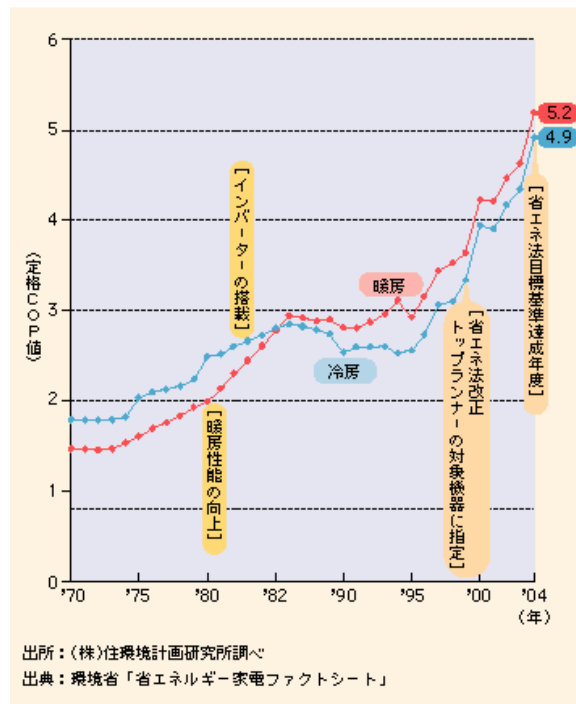
A yellow scroll graphic with a blue outline, featuring a vertical strip on the left side and a circular tab on the top right. The text is centered on the scroll.

Strategic use of
Internet Data Center
for smart city
-- talking with "TOKYO" --

Contribution by hosting service

- Many offices install old and in-efficient HVAC systems. When we move the servers in these offices to iDC, we will be able to improve the HVAC bill. Current HVAC systems improves 30-40% energy efficiency, compared with existing systems.

図3-4-7 エアコンの冷暖房COP推移(販売ベース)



NTTビズリンクHP

Contribution of Virtualization, i.e., Cloud Computing

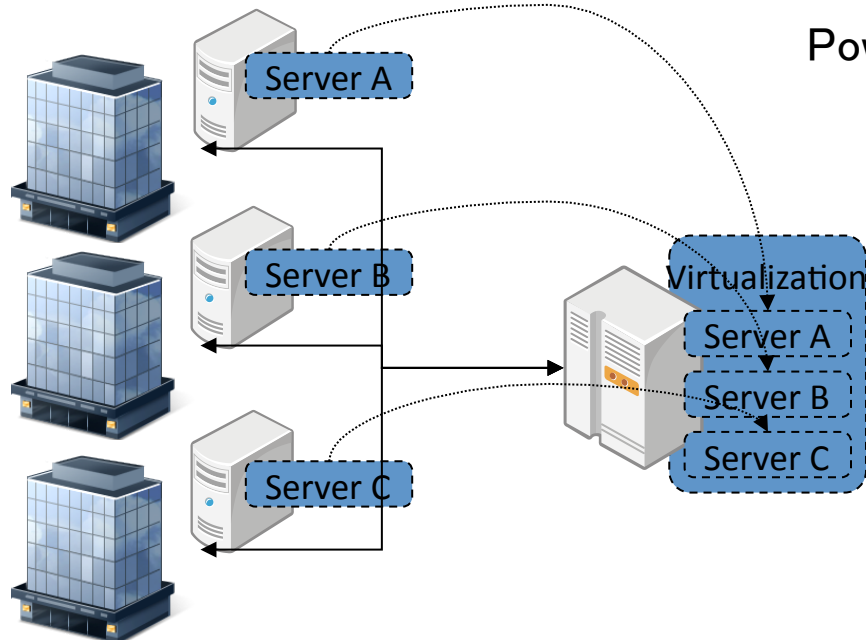
- Servers in the offices with old hardware platform can be accommodated in iDC with virtualization, i.e., cloud computing.
- Large energy saving by sharing the computing resources and HVAC resources.

CO₂ Emission = 100

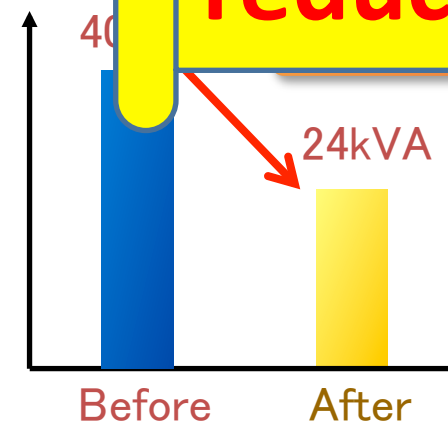
(1) Move servers to iDC

(2) Sharing resources by virtualization

CO₂ Emission = 60



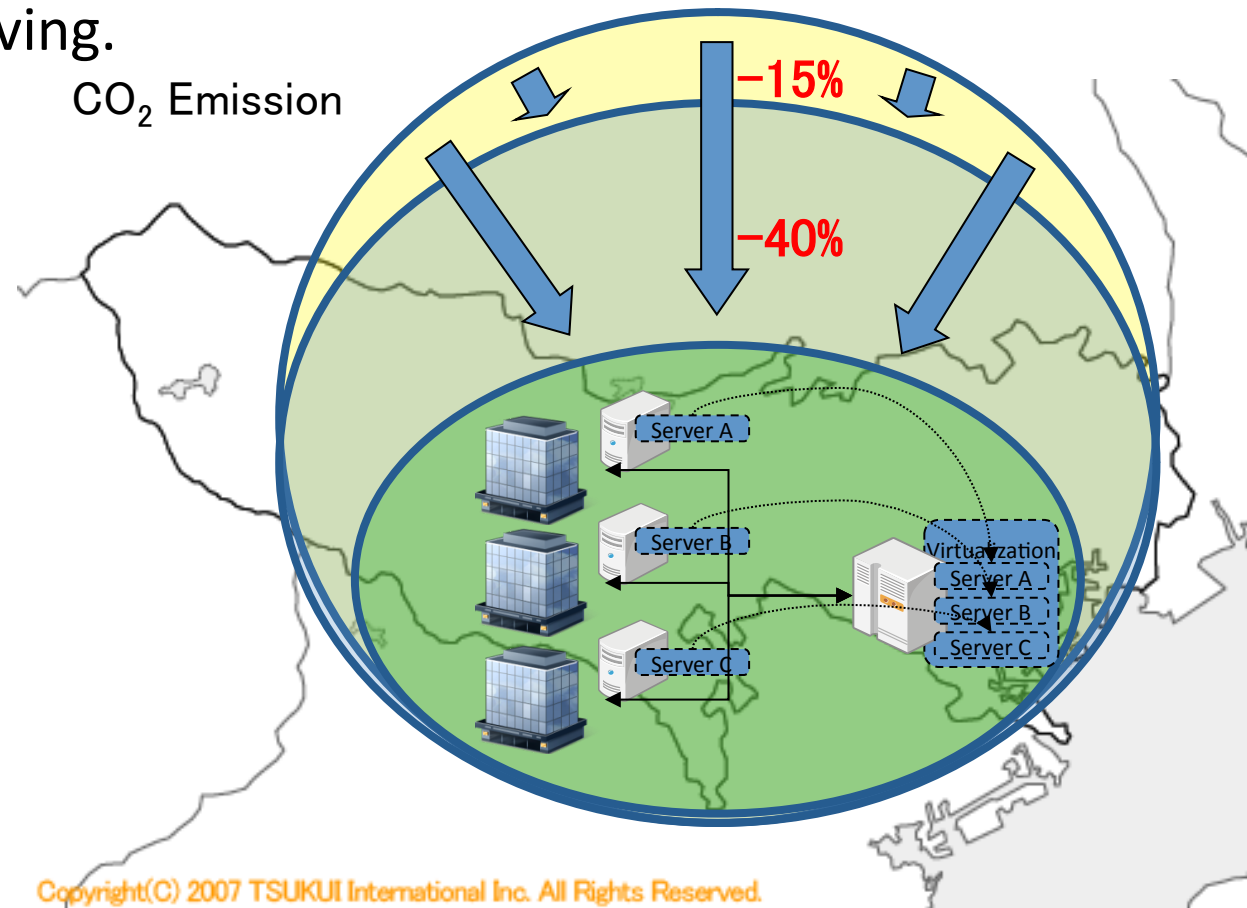
Power Consum



Source : NTT

Strategic Energy Saving in Tokyo ?

1. Move and accommodate servers in the offices into iDC , hosting service, will lead to 15% energy saving
2. Vitalize the servers and integrate into a single physical machine, i.e., cloud computing, will lead to 40% energy saving.



Thank you



IPv6 Promotion Council of Japan:
<http://www.v6pc.jp/en/index.html>
e-mail: info@v6pc.jp



Task Force on IPv4 Address Exhaustion:
<http://kokatsu.jp/>