

JCC総会（2012年12月19日）

# インタークラウドの進展

青山 友紀

GICTF(グローバルクラウド基盤連携技術フォーラム)会長

GICTF

# インターネットクラウドの重要性が世界的に認識されるようになった

- ビッグデータ
- 災害対応

1. 標準化の進展とSDO間連携
2. 各種国際会議での議論進展
3. 研究開発と実証実験

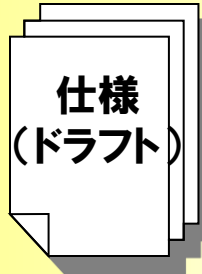
# 平成24年度のGICTF活動

GICTF(H23)

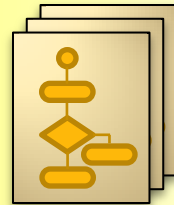
技術討論



GICTF(H24)



1. 検討成果に基づいたI/F技術仕様を  
海外の標準化団体(ITU-T)への提案



2. クラウド間の連携や、NW仮想化と  
クラウドの連携のプラクティスを  
収集し、ベストプラクティスを評価

情報収集/  
技術紹介

連携

他団体、機関

連携

仕様提案/  
議論

GICTF

# 世界標準の進展

ITU-T SG13 WG6でのクラウド標準化  
GICTFでの議論をベースにインタークラウド標準  
に積極的に寄書を提案

ISO/IEC JTC1 SC38 WG3 での標準化  
ITU-T SG13との連携をスタート

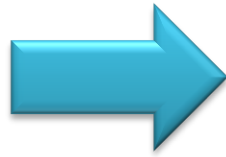
IETF, IEEE, ETSIなどでも議論がスタート

GICTFとデファクト標準団体との連携

DMTFとの連携活動の合意

(他 団体とも連携準備中)

# The World's First Public International Standards Setting on Cloud Network



Proposal  
based on the  
results

## ➤ Major Deliverables

- I. *"Use case and functional requirements for Inter-Cloud Computing"* E/Aug 2010
- II. *"Inter-Cloud interface specification on protocols"* J/Dec 2011, E/Apr 2012
- III. *"Inter-Cloud interface specification on resources data model for network control"* J/Dec 2011, E/Apr 2012
- IV. *"Network and technical requirements in support of Inter-Cloud"* J/Dec 2011 E/Apr 2012

[http://www.gictf.jp/index\\_e.html](http://www.gictf.jp/index_e.html)

**7 frameworks of public international standards are almost completed**

### I. Cloud Computing Definition

- Vocabulary definition, etc.

### II. Requirements

- Service requirements
- Use cases, etc.

### III. Cloud Network

- Network structures
- Network requirements, etc.

### IV. Cloud Computing Infrastructure

- Structures of infrastructure
- Infrastructure requirements, etc.

### V. IP Resources Management

- Ability of resources management, etc.

### VI. Inter-Cloud

- Method of inter-cloud
- Security management, etc.

### VII. Cloud Computing DaaS

- Requirements and architecture of Desktop as a Service

# ITU-T SG13 WP6 Draft

## Recommendations on Cloud

Priority	Rec.	Q.	Short Title	Target for Consent	Editors
1	Y.ccdef → Y.ccf	26	Cloud Computing Definition and Vocabulary	Q4 2013	Olivier Colas
1	Y.ccra	27	Cloud Computing Reference Architecture	Q4 2013	Olivier LeGrand Mark Jeffrey
2	Y.cceco	26	Cloud computing: ecosystem, use cases, and general requirements	Q1 2013	Ying Chen
2	Y. ccinfra	27	Cloud Computing Infrastructure Functional requirements	Q1 2013	Yongshun Cai Emil Kowalczyk
2	Y.e2eccrmr	28	End to End Cloud Computing Resources Management Requirements	Q1 2013	Richard Brackney Yongxiang Wang
3	Y.ccic	27	Framework of Inter-cloud for Network and Infrastructure	Q4 2013	Naotaka Morita Weixiang Shao
3	Y.daas	26	Requirements and Architecture of Desktop as a Service		Myeong-Hoon Oh Aaron Zhang

# I T U-Tのクラウド標準化に向けたGICTF

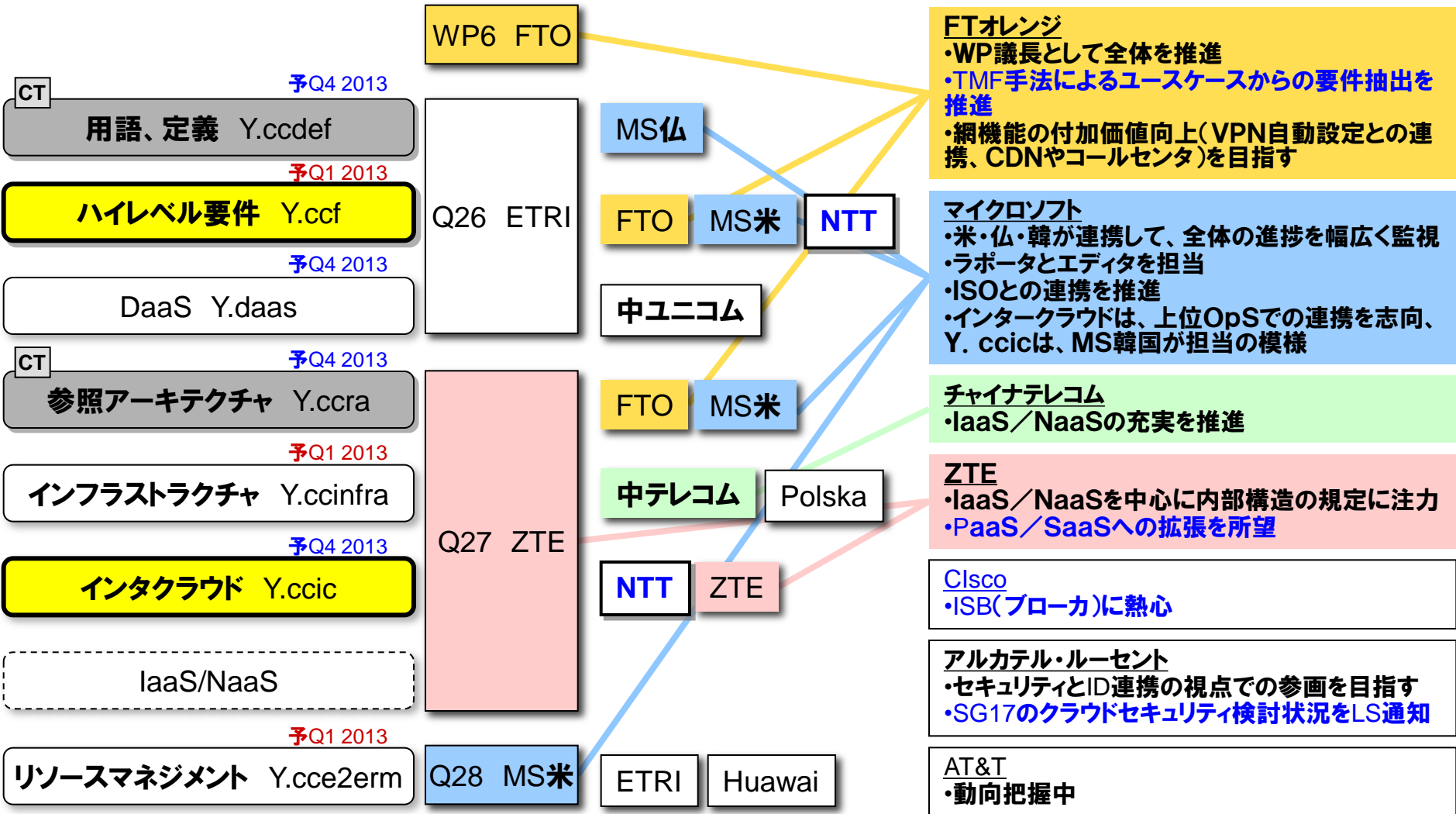
## 向

勧告ドラフト

議長/ラポータ

エディタ

主要他社の動向

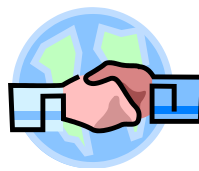


## DMTFとの連携

GICTFは、クラウド関連の標準化活動で重要な役割を担い  
DMTF (Distributed Management Task Force, Inc.) と連携  
パートナーになることを合意(2012年7月)

GICTFとDMTFは、本連携を通じて、インタークラウドプロトコルと  
DMTFの関連プロトコル(CIMI等)との整合をはかる。

GICTFホームページ: <http://www.gictf.jp>  
DMTF ホームページ: <http://dmtof.org/jp>





# 見えてきた！ダイナミックなクラウド間連携技術！

## ～ 第一回 テストベッドWG 活動報告 ～

- ◆グループA:NTT、NTTデータ、NTTコミュニケーションズ、東芝ソリューション
  - ・クラウド間連携システム構築と制御、既存SaaSアプリケーションとの親和性を確認
  - ・今後、利用者IDの連携など、セキュリティ関連の評価を実施予定
- ◆グループB:NEC、KDDI研究所
  - ・クラウド型IMSのアクティブセッションを無停止で他拠点へ移行、サーバの集約により省電力化を実証
  - ・今後、さらに広域な環境で検証予定
- ◆グループC:ジュニパーネットワークス、クラウド・スコープ・テクノロジーズ
  - ・既存NWと新たなネットワーク(OpenFlowスライス)のハイブリッドネットワークを構築し、その見える化を実現
  - ・今後、異なるNW制御部間の連携と見える化を実現予定
- ◆グループD:日立製作所、慶應義塾大学
  - ・NWエッジで情報処理を行うリアルタイム分散処理により集中型データセンタに比べ応答性を改善
  - ・今後、広域環境に拡張予定

**Vinton Cerf**  
**慶應義塾大学**  
**名誉博士号授与式典**

**2012年9月13日**



**Vinton Cerf 博士の記念講演**

**Inter-Cloud Interaction (New Research Area !)**

- How to refer to other clouds ?**
- How to refer to data in other clouds ?**
- How to make data references persistent (unlike URLs) ?**
- How to protect Clouds from various forms of attack (inside, outside) ?**
- How to establish an access control regime (inside, between clouds) ?**
  
- What semantics can we rely on with inter-cloud data exchange ?**
- What notion of “object” would be useful for inter-cloud exchange ?**

# SDN & Inter-Cloud Special Summit was held in MPLS2012



Technical Committee Biographies Contact Info  
 Press Releases Registration Press Package  
 Attendees Speakers Press & Media Exhibitor Staff Technical Committee  
 MPLS Sponsors Exhibiting  
 CFP Submissions  
 Tutorials Technical Sessions Exhibits Inter-Op Demo SDN & Inter-Cloud



**MPLS 2012 INTERNATIONAL CONFERENCE**  
 15th Annual International Conference on  
 Next Generation Internet and Related Technologies

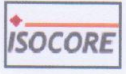


Dr. Vint Cerf, an Internet  
 founding father, to deliver  
 Keynote Speech



October 28 - 31, 2012  
 Washington, DC

**SDN & Inter-Cloud Summit - November 1, 2012**



**REGISTER NOW!**

MPLS 2012 building upon the success of its predecessors will continue to offer great insight into emerging solutions and technologies that promises to shape the next generation networks. It covers interesting areas of SDN, Cloud/Data Center Interconnect, Mobility and Services for Resiliency, Ethernet services, IP/MPLS, and optical and emerging multi-play applications across common infrastructure. MPLS 2012 is the 15th anniversary of this event, and is addressing the most important contemporary topics of interest to the industry.

**Exhibition**

**Registration for Exhibiting** Visit the Exhibits page to see who will be at MPLS 2012. Please contact mpls2012-admin@isocore.com for further information.

**Conference**

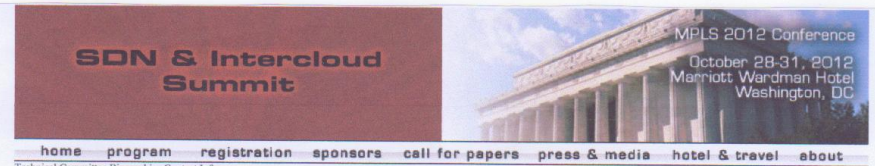
MPLS 2012 provides a unique opportunity to major switching and transport equipment vendors, test equipment manufacturers and Service Providers, both wireline and wireless operators, to showcase next generation IP, MPLS, high speed Ethernet and optical products and services. With a very large number of participants from around the world, MPLS International Conference is the first and leading event to attend and to hear from the greatest minds in the field of next-generation Internet, cloud computing, Ethernet and MPLS services.

MPLS 2012 is truly a global networking forum bringing together recognized people from all over the world who lead the direction of future Internet technologies. The conference is a great ground for meeting these experts and exchanging ideas and perspectives. MPLS 2012 will include extensive four day program that will consist of tutorials, technical sessions, panels, and exhibits. MPLS 2012 is chaired by industry pioneers, Andrew Malis of Verizon, Nicolai Leymann, Deutsche Telekom and Kohei Shiomoto of NTT.

MPLS 2012 is expected to reach new heights in addressing contemporary topics of interest to the industry. Building upon the success of its predecessors since 1998, it will continue to offer great insight into emerging solutions and technologies that promise to shape the next generation networks and services. It plans to cover interesting areas of emerging multi-play applications across common infrastructure, cloud

<http://www.isocore.com/mpls2012/>

2012/10/09



Technical Committee Biographies Contact Info  
 Press Releases Registration Press Package  
 Attendees Speakers Press & Media Exhibitor Staff Technical Committee  
 MPLS Sponsors Exhibiting  
 CFP Submissions  
 Tutorials Technical Sessions Exhibits Inter-Op Demo SDN & Inter-Cloud

## Thursday, November 1 SDN & Inter-Cloud Special Summit

Supported By:

9:00 - 10:30 am

**Chair:**  
 BIJAN JABBARI,  
 Isocore

- SDN Architectural Overview  
 CHRISTOPHER LILJENSTOLPE, *Big Switch Networks*
- Where The Network Operational Rubber Meets the Road: IRS, OpenFlow, and Network Programmability  
 TOM NABEAL, *Juniper Networks*
- The Virtual Network, a Pragmatic Look at SDN  
 MARK BERLY, *Arista Networks*
- EVPN Support for Cloud  
 DAVID ALLAN, *Ericsson*
- Multi-Layer Integration Using SDN  
 PING PAN, *Inferna*

**Break**  
 10:30 am - 10:45 am

10:45 am - 12:15 pm

**Chair:**  
 CHRISTOPHER LILJENSTOLPE,  
*Big Switch Networks*

- Cloud and SDN  
 PETER KREY, *Fidelity Investment*
- Network Analysis with SDN Tools  
 TRUMAN BOYES, *Bloomberg*
- TE in an SDN Context  
 MOJIB NABEEL, *Microsoft*
- Network Control Using SDN  
 ARASH AFRAKHTEH, *Caridan Technologies*
- SDN/OpenFlow technologies for Flexible and Cost-effective Transport  
 ATSUSHI IWATA, *NEC Corporation*

**Break**  
 12:15 pm - 1:30 pm

1:30 - 2:45 pm

**Chair:**  
 MONIQUE MORROW,  
*Cisco Systems*

- Information of Japanese Inter-Cloud Activities  
 TOMONORI AOYAMA, *GICTF*
- DMTF Activities and DMTF/GICTF Collaboration in Inter-Cloud  
 JEFF HILLAND, *DMTF President*
- Distributed Cloud Service by Carrier/Service Provider  
 ICHIRO FUKUDA, *NTT Communication*

**Break**  
 2:45 pm - 3:00 pm

3:00 - 4:15 pm

**Chair:**  
 NAOAKI YAMANAKA,  
*Keto*

- Inter-Cloud and Architectural View from the ITU-T  
 MONIQUE MORROW, *Cisco Systems*
- InstantENI and GENICloud: An Architecture for a Scalable Testbed  
 RICK MCGEER, *HP Labs*
- Deeply Programmable Network for Inter-Cloud Federation  
 AKI NAKAO, *Univ. of Tokyo*

4:15 - 5:15 pm

**Panel Session**  
**Chair:**  
 ASUHIRO GOTO,  
*IS*

- MONIQUE MORROW, *Cisco Systems*
- JEFF HILLAND, *Senior Systems Architect, Hewlett-Packard; DMTF President*
- ICHIRO FUKUDA, *NTT Communication*
- AKIHIKO TAKASE, *Hitachi*
- YOSHIAKI KIRIHA, *NEC*

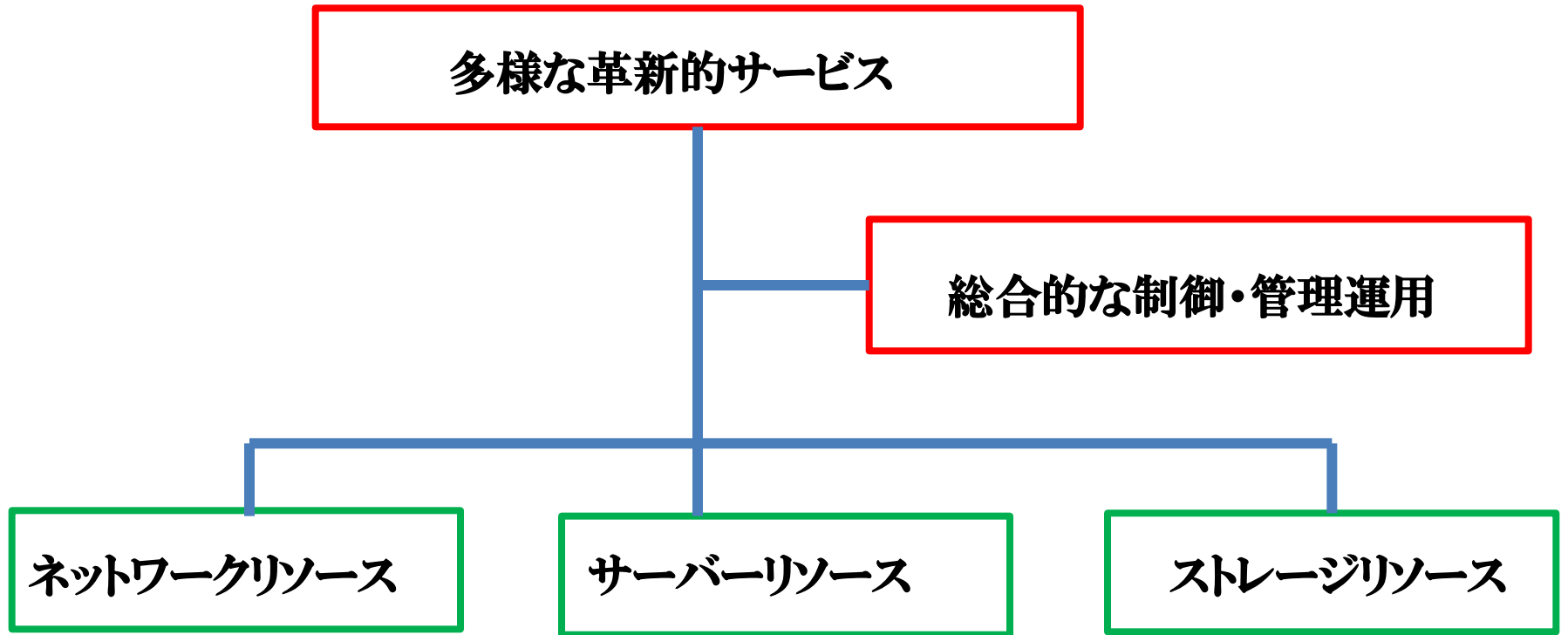
tutorials  
 technical sessions  
 exhibits  
 inter-op demo

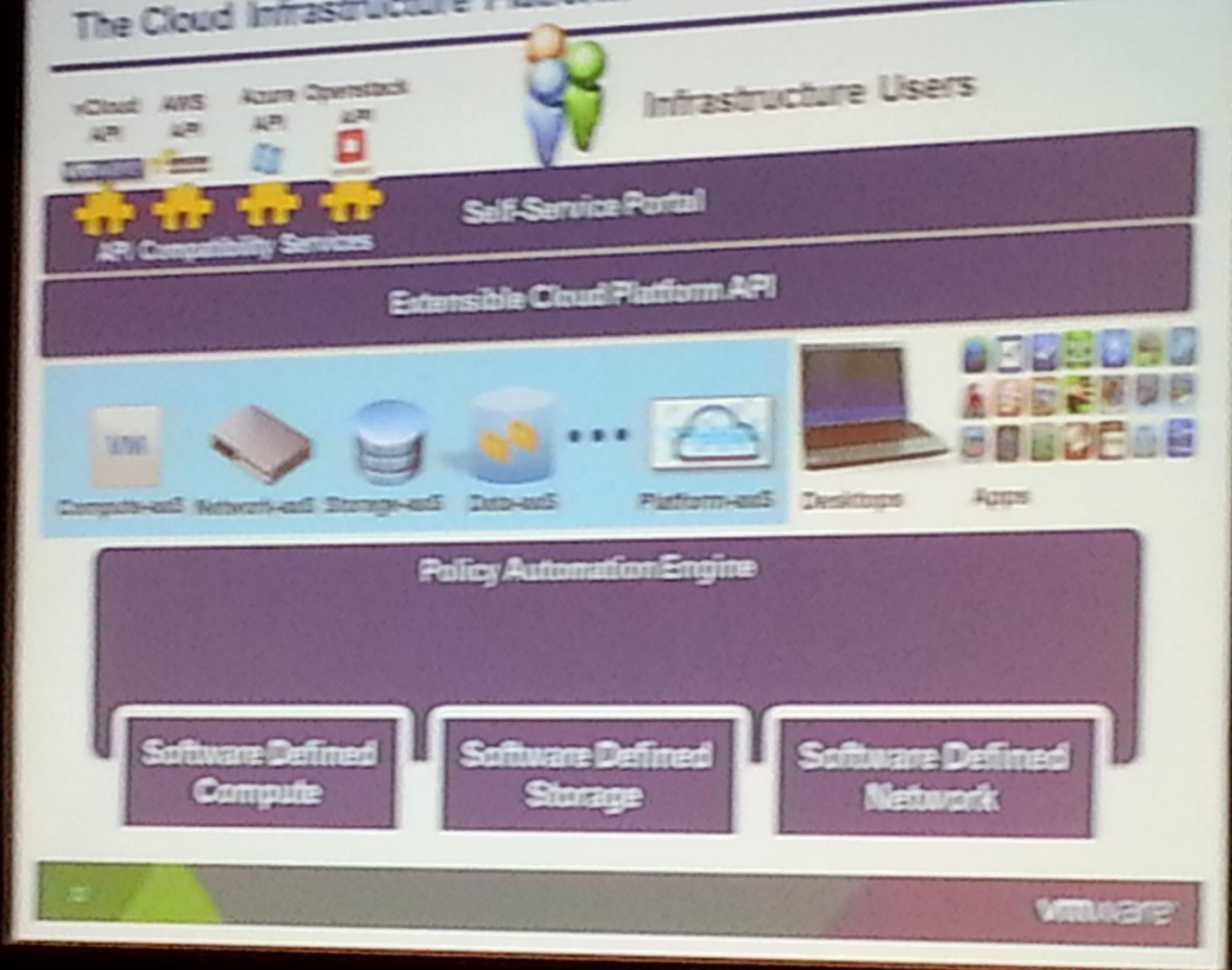


# インターネットに変わる新しい ネットワーク技術の登場

- ネットワーク仮想化  
(Network Virtualization)
- Software Defined Network  
(SDN)
- Open Flow

新ICTパラダイムにおいては新世代ネットワークとクラウドコンピューティングが総合的に制御・管理運用され、革新的サービスを提供するプラットフォームを構築する必要がある。





IEEE CloudCom2012 @ Taipei

Vmwareの講演

# クラウドネットワークシンポジウム2013

- 日時：2013年2月20日(水) 11:00～17:30
- 場所：秋葉原UDXビル2階 アキバ・スクエア
- 実施団体：「広域災害対応型クラウド基盤構築に向けた研究開発(高信頼クラウドサービス制御基盤技術・環境対応型ネットワーク構成シグナリング技術・省電力アクセスネットワーク制御技術)」受託機関
- 協力：グローバルクラウド基盤連携技術フォーラム (GICTF)
- 実施内容：委託研究の成果発表・展示・デモンストレーション および 特別講演・有識者によるパネルディスカッション
- Webページ：<https://www.itevent.jp/>