



Boutique Network, Global Uniform Service

Services promote the improvement of SDN Technology

Aofei Data NaaS Solution

Practice of Intelligent Network Construction

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Aofei Data COO

Agenda

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2

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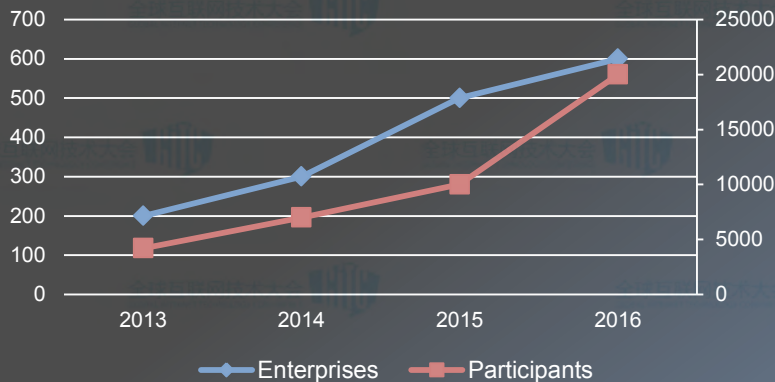
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- Intention of Participating GITC 2016
- Boutique Network, Global Uniform Service
- Introduction of Aofei International Business
- Blessings and Expectations

1

Intention of Participating GITC 2016

Participating situation



- Meet Industry Elites
- Broaden Technical Communication
- Reinforce Business Cooperation
- Propagate Industry Development

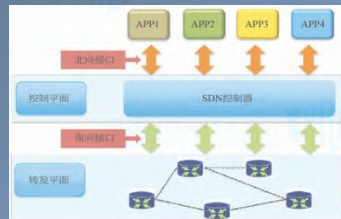
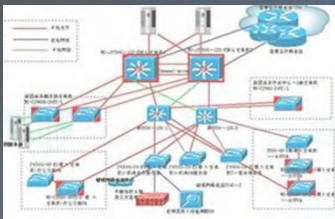
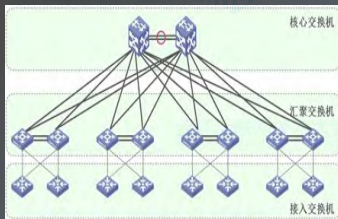
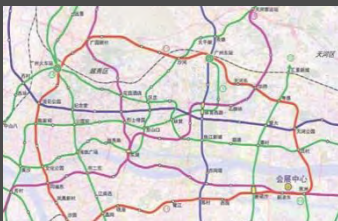
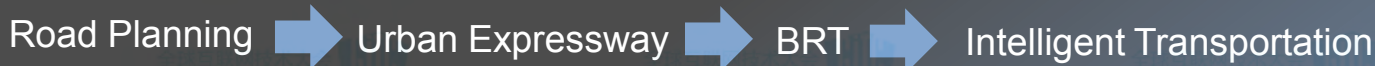


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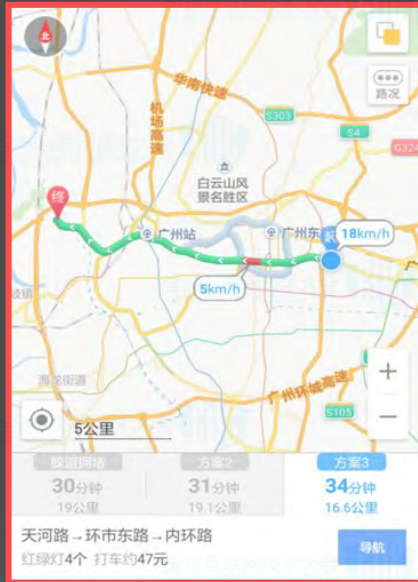
Boutique Network, Uniform Service

GITC 2016

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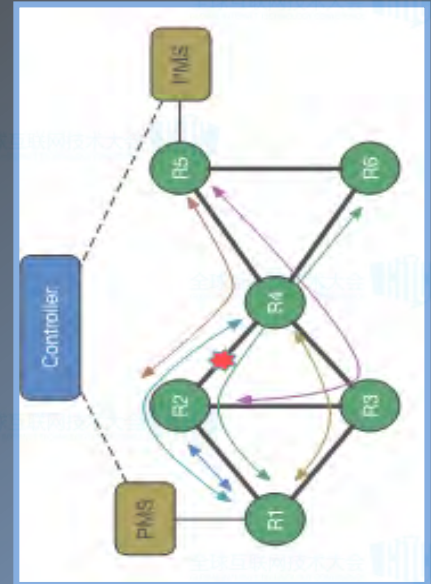


Which is Driver's Best Path? Optional Paths, Road Situation, Choice Cost...



Advantages +

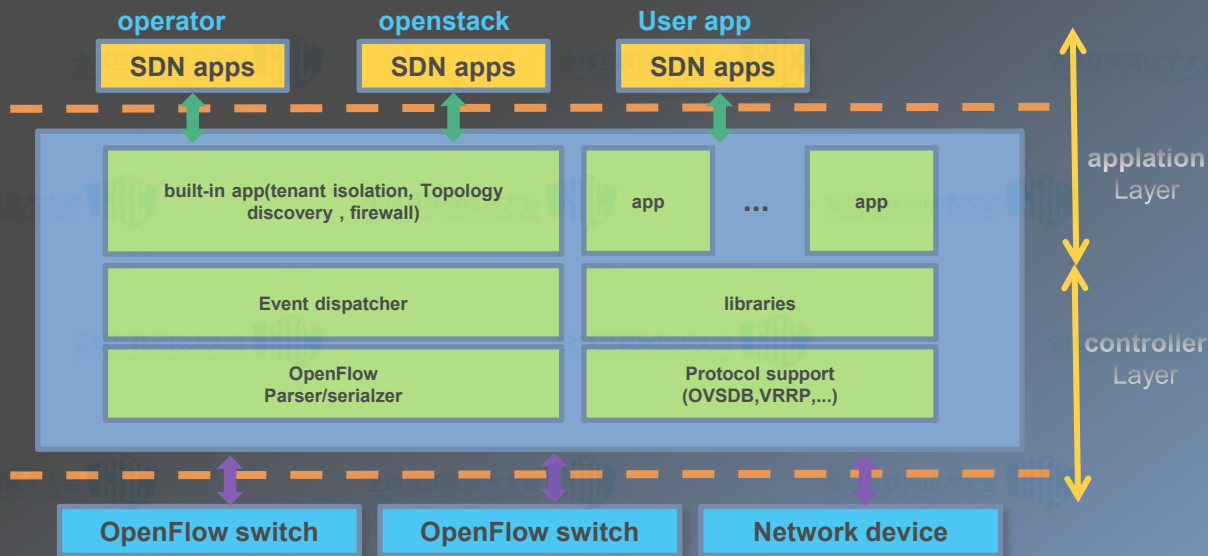
- Centralized Control
- Differentiated Services
- User Defined
- Path Visibility
- Dynamic Perception



Which is Packet's Best Path? Optional Paths, Traffic Situation, Choice Cost...

Boutique Network, Uniform Service

Definition of SDN

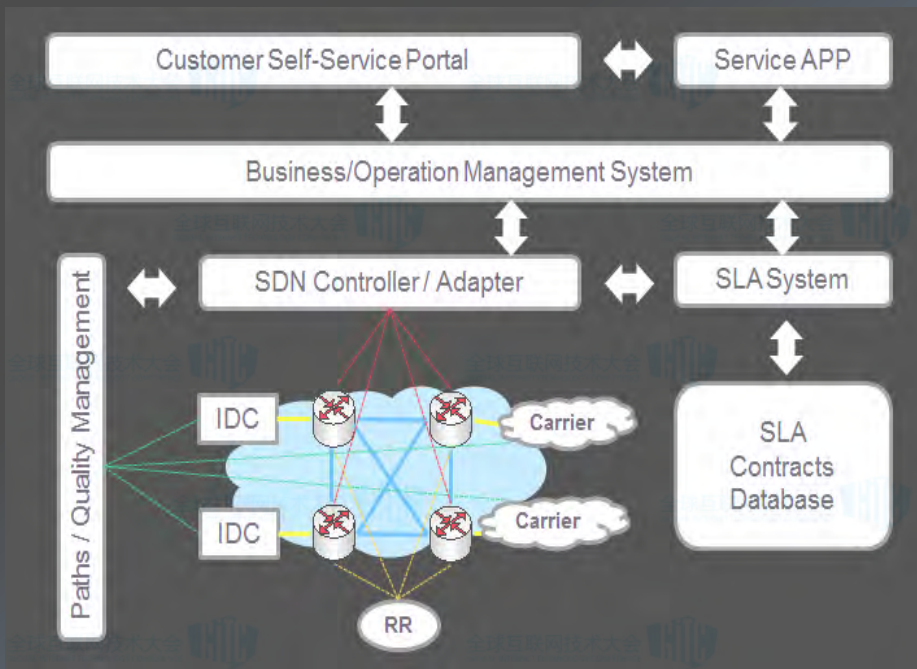


- Open programmable API – Agile
- Central management
- Programmatic configuration
- Open standards-based and vendor-neutral

Boutique Network, Uniform Service

SDN Service Architecture

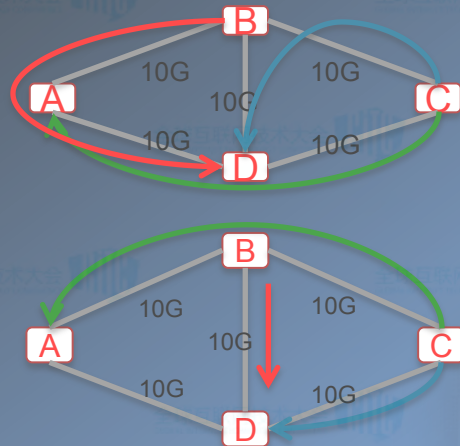
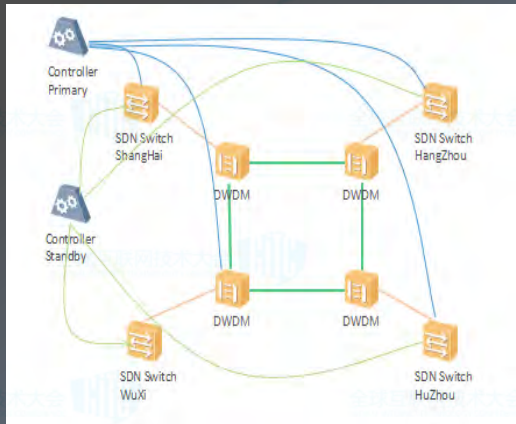
According to different business models, Ao fei domestic and international network use different intelligent network scheduling technologies, meeting diverse needs of business.



- **Centralized Control**
- **Service Association**
- **Traffic Models**
- **EC form Service**
- **Transparent Service**
- **Process Scheduling**
- **Future Characteristics**

Design Concept

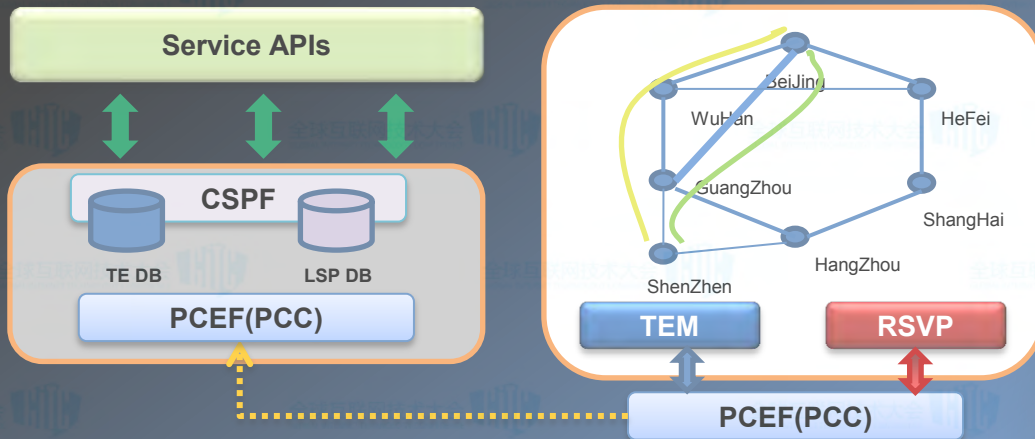
- Allow customers to use network services like electricity or water.
- Service/Software definition WAN, open and close Wan Service.
- Electric Commerce Portal, customers self tuning bandwidth and QoS.
- Centralized algorithm control, global traffic optimal scheduling.



Boutique Network, Uniform Service

Network architecture algorithm

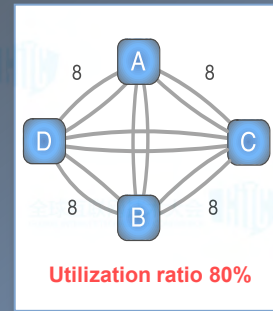
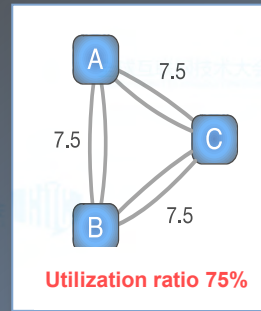
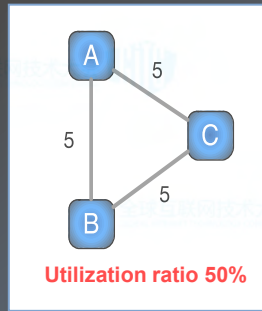
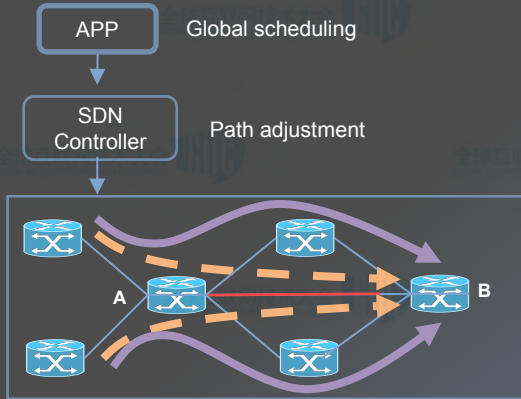
- PM sends traffic information collection to probe system according to the user configuration cycle and strategy.
- SNMP collects of tunnel traffic from PCC, and calculates the bandwidth utilization of the links.
- PM summaries and presents the traffic information report from probe system based on user strategy.
- Optimized information sent to the tunnels to meet the optimum conditions.
- AC calculates the optimized path according to the optimization information from PM.
- PCC sets up the accurate path based on the AC path results, using RSVP-TE protocol.
- After establishment of the new LSP, traffic is switched to a new LSP and former LSP is deleted.



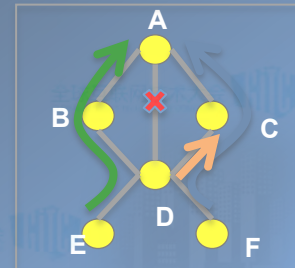
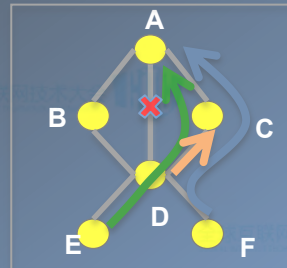
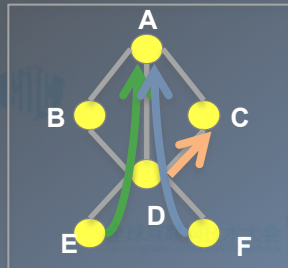
Boutique Network, Uniform Service

Network architecture algorithm

- Network architecture centralized optimization design to enhance the utilization rate.



- Limitation for network device path algorithm, Solution by global control.



Boutique Network, Uniform Service

Domestic traffic scheduling

- Automatic discovery of network topology
- Rapid launch of new business
- Business centralized control
- Business automatic protection
- Controller redundancy protection
- Open API interface

The screenshot displays a comprehensive network management interface. On the left, a sidebar contains icons for 'Flows', 'Nodes', and 'ISL Attributes'. The main area is divided into several panels:

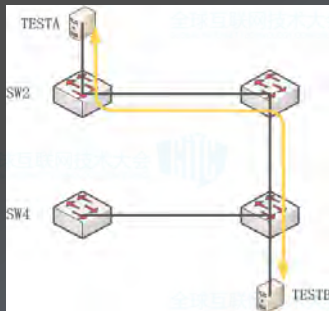
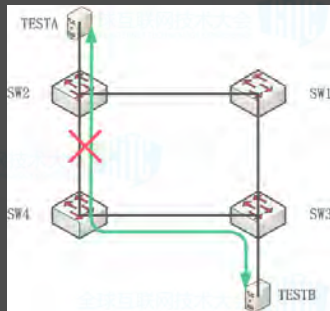
- Topology View:** Shows a network diagram with nodes (switches and servers) and their interconnections. A 'Show Physical Path' window is open, displaying a detailed view of a switch (S24) and its connections.
- Create Node Form:** A form for adding new nodes with fields for Name, Description, Switch Port, Group, IP, Subnet Mask, and VLAN. It includes 'OK' and 'Cancel' buttons.
- Create Flow Form:** A form for defining traffic flows. It includes fields for Name, Description, Source Node, Destination Nodes (a list box with options like Hangzhou, Wuxi, etc.), Bandwidth Allocation (Guaranteed), Flow Direction (Bidirectional), Primary Path Metric (Number of Hops), Maximum Bandwidth, Maximum Hop Count, Maximum Cost, IP Protocol, Source L4 Port, and Destination L4 Port. It also has 'OK' and 'Cancel' buttons.
- Flows Table:** A table listing existing flows with columns for Name, Source Node, Destination Nodes, Bandwidth Allocation, and Flow Direction.

Name	Source Node	Destination Nodes	Bandwidth Allocation	Flow Direction
wuxi-hangzhou-1808	hangzhou-1808	wuxi-1808	Best Effort	Bidirectional
wuxi-hangzhou-1807	hangzhou-1807	wuxi-1807	Best Effort	Bidirectional
wx-huzhou	wx	huzhou	Guaranteed	Bidirectional
sh-hz	sh	hangzhou	Guaranteed	Bidirectional

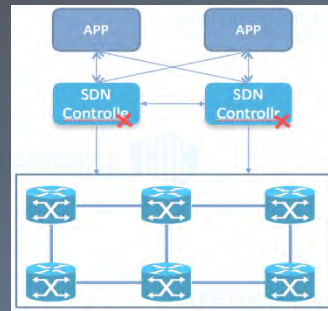
Boutique Network, Uniform Service

Domestic traffic scheduling

automatic protection



controller redundancy



2. 选择带宽

BANDWIDTH

1 Mbps 5000 Mbps 10000 Mbps

3000

DURATION

1 hour 360 hours 730 hours

Hours Days Weeks Months

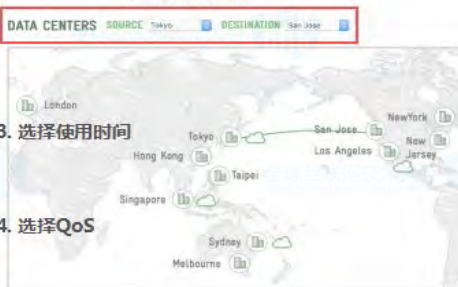
LATENCY

Low 2.400ms Standard Best Effort

Estimated Cost: USD 45.91

系统自动计算所需费用

1. 选择业务端点



3. 选择使用时间

4. 选择QoS

rapid service

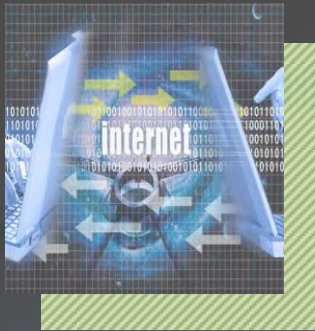
customized service

transparent service

Boutique Network, Uniform Service

Global traffic scheduling

- Launched a comprehensive network of NaaS service.
- Analysis the main direction of the submarine cable quality.
- Analysis the key operators regional coverage.
- Modeling multi transits network quality based on global probes and big data analysis system.
- International intelligence network based on network quality and service definition.



Network status

- Global Network
- Multiple transits options
- Quality differentiated price



Business needs

- Best quality
- Widest coverage
- Lowest cost



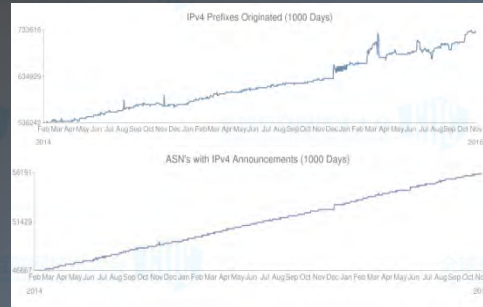
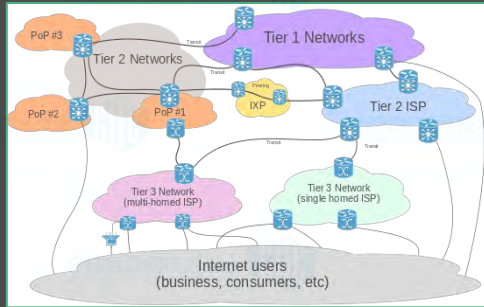
Technical requirements

- Automation strategy
- Diversified methods
- Global control

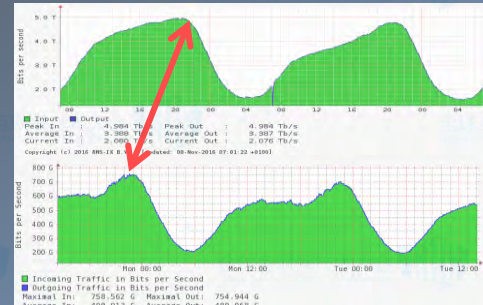
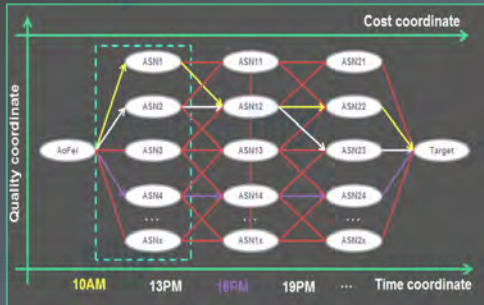
Boutique Network, Uniform Service

Global traffic scheduling

The size of the Internet continues expanding, there are 54000+ network and 730000+ route prefixes in the global internet until Nov 2016. Network strategy is becoming more complex and elaborate.



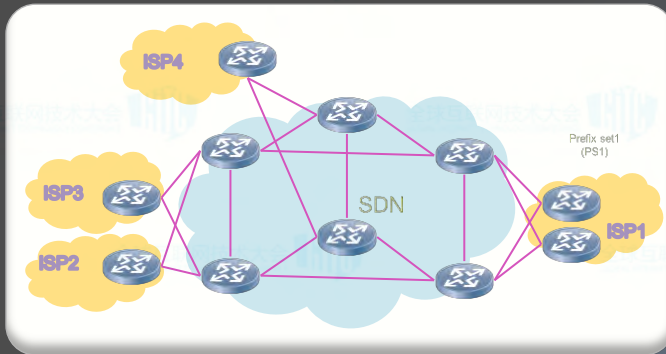
Aofei International Network global traffic scheduling policy based on its multiple ip transits and big data analysis abilities to construct global dynamic boutique network.



Boutique Network, Uniform Service

Global traffic scheduling

Aofei International Network meets the business definition attributes, providing the best business path according to the quality, time, cost and other dimensions.



In



Select optimal(maybe multiple) external routes from EBGp.

Compute path meet constrains.

Link usage threshold

Explicit route(loose or strict)

Quality

Load balance

Settlement cost

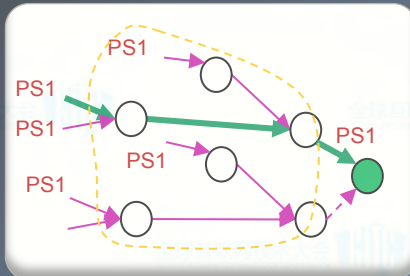
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Change BGP routes attributes to meet path computed.

Out



**BEST
PATH**



Boutique Network, Uniform Service

Global SLA System

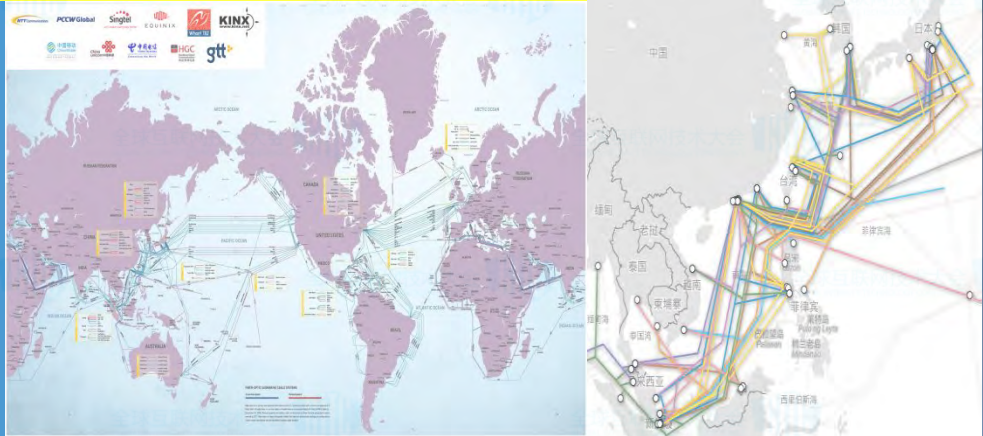
Basic Services	<ul style="list-style-type: none">■ 7×24 monitoring services from technical and security staff on duty■ Regular facility environment (including customer equipment) inspection service■ Simple hardware fault diagnosis
Security Services	<ul style="list-style-type: none">■ Firewall: Prevent hackers ,virus attacks and health examination■ DDOS flow cleaning: Filter DDOS attack traffic
Maintenance Services	<ul style="list-style-type: none">■ Device hardware maintenance■ Management services for network system■ Management services for database performance
Operating Services	<ul style="list-style-type: none">■ Provide procurement, installation, administration, and maintenance services for server systems
Recovery services	<ul style="list-style-type: none">■ Provide synchronous data backup and recovery service solutions

3

Aofei International Business

Aofei International Business

Global IEPL
Global MPLS
Global IP Transit
Global IX Transit
Global DCs
Global CDN/Cloud
Global SI.

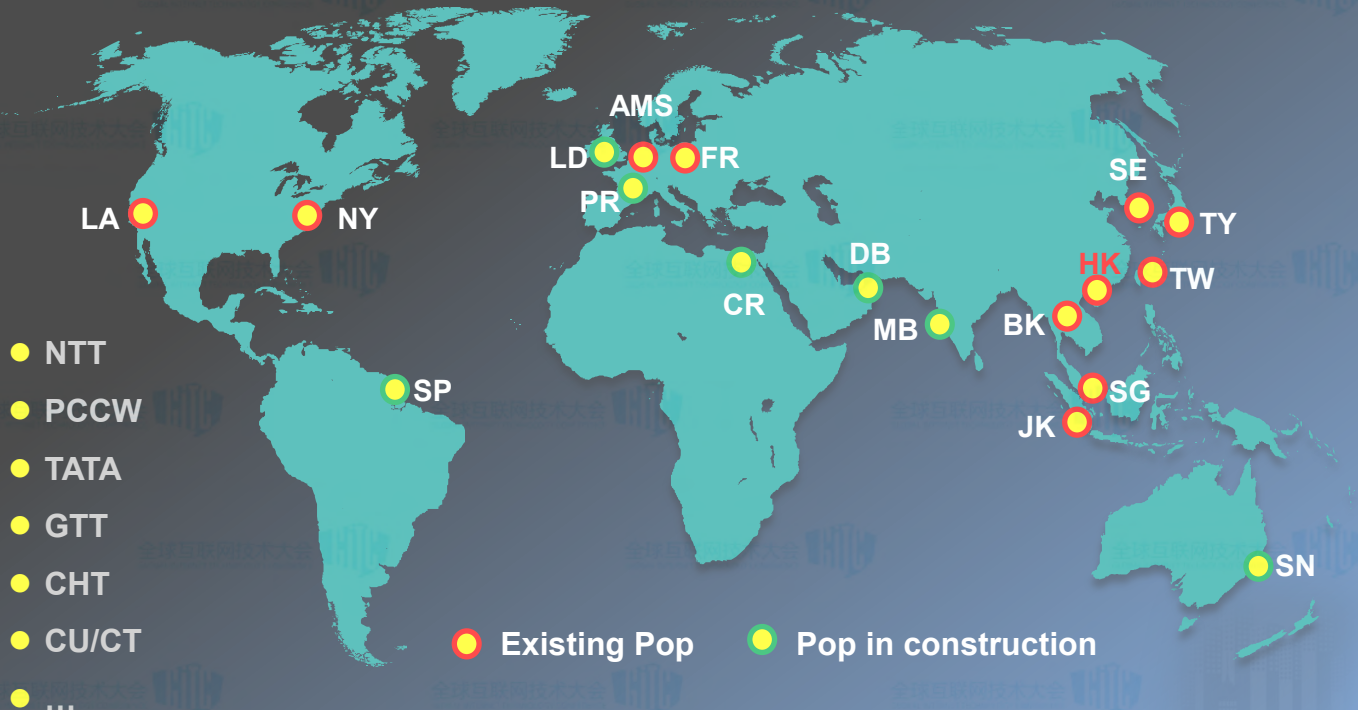


- Insist on the operating philosophy of "Boutique Network , Global Uniform Service".
- International Network with HK as the core, covering 5 continents over 15 countries.
- Providing service based on abundant submarine cables, quality carriers and professional teams.
- Sustained service quality assurance , global unified SLA service system.

Aofei International Business

Global Network

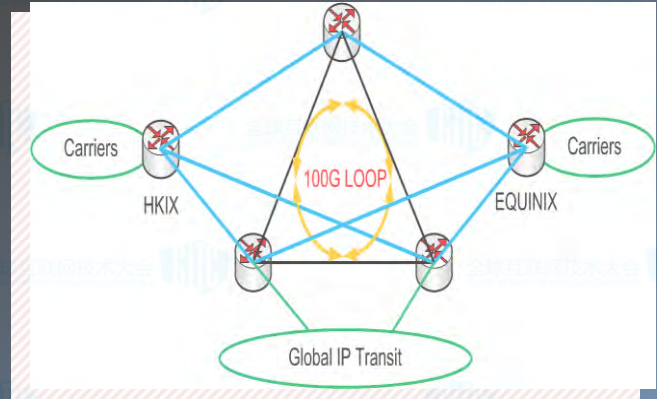
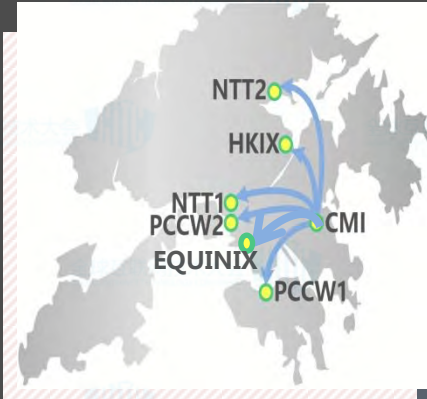
Aofei International Network plan to covers 5 continents over 15 countries.



Aofei International Business

HK Network

Aofei International Network with HK as the core, which has abundant ip transits and local loop resource.



IP-transit

Using NTT, PCCW, TATA global routing access, multi operators backup and export traffic verify conditions.

Local-loop

Aofei data has 5 major POPs in HK, using the WDM, dark fibers to achieve full interconnection, Intranet capacity reach to 100G

IXPs

Access to the main internet exchanges HKIX and Equinix, ensuring excellent network robustness and network quality.

Aofei International Business Oversea DCs



GITC 2016

Aofei high quality oversea DCs are distributed in Asia, Europe, America, TW and so on.

METRO IBX (AMS)

Address : Frankford
Built-up area: 30000+ SMs
Reliability: Tier IV
Cooperation Partner : Equinix



METRO IBX (LA)

Address : Los Angeles
Built-up area: 20000+ SMs
Reliability: Tier IV
Cooperation Partner : Equinix



METRO IBX (GER)

Address : Frankford
Built-up area: 35000+ SMs
Reliability: Tier IV
Cooperation Partner : Equinix



JiXin Cloud Center

Address : TaiPei
Built-up area : 3000+ SMs
Reliability : Tier III
Cooperation Partner : TIGC

Jakarta Data Center

Address : Jakarta
Built-up area : 2000+ SMs
Reliability : Tier III
Cooperation Partner : Indosat

Kim Chuan Center

Address : Singapore
Built-up area : 30000+ SMs
Reliability : Tier IV
Cooperation Partner : Singtel



Aofei Data operates 3 major data centers in HK, including CMI, NTT and MCX10 and some racks in Sha Tin, Wan Chai, Kwai Fong etc.



CMI

Address : Tseung Kwan O
Built-up area : 24355 Square meters
Reliability : Tier III+
Cooperation Partner : China Mobile



NTT

Address : Tai Po
Built-up area: 23566 Square meters
Reliability: Tier III+
Cooperation Partner : NTT



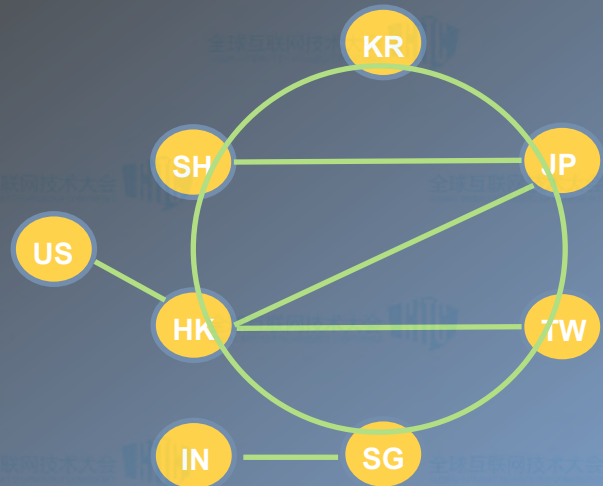
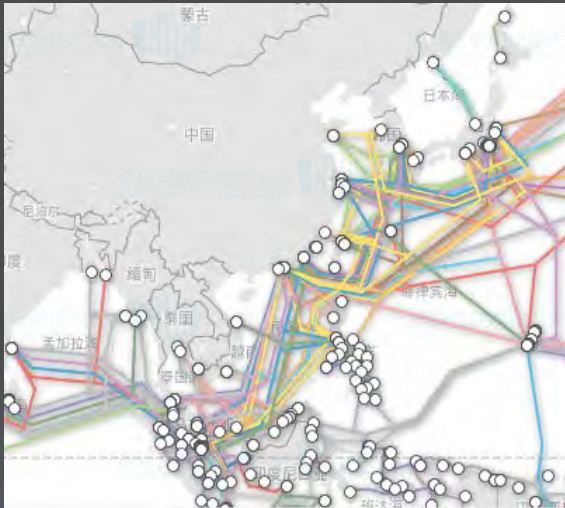
MCX10

Address : Kwai Chung
Built-up area: 18000 Square meters
Reliability: Tier III+
Cooperation Partner : PCCW

Aofei International Business

IEPL/MPLS Service

Relying on the rich resources of cable and POP nodes, Aofei International Network has a wide interconnection in major southeast asian countries with submarine cables, including APG, EAC, SMW-3, APCN-2 etc. Aofei Network can provide customers with 2 layers of IEPL and 2.5 layers of MPLS business networking.



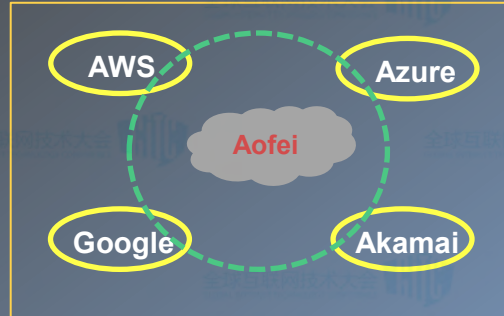
Service assurance : International IEPL/MPLS 1 Hours Delivery.

Aofei International Network has already access the Amazon AWS, Microsoft Azure, Google and Akamai. Relying on our own strong cloud service system, provide customers with convenient Mix Cloud Services.

Self-service Cloud System



Powerful Network Connection



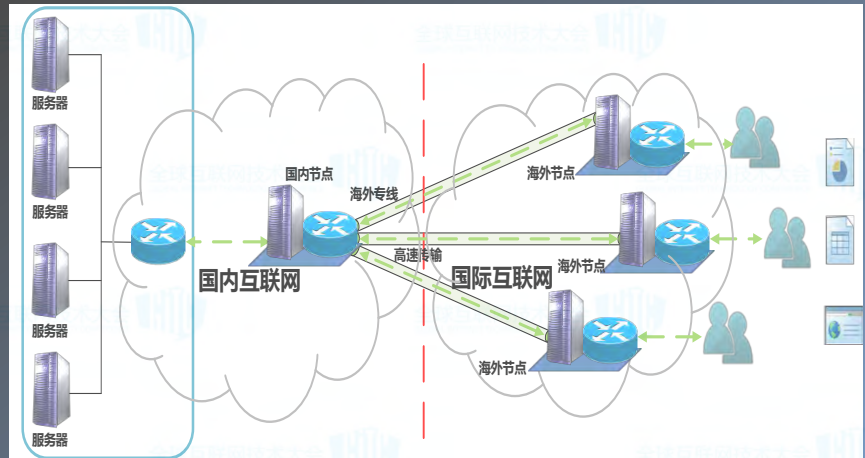
Strength

- Online self-service and optional server template
- Powerful user management and monitoring
- Various value-added services
- Support network virtualization and mixed deployment of cloud and physical host

Aofei International Business

Overseas CDN Business

In order to carry out better support of CDN international business, Aofei International Network nodes are using international direct IEPL between the world's major POPs, including HK,TW,JP,SG,KR,US,GE and so on.



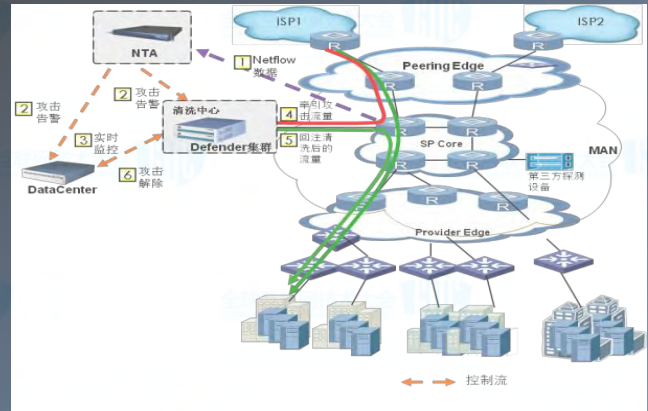
Content scheduling : Aofei global main Pops connection through the IEPLs

Eyeballs coverage: International dynamic boutique network support CDN business

Aofei International Business

Anti DDoS Service

DDos attacks have formed a black industry chain, with the development of the IOT business, more and more sources and types of attacks emerge , creating serious threats to the security of the Internet business. DDos attack happened in the United States in the October 22nd, Hackers used millions IOT equipments to launch attacks, the scale **reached 1T**



- Aofei Global network deployment anti DDoS system, maximum cleaning capacity of more than 100G.
- Real time detection, fast linkage.
- Distributed colony deployment, centralized control, the whole process using BGP traction.
- Combined with business needs, custom flow cleaning strategy.

4

Wishes and Expectations



Wishes and Expectations



Best Wishes for GITC 2016

No Cooperation , No Internet

www.ofidc.com