



# Software Defined ~~Networking~~ Everything

## Evolving to the DoD Information Core

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## Presentation Disclaimer

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## Software Defined Everything (SDx)

- **SDx as implemented means different things to different organizations.**  
**Current focus areas are:**

### Service Automation

- Automated provisioning(by design)
- Improved end-to-end management and service delivery
- Dynamic Bandwidth reallocation and scheduling
- Less time connected in the “box”/ VM

### Programmability

### Lower Total Cost of Ownership

### Open Standards/Systems

#### Availability

#### Security

- Reduction in requirement for direct equipment access by personnel and management systems
- Control plane separation from data plane



## DoD Information Core

### TODAY: DoD Information Network (DoDIN)

The ***globally interconnected***, end-to-end set of information capabilities for collecting, processing, storing, disseminating, and managing information on demand to warfighters, policy makers, and support personnel.

### GOAL: DoD Information Core (DoDIC)

The ***globally orchestrated***, end-to-end set of information capabilities for collecting, processing, storing, disseminating, and managing information on demand to warfighters, policy makers, and support personnel.



# Automated Provisioning Capability

## A Key Enabler for Software Defined Everything



## Automated Provisioning Capability Bottom Line

**FASTER**

Automated Provisioning (AP) provides the ability to drastically reduce provisioning times through customer based service provisioning.

**LOWERS COSTS**

Automation results in a significant reduction in Tier I, II technicians and provisioning personnel which reduces O&M/DWCF requirements.

**EXPANDS SERVICES**

Automated Provisioning enables vendor neutral centralized control services in:

- Legacy and Non-Standard Infrastructure
- Mission Partner Environment (MPE)
- Wide Area Networks
- Campus Area Networks
- Local Area Networks



## Keys Points for the Automated Provisioning Capability

### Customer order through DDOE/Storefront

- Provisioning goal (hardware available): 7 days
- Actual installation time: 30+ days
- Demonstrated with automation: **2 minutes!!**
- Capabilities are provisioned **ON DEMAND**

### DWCF Labor Hours per action reduced

- 5x Reduction of Tier I, II & provisioning labor hours for start, change, or disconnect

Any information you've already provided on this page will be used to pre-populate the new location, so you can create new location based on existing ones. You can also modify a single attribute of the IPSet such as the facility security instructions.

Selected Address: 1000 AIR FORCE PENTAGON, 1000 AIR FORCE PENTAGON, WASHINGTON, DC, 20330, US  
Selected Location: Bldg: Unknown Building / Floor: 4E / Rooms: 131

**Additional Location Information\***

	Site Name	Capacity Available	Interfaces Available	Speed Available	Status	Disco Site
Provisioned	CDC Saint Louis		Multirate 10GBASE-LR and OC-192/STM-64 SR-1 XFP	300MBE	✓	✗
Provisioned	CDC Columbus		XFP-100-SR	200MBE	✓	✗

**Provisioned Devices**

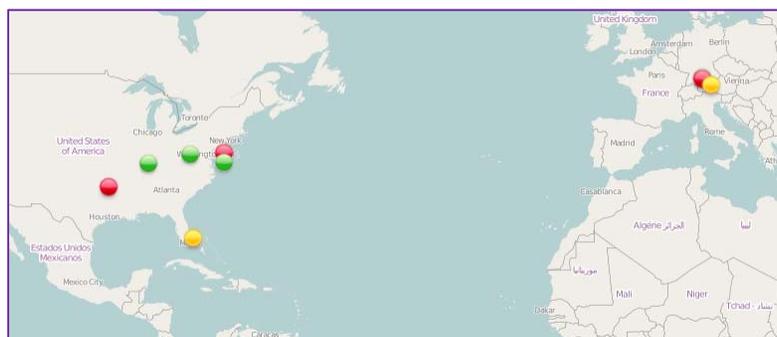
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```

VPLC AEs IN NETWORK

RDs: View Members  
27060.1999070102 Click Image Here

Facility Information:

Points of Contact:



### Automation = What/Where Knowledge

- J6/Planners/Operators get current capabilities
  - Actionable for real time execution
- DISA service managers get real time capabilities
  - Actionable to pre-deploy more capacity

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# DoD Information Core Capability

## Software Defined Everything Implementation

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## DoD Information Core Bottom Line

**ENCRYPT**

**HARDEN**

**ENHANCE C2**

**PRESERVE:**

**L1: 100G DWDM**

**L2: IPT-PE (MPLS)**

- **DoDIN is the configuration of interconnected Networks.**
- **DoDIC is C2 of the entire Information Core (Networks, Compute, Storage, and Security).**
- **Eliminates circuit mentality. Focus shifts to services.**
- **Implement with new Backbone Autonomous System**
  - Focus on Carrier Ethernet Services
  - Focus on hardening an active control plane
  - Focus on Customer based On Demand Provisioning
  - Focus on Service Level Agreement and mission partner flow visibility down to the service level (i.e. user experience level)
  - Prove reliability of DoDIC's ability to support legacy TDM transmission over Ethernet



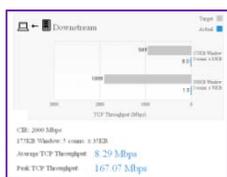
# SDx Big Picture

CORE PROBLEM SDN SOLVES  
**AGILITY**

OPEX/HARDWARE CAPEX  
**NetOps**

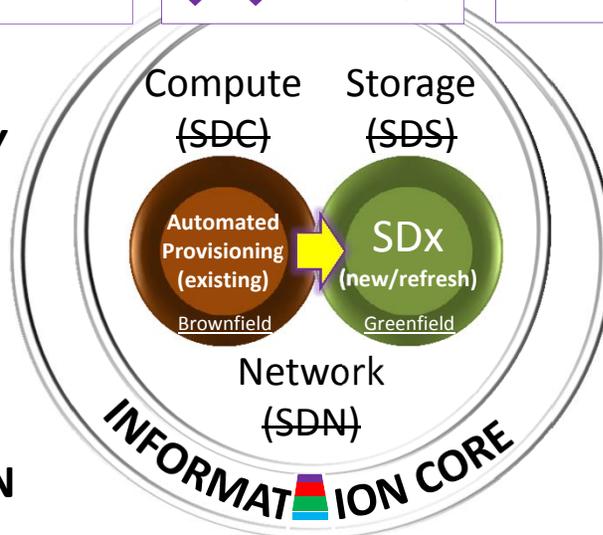
DEV OPEX/SOFTWARE  
**DevOps**

- EFFECTS OPERATIONAL IMPROVEMENTS**
- ↑ **AVAILABILITY**
  - ↓ **DEPLOYMENT COMPLEXITY**
  - ↑ **PROVE SLA RELIABILITY**



- EFFECTS FISCAL BUDGETARY REDUCTIONS**
- ↓ **NETWORK CONSOLIDATION**
  - ↓ **LABOR REDUCTION**

- EFFECTS SERVICE IMPROVEMENTS**
- AUTOMATED PROVISIONING**
  - GEO-DISTRIBUTED CDC**
  - DYNAMIC MPE CAPABILITY**

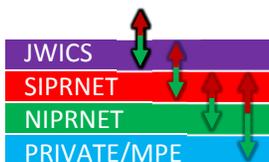


- NOW IN THE REALM OF POSSIBLE CAPABILITY DEVELOPMENT**
- EVERY DEVICE IS A SENSOR (EDIAS)**
    - End to End (E2E) Visibility of EVERY device
    - On Demand Tap at EVERY device

- CONTINUITY OF GOVERNMENT (COG)**
  - COG Simulation/ Rehearsal
  - Dept./Agency Level Coop

- GOVERNMENT CIRCUIT PROVISIONING**
  - On Demand Last Mile
  - On Demand Cloud Services
  - MPE -> Other Departments

GLOBAL C2/VISIBILITY OF ALL SDx CONTROLLERS (THROUGH CLASSIFICATION)



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# Demonstrations

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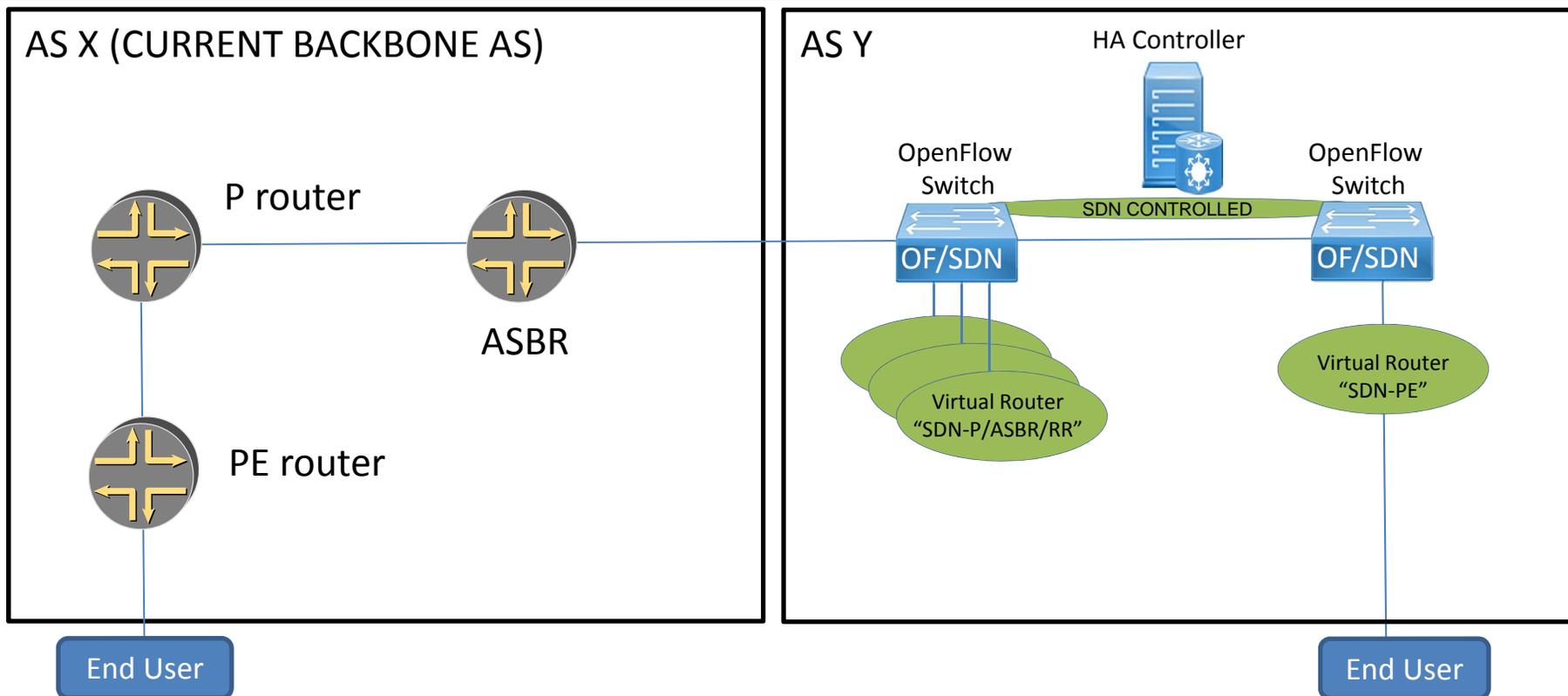
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# NEW GLOBAL SDx BASED AUTONOMOUS SYSTEM (AS)



# IPT-PE(MPLS) MIGRATION INTO SDN INFORMATION CORE



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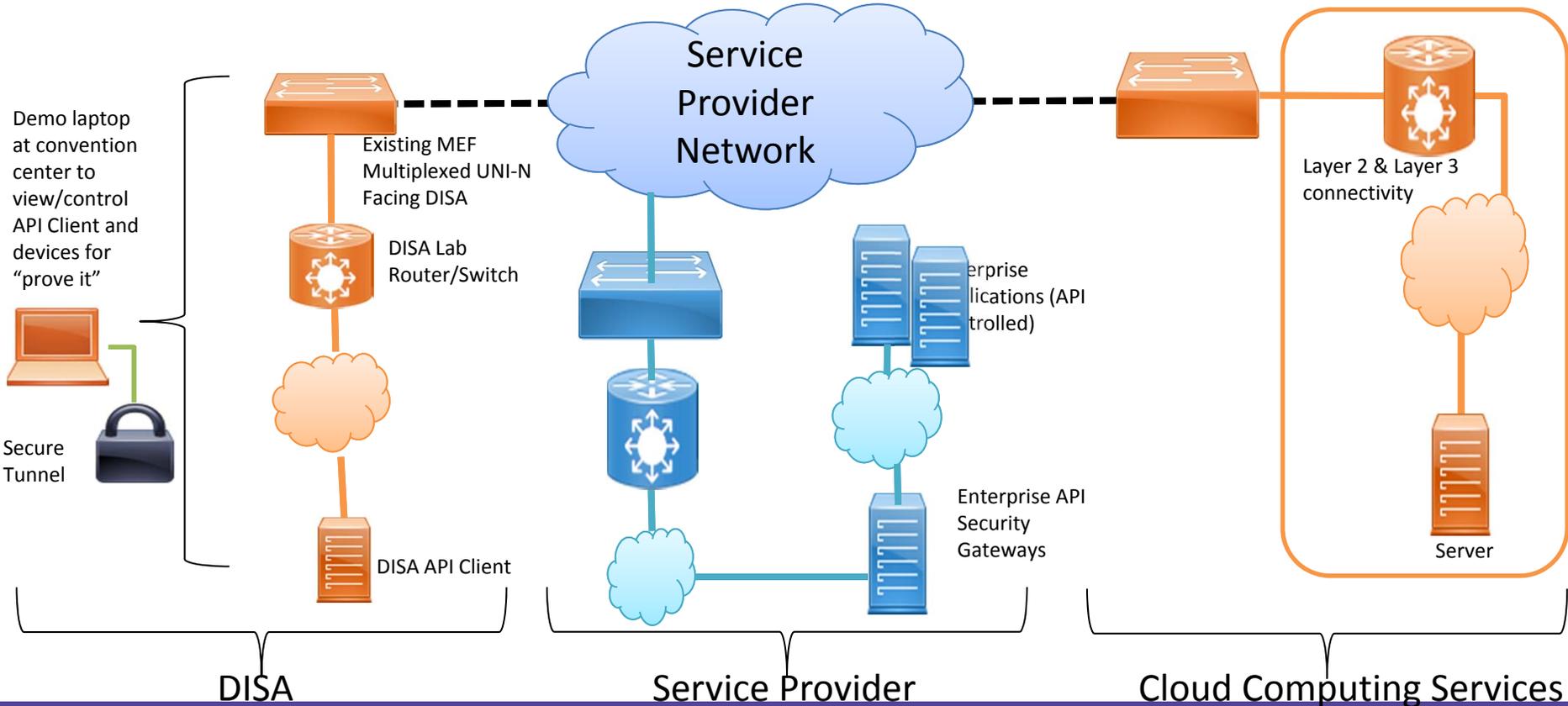
# ON DEMAND CLOUD / LAST MILE

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# On Demand Cloud / Last Mile



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# HAYWIRE

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# Haywire - Policy Verification

Time: Apr 7, 2016 11:19 AM

Search

15 Events | 6 Devices | 64 Paths

**POLICIES & EVENTS** Add Policy Details

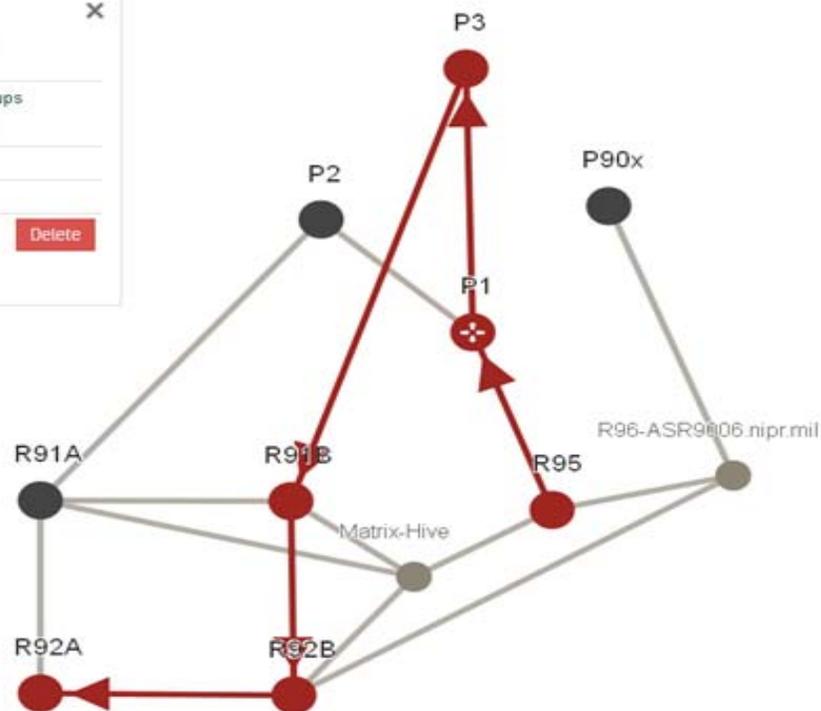
15 events | 0 passing policies

- Device Change Detected
- Device Isolation (1 total)**
  - check device groups
- Loop (1 total)
- Multipath (2 total)
- Shortest Path (1 total)
- Tunnel Symmetry (1 total)

### Device Isolation

Name	check device groups
Notes	segment group
Source Devices	R95
Target Devices	R92A

Delete





**DEFENSE INFORMATION SYSTEMS AGENCY**  
The IT Combat Support Agency

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