



Simplifying the use of AMWA IS-04 through dematerialised microservices

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IP SHOWCASE THEATRE AT IBC – SEPT. 14-18, 2018



Agenda

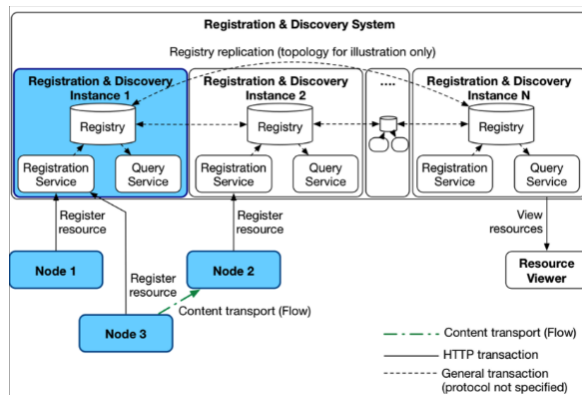
- What is AMWA IS-04 Registration and Discovery?
- What is a microservice?
- Mellanox's development - Dematerializing IS-04 to a open-sourced microservice
- Automating your network and services
- Benefits of the solution
- Next Steps and direction





AMWA IS-04 Registration and Discovery System

- AMWA IS-04 is a set of specific APIs to enable
 - Network-connected media devices to register their resources on a shared registry
 - Client applications to query the registry, and to subscribe to updates
- Also specifies discovery mechanisms eg. Peer to Peer



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What is a microservice?

“The microservice architectural style is an approach to developing a single application as a suite of small services, each running in its own process and communicating with lightweight mechanisms, often an HTTP resource API. These services are built around business capabilities and independently deployable by fully automated deployment machinery.”

James Lewis and Martin Fowler

<http://martinfowler.com/microservices/>

<https://www.nginx.com/blog/introduction-to-microservices/>

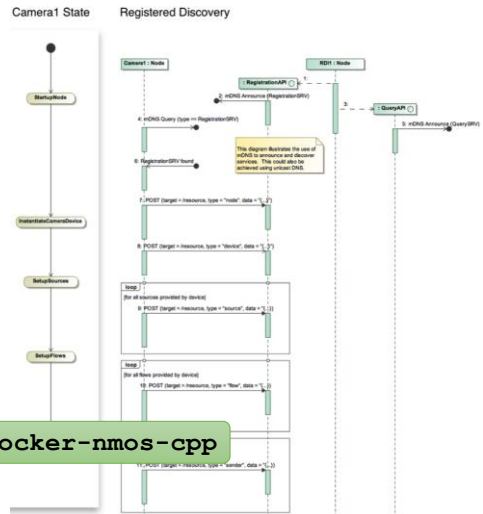


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Dematerializing IS-04 to a open microservice

- Containerised **open-sourced** implementation of AMWA IS-04 RDS. Joint collaboration with Sony
- Supplied as a self-contained Docker image making it platform agnostic
- Includes everything needed
 - DNS-SD Discovery subsystem
 - Registration Service
 - Query Service

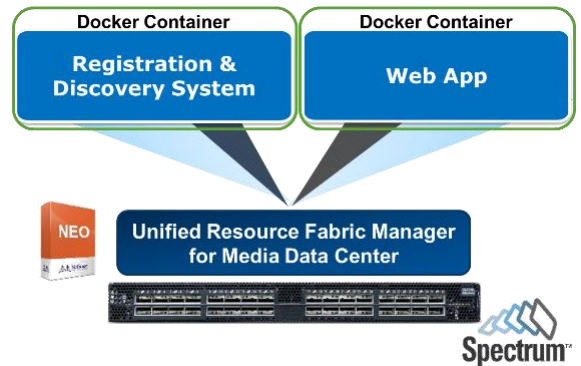


github.com/mellanox/docker-nmos-cpp



Using the AMWA IS-04 microservice

- Microservice is installable on a Mellanox switch
- Easy to deploy – few simple commands
- Fully automatable and auto-starting
- Once installed minimal user-knowledge is needed
- Lowers time to a working solution



`docker pull mellanox/nmos-cpp-avahi:latest`





Simplifying broadcast networking using existing tools

- Utilise existing data centre technologies to ease the broadcast networking burden – **Zero-Touch Provisioning**
 - Ansible – A simple IT automation engine that automates:
 - Cloud provisioning
 - Configuration management
 - Application deployment
 - Intra-service orchestration, and many other IT needs.
 - DHCP - Dynamic Host Configuration Protocol
 - TFTP/FTP/SCP – Configuration storage (A networked resource for network config repository)



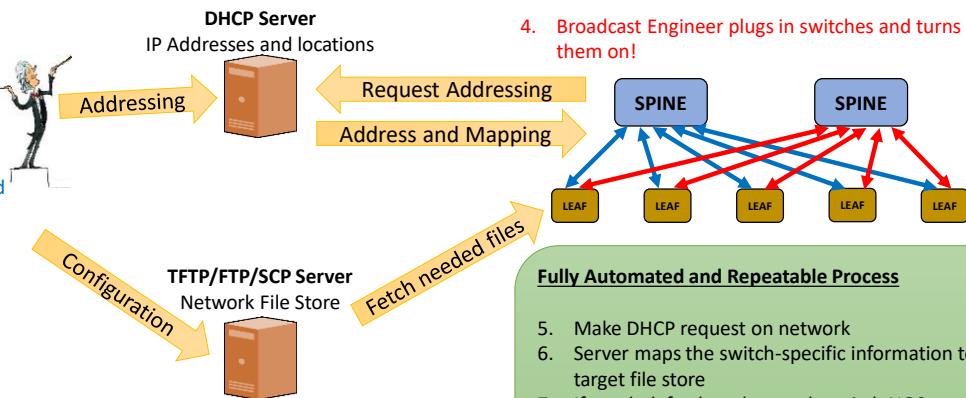
github.com/mellanox/ansible-ztp-example

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Automation Workflow for Broadcast Networks

1. Design network layout
2. Build layout in **Ansible Tower**
3. Deploy/Push configurations, NOS images and microservices



Fully Automated and Repeatable Process

5. Make DHCP request on network
6. Server maps the switch-specific information to the target file store
7. If needed, fetch and upgrade switch NOS
8. If needed, fetch and activate switch configuration
9. If needed, fetch and activate required containers (ie. microservices)



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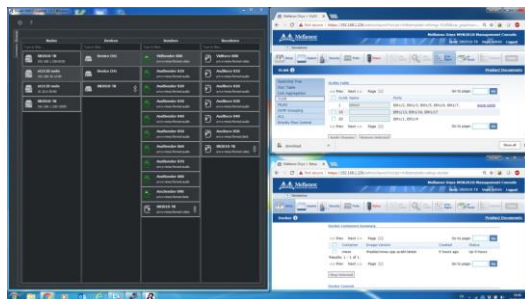


Going from this to this in under 5 minutes



Fresh from its factory box

Zero-Touch Provisioned



Fully functional broadcast media network



See You Tube video: https://youtu.be/A1_HOYi8thc

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Benefits of this approach

- Technically more flexible – supports multi-VLAN and DNS-SD designs
- Reduces the IP networking knowledge needed for the majority of broadcast engineers
- Configuration management removes risk by removing mistakes
- Completely repeatable – wipe and roll again
- Approach is widely adopted by data centres and cloud providers

Ultimately it reduces your IP transition costs!



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Next steps and direction

- To date
 - Open-sourced AMWA IS-04 dematerialized Docker container
 - Open-sourced example Ansible scripts
- Next Steps
 - Take a look at Registry High-Availability
 - Networking is already there to do this
 - Possibly would like to see auto-discovery of registry back-end resources
 - Publish more Ansible scripts and Tower configs for reference network designs



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Thank You

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Come and see us - Booth 8.E27



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