

# Deployment Brigade Updates

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**ONOS/CORD WG**

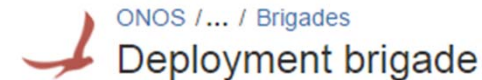
# ONOS Brigade

- **Brigade Models**
  - A focused approach to delivering roadmap features for **ONOS** through the creation of small teams called “**Brigades**”
- Active Brigades
  - Dynamic configuration
  - Intent framework
  - **ONOS Deployments**
  - Virtualization
  - GUI

# Deployment Brigade

- **Brigade goal**
  - **Create a concrete stack of software (Layer 1-3, Optical) that can be deployed in networks**
  - Related subsystems
    - Packet/Optical
    - New Proxy ARP
    - VPLS
    - SDN-IP
    - Intent framework
    - SDX-L2/L3
    - Castor
    - ...

# Deployment Brigade Members



Created by David Boswell, last modified by Luca Prete on Oct 05, 2016

## Brigade Leads:

- Luca Prete / ON.Lab ([luca@onlab.us](mailto:luca@onlab.us))

## Brigade Members:

- Alaitz Mendiola / University of the Basque Country / GEANT
- Brian O'Connor / ON.Lab ([bocon@onlab.us](mailto:bocon@onlab.us))
- Chun-Ming Ou / NCTU
- Carolina Fernández / i2CAT
- Dongkyun Kim / KREONET
- Huai-Wen Hsu / NCTU
- Himal Kumar / UNSW
- Humberto Galiza / AmLight
- Itzik Ashkenazi / Technion - Israel Institute of Technology
- Jeronimo Bezerra / AmLight-FIU
- Jordi Ortiz / University of the Basque Country
- Pier Luigi Ventre / CNIT / Università Roma Tor Vergata / GEANT
- Priyanka Chopra / Adara Networks
- Raghu Ram / Adara Networks
- Wei-Cheng Wang / NCTU
- Wu Shaoyong / ZTE Corporation
- Yi Tseng / NCTU
- Yong-Hwan Kim / KREONET

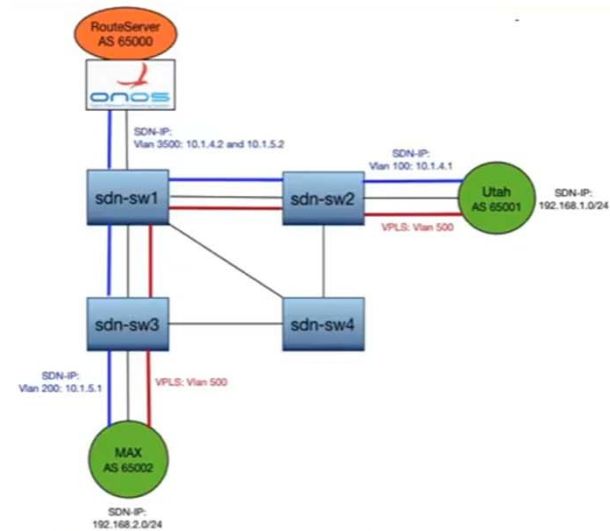
# Brigade Activities

Collect requirements

Do pair-programming

Meet one each other and  
socialize

Show demo



## Deployment brigade: kickoff meeting - Meeting notes

```
https://gerrit.onosproject.org/#/c/11373/

All My Projects People Documentation
Changes Drafts Draft Comments Watched Changes Starred Changes Groups

Change 11373 - Needs Module-Owner
WIP: ONOS-6298: New VPLS Neighbourfinder to su
Change-Id: I5c8098c108780d6c6669f5e952a17c54f

admin@12-utah:~$ ping -I 100.100.100.1 100.100.100.2
PING 100.100.2 (100.100.100.2) from 100.100.100.1: 56(84) bytes of data.
64 bytes from 100.100.100.2: icmp_seq=7 ttl=64 time=0.958 ms
64 bytes from 100.100.100.2: icmp_seq=8 ttl=64 time=0.489 ms
64 bytes from 100.100.100.2: icmp_seq=9 ttl=64 time=0.548 ms
64 bytes from 100.100.100.2: icmp_seq=10 ttl=64 time=0.538 ms
64 bytes from 100.100.100.2: icmp_seq=11 ttl=64 time=0.632 ms
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64 bytes from 100.100.100.2: icmp_seq=37 ttl=64 time=0.617 ms
64 bytes from 100.100.100.2: icmp_seq=38 ttl=64 time=0.534 ms
64 bytes from 100.100.100.2: icmp_seq=39 ttl=64 time=0.549 ms
^C

--- 100.100.100.2 ping statistics ---
39 packets transmitted, 33 received, 15% packet loss, time 38058ms
rtt min/avg/max/mdev = 0.478/0.571/0.958/0.078 ms
admin@12-utah:~$ ping -I 192.168.1.254 192.168.2.254
PING 192.168.2.254 (192.168.2.254) from 192.168.1.254: 56(84) bytes of data.
64 bytes from 192.168.2.254: icmp_seq=1 ttl=64 time=0.968 ms
64 bytes from 192.168.2.254: icmp_seq=2 ttl=64 time=0.643 ms
64 bytes from 192.168.2.254: icmp_seq=3 ttl=64 time=0.567 ms
64 bytes from 192.168.2.254: icmp_seq=4 ttl=64 time=0.495 ms
^C
```

# Collect Requirements

- **Short-term Focus in 2016**
  - Let ONOS run concurrently applications to provision L2 circuits (VPLS) and L3 services through BGP (SDN-IP) (deployed by KISTI, AmLight, and etc.)
  - Refactor the ProxyARP application to avoid code duplication while enabling different applications to plugin their ProxyARP logic easily
  - Possibly integrate the features of Castor (developed by AARNET) and SDX-L2 (developed by GEANT) into VPLS
  - Possibly integrate the features of Castor and SDX-L3 (developed by GEANT) into SDN-IP
  - Deployment activities
  - Demo results at ONOS Build 2016

# Do Pair-Programming

- ONOS-5298: New VPLS NeighbourHandler to support multiple VLANs

Change 11373 - Needs Module-Owner

WIP: ONOS-5298: New VPLS NeighbourHandler to support multiple VLANs

Change-Id: I5c809b9c108760defc666b9f5e9d2a17c64047eb

Owner: Yong-hwan Kim

Reviewers: Jenkins User, Simon Hunt, Carolina Fernandez, Jonathan Hart, Luca Prete, Thomas Vachuska, Yi Tseng

Project: onos

Branch: master

Topic: newVplsArpHandler

Strategy: Rebase if Necessary

Updated: 8 hours ago

Cannot Merge

Cherry Pick, Rebase, Abandon, Follow-Up

Author: Yong-hwan Kim <yh.kim086@gmail.com> Sep 22, 2016 2:05 AM

Committer: Yong-hwan Kim <yh.kim086@gmail.com> Sep 23, 2016 7:37 AM

Commit: 8417691bd7bd4a3e3726592636b2f747ae22e65b (gitweb)

Parent(s): bb39b889f127789df0739c1ad88efe0a35453e61 (gitweb)

Change-Id: I5c809b9c108760defc666b9f5e9d2a17c64047eb

Files: Open All, Diff against: Base, Edit

File Path	Comments	Size
apps/vpls/src/main/java/org/onosproject/vpls/VplsNeighbourHandler.java	new: 10	79
	+70, -9	

History: Expand All

User	Action
Yong-hwan Kim	Uploaded patch set 1.
Jenkins User	Patch Set 1: Verified-1 Build Failed https://jenkins.onosproject.org/job/onos-gerrit-buck/5451/ : FAILURE https://jenkins.onosproject.org/job/onos-gerrit-buck/5451/
Jonathan Hart	Patch Set 1: (1 comment)
Yong-hwan Kim	Uploaded patch set 2.
Jenkins User	Patch Set 2: Verified-1 Build Failed https://jenkins.onosproject.org/job/onos-gerrit-buck/5452/ : FAILURE https://jenkins.onosproject.org/job/onos-gerrit-buck/5452/
Yong-hwan Kim	Uploaded patch set 3.
Jenkins User	Patch Set 3: Verified-1 Build Failed https://jenkins.onosproject.org/job/onos-gerrit-buck/5453/ : FAILURE https://jenkins.onosproject.org/job/onos-gerrit-buck/5453/
Yong-hwan Kim	Uploaded patch set 4.
Jenkins User	Patch Set 4: Verified-1 Build Failed https://jenkins.onosproject.org/job/onos-gerrit-buck/5455/ : FAILURE https://jenkins.onosproject.org/job/onos-gerrit-buck/5455/
Yong-hwan Kim	Uploaded patch set 5.
Jenkins User	Patch Set 5: Verified-1 Build Failed https://jenkins.onosproject.org/job/onos-gerrit-buck/5461/ : FAILURE https://jenkins.onosproject.org/job/onos-gerrit-buck/5461/
Yong-hwan Kim	Uploaded patch set 6.
Jenkins User	Patch Set 6: Verified-1 Build Failed https://jenkins.onosproject.org/job/onos-gerrit-buck/5462/ : FAILURE https://jenkins.onosproject.org/job/onos-gerrit-buck/5462/
Yong-hwan Kim	Uploaded patch set 7.
Jenkins User	Patch Set 7: Verified-1 Build Failed https://jenkins.onosproject.org/job/onos-gerrit-buck/5475/ : FAILURE https://jenkins.onosproject.org/job/onos-gerrit-buck/5475/
Yong-hwan Kim	Uploaded patch set 8.

```
/**
 * Handler for neighbour messages.
 */
private class VplsNeighbourMessageHandler implements NeighbourMessageHandler {

    @Override
    public void handleMessage(NeighbourMessageContext context,
                             HostService hostService) {

        switch (context.type()) {
            case REQUEST:
                handleRequest(context);

                break;

            case REPLY:
                handleReply(context, hostService);

                break;

            default:
                log.warn(UNKNOWN_CONTEXT, context.type());
                break;
        }
    }
}
```



# Do Pair-Programming

- ONOS-5298: New VPLS NeighbourHandler to support multiple VLANs

The screenshot displays a code review interface for the file `VplsNeighbourHandler.java` in the `onos / apps/vpls/src/main/java/org/onosproject/vpls` directory. The interface shows a diff between the original code (left) and the proposed changes (right).

**Code Changes:**

- Constants:** Added `UNKNOWN_CONTEXT` and `CAN_NOT_FIND_NETWORK` constants at the top of the class.
- activate() Method:** Added `neighbourHandlers.put(intf, neighbourHandler);` and `neighbourService.registerNeighbourHandler(intf, neighbourHandler, appld);`.
- deactivate() Method:** Added `neighbourService.unregisterNeighbourHandler(e.getKey(), e.getValue(), appld);` and `log.debug("Deactivated");`.
- configNeighbourHandler Method:** Added `neighbourService.registerNeighbourHandler(intf, handler, appld);` and `break;` in the `INTERFACE_ADDED` case.

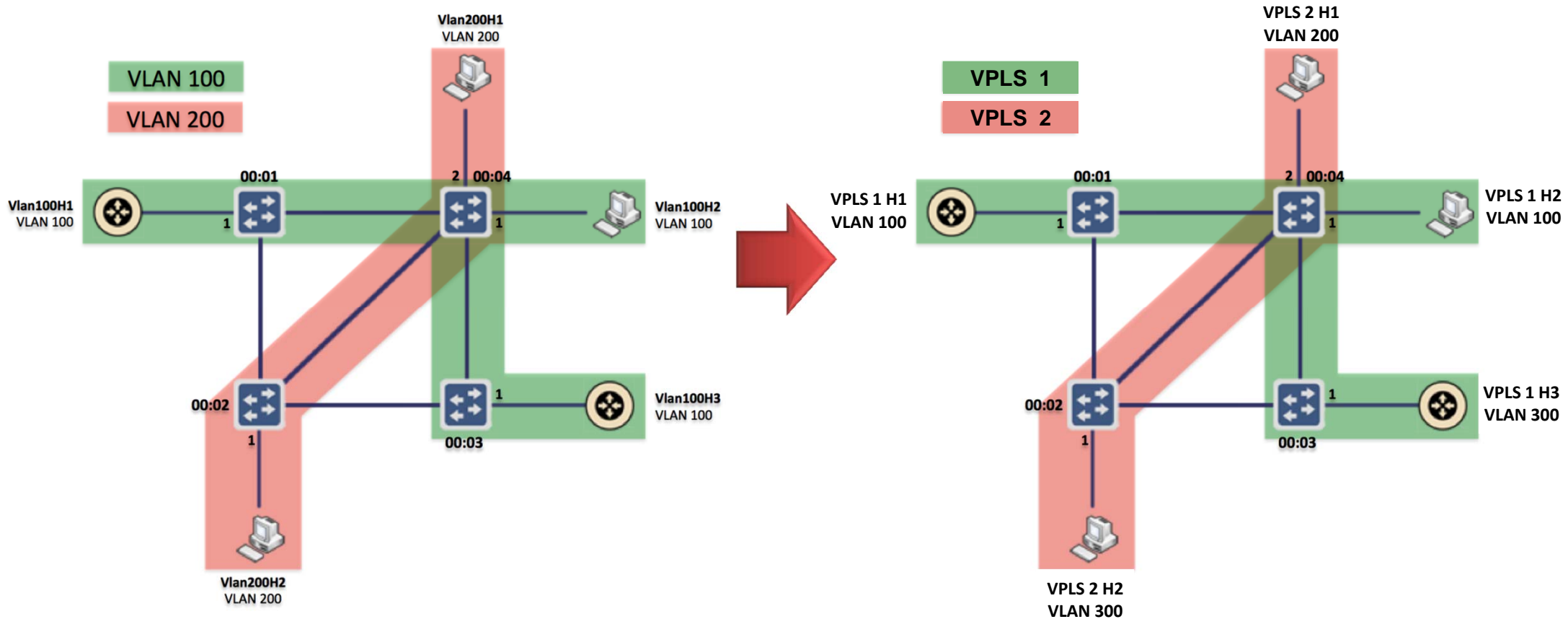
**Comments:**

- Simon Hunt:** Code style - constants should be declared at the top of the class ... Oct 12 8:55 AM
- Yi Tseng:** Done Oct 12 6:22 PM
- Jonathan Hart:** Do you want to register for all interfaces? I though the idea was t... Oct 11 5:42 PM
- Yi Tseng:** Done Filtered by both empty IP list and config in VPLS configurati... Oct 12 6:22 PM
- Jonathan Hart:** Why did you remove the call to remove neighbour handlers on de... Oct 11 5:42 PM
- Yi Tseng:** I forgot to add "neighbourService.unregisterNeighbourHandlers(ap... Oct 12 6:22 PM
- Simon Hunt:** code style - blank line after each 'break' to visually separate each ... Oct 12 8:55 AM
- Yi Tseng:** Done Oct 12 6:22 PM



# Do Pair-Programming

- ONOS-5298: New VPLS NeighbourHandler to support multiple VLANs
  - Two main function of VPLS
    - Collect information about the configuration and hosts attached
    - Install the flows needed to let the hosts communicate by intent framework



# Do Pair-Programming

- ONOS-5298: New VPLS NeighbourHandler to support multiple VLANs

```
/**
 * Handles request messages.
 *
 * @param context the message context
 */
protected void handleRequest(NeighbourMessageContext context) {

    SetMultimap<String, Interface> vplsNetwork =
        vplsConfigService.getVplsNetwork(context.vlan(), context.inPort());

    if (vplsNetwork != null) {
        Collection<Interface> vplsInterfaces = vplsNetwork.values();
        vplsInterfaces.stream()
            .filter(intf -> !context.inPort().equals(intf.connectPoint()))
            .forEach(context::forward);
    } else {
        log.debug(CAN_NOT_FIND_NETWORK, context.inPort(), context.vlan());
    }
}
```

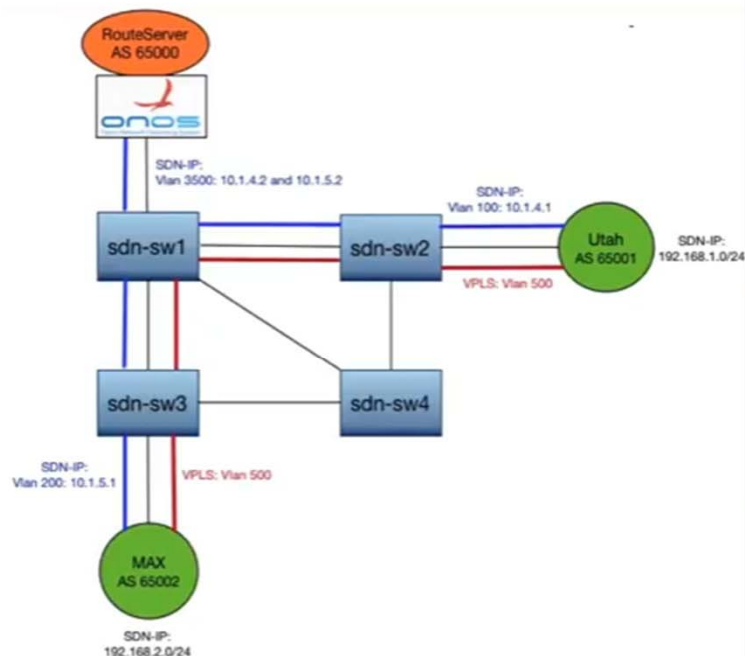
```
/**
 * Handles reply messages between VLAN tagged interfaces.
 *
 * @param context the message context
 * @param hostService the host service
 */
protected void handleReply(NeighbourMessageContext context,
                           HostService hostService) {

    SetMultimap<String, Interface> vplsNetwork =
        vplsConfigService.getVplsNetwork(context.vlan(), context.inPort());

    Set<Host> hosts = hostService.getHostsByMac(context.dstMac());
    if (vplsNetwork != null) {
        Collection<Interface> vplsInterfaces = vplsNetwork.values();
        hosts.forEach(host -> vplsInterfaces.stream()
            .filter(intf -> intf.connectPoint().equals(host.location()))
            .filter(intf -> intf.vlan().equals(host.vlan()))
            .forEach(context::forward));
    } else {
        log.debug(CAN_NOT_FIND_NETWORK, context.inPort(), context.vlan());
    }
}
```

# Show Demo

- Brigade initiative (9/22) based on Mininet



```

Terminal Shell Edit View Window Help
Scenario setup: 10 steps, 10 passed, 0 failed, 0 s...

onos> routes
Table: ipv4
Network      Next Hop
192.168.1.0/24 10.1.4.1
Total: 1

Table: ipv6
Network      Next Hop
Total: 0

onos> routes
Table: ipv4
Network      Next Hop
192.168.1.0/24 10.1.4.1
Total: 1

Table: ipv6
Network      Next Hop
Total: 0

onos> routes
Table: ipv4
Network      Next Hop
192.168.1.0/24 10.1.4.1
192.168.2.0/24 10.1.5.1
Total: 2

Table: ipv6
Network      Next Hop
Total: 0

onos> app activate org.onosproject.sdnip
  
```

```

Terminal Shell Edit View Window Help
Scenario setup: 10 steps, 10 passed, 0 failed, 0 s...

admin@12-utah:~$ ping -I 100.100.100.1 100.100.100.2
PING 100.100.100.2 (100.100.100.2) from 100.100.100.1 : 56(84) bytes of data.
64 bytes from 100.100.100.2: icmp_seq=7 ttl=64 time=0.950 ms
64 bytes from 100.100.100.2: icmp_seq=8 ttl=64 time=0.489 ms
64 bytes from 100.100.100.2: icmp_seq=9 ttl=64 time=0.540 ms
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64 bytes from 100.100.100.2: icmp_seq=17 ttl=64 time=0.552 ms
64 bytes from 100.100.100.2: icmp_seq=18 ttl=64 time=0.540 ms
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64 bytes from 100.100.100.2: icmp_seq=21 ttl=64 time=0.627 ms
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64 bytes from 100.100.100.2: icmp_seq=26 ttl=64 time=0.563 ms
64 bytes from 100.100.100.2: icmp_seq=27 ttl=64 time=0.590 ms
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64 bytes from 100.100.100.2: icmp_seq=39 ttl=64 time=0.549 ms
^C
--- 100.100.100.2 ping statistics ---
39 packets transmitted, 33 received, 15% packet loss, time 3805ms
rtt min/avg/max/mdev = 0.478/0.571/0.950/0.078 ms
admin@12-utah:~$ ping -I 192.168.1.254 192.168.2.254
PING 192.168.2.254 (192.168.2.254) from 192.168.1.254 : 56(84) bytes of data.
64 bytes from 192.168.2.254: icmp_seq=1 ttl=64 time=0.960 ms
64 bytes from 192.168.2.254: icmp_seq=2 ttl=64 time=0.643 ms
64 bytes from 192.168.2.254: icmp_seq=3 ttl=64 time=0.567 ms
64 bytes from 192.168.2.254: icmp_seq=4 ttl=64 time=0.495 ms
  
```

- ONOS Build 2016 (11/4) on real environments

# KISTI

- **Contribution for deployment brigade**
  - Deployment part
    - New Proxy ARP, VPLS, SDN-IP
  - Development part
    - Possibly integrate the features of VDN into VPLS
    - Possibly integrate the features of VPLS into VDN
    - Possibly add new feature of L2 (VDN)
  - Promotion part

# Future Plans

- Long-term Focus in 2017
  - Integrate - at least for demo/field trial purposes - the recently developed BoD app (for NSI integration)
  - Integrate packet-optical to manage optical resources with VPLS and SDN-IP
  - Use MEF standards into VPLS
  - Integrate E-CORD and VPLS, so that VPLS can dynamically connect multiple
  - More deployment activities

# Detailed Information

- Basic information on the ONOS Wiki:
  - <https://wiki.onosproject.org/display/ONOS/Deployment+brigade>
- Brigade JIRA stories (backlog):
  - <https://jira.onosproject.org/secure/RapidBoard.jspa?rapidView=1&view=planning&quickFilter=106>
- Mailing list archive:
  - <https://groups.google.com/a/onosproject.org/forum/#!forum/brigade-deployments>
- Demo Video (Sept. 22):
  - <https://www.youtube.com/watch?v=28yeJ9Ruf-8&feature=youtu.be>
- ONOS Community Blog Series: Deployments Brigade:
  - <http://onosproject.org/2016/10/12/onos-community-blog-series-deployments-brigade/>

# Thank You!

Questions and/or Comments to  
[yh.kim086@kisti.re.kr](mailto:yh.kim086@kisti.re.kr)