Avaya Surge™ Solution 2.0.1.0 Release Notes

Release 2.0.1

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Contents

Purpose

These Release Notes provides the following information about Avaya Surge™ Solution 2.0.1.0 release.

- General information about the Avaya Surge™ Solution
- Release distribution
- Supported devices
- Known problems and workarounds
- Operational notes
- List of documents
- Support contact information

Intended audience

The primary audience for this document is anyone who is involved with deployment, administration, maintenance and troubleshooting for the Avaya Surge™ Solution. The audience includes, but is not limited to, implementation engineers, field technicians, business partners, solution providers, and customers. This document does not include optional or customized aspects of a configuration.

About Avaya Surge™ Solution

The Avaya Surge™ Solution delivers the simplicity needed to help connect, secure, and manage the growing number of medical devices and technologies to reduce breaches, implement new healthcare innovation rapidly, and improve IT staff efficiency. The solution provides the following features:

- Advanced network segmentation to reduce catastrophic breaches.
- Automated and secure onboarding of medical devices.
- Inventory management of hundreds of devices.
- Ability to assign flow priority by device and traffic type.

The Avaya Surge™ Solution is an implementation of Avaya Surge™ Fx architecture. The solution combines Open vSwitch (OVS)-enabled Avaya IoT device called Open Network Adaptor (ONA), HyperSec Gateway with the Avaya Surge™ IoT Controller and user level workflows to provide isolation and segmentation of medical devices in healthcare facilities.

Along with the Avaya Surge™ IoT Controller, the Avaya Surge™ Solution provides the Avaya Surge™ Application. The Avaya Surge™ Application enables you to configure and manage the network of ONA

devices and Avaya HyperSec Gateway, along with the medical devices to which the ONAs connect over the network. The Avaya Surge™ Application is an application for ONA and HyperSec Gateway device configuration, device management, flow configuration, and diagnostics.

Terminology

Term	Description
Surge™ IoT Controller	An appliance based solution consisting of two rack mountable single unit servers running the software components of the Avaya Surge™ Solution
Leader Node	The node which provides acts as the Active node in the Active-Standby high availability setup
Master Node	The node which provides acts as the Standby node in the Active-Standby high availability setup
ONA	Open Networking Adapter 1101 GT
Surge™ Admin UI aka Platform UI aka Admin UI	The software component in the Avaya Surge™ Solution that allows configuration of the Surge™ IoT Controller platform functions
Avaya Surge™ HealthCare App	The software component in the Avaya Surge™ Solution that allows licensing of ONAs and provisioning of the flows in the ONA
ADM	Appliance Device Manager
HyperSec Gateway	Layer-2 over IPsec tunnel appliance for ONA

Supported features for this Release

The following features are supported:

- Enterprise Class Controller
- Security vulnerability patch
- New backup and restore procedure for HA

Avaya Surge™ Solution hardware and software requirements

The solution is shipped with following components:

- Open Networking Adapter (ONA): Is a pocket-sized intelligent appliance that is paired with a medical device.
- A preconfigured hardware appliance HP DL360p G9: This appliance has all the required hardware and software for the Avaya Surge™ Solution to work properly.
- Enterprise Class Surge™ IoT Controller

Component	Specification	
CPU	Processor Name	Intel(R) Xeon(R) CPU E5-2697 v3 @ 2.60GHz
	Processor Speed	2600 MHz
	Execution Technology	14/14 cores; 56 threads
	vCPU(s)	56
	CPU socket(s)	2
	Core(s) per socket	14
	Thread(s) per core	2
Memory	128 GB	
HDD	4 x 600GB 15000 rpm SAS drive configured with RAID 5	
Network	4 x 1 Gig Broadcom NetXtreme BCM5719 2 x 10 Gig Broadcom NetXtreme II BCM57810	
Other	Power Supply: 2 x HP 500W FS Plat Ht Plg Pwr Supply Kit	

- Business Class Surge™ IoT Controller

Component	Specification
CPU	Processor Name Intel(R) Xeon(R) CPU E5-2620 v3 @ 2.60GHz Processor Speed 2600 MHz Execution Technology 12/12 cores; 24 threads vCPU(s) 24 CPU socket(s) 1 Core(s) per socket 6 Thread(s) per core 2
Memory	32 GB (HP 8GB 1Rx4 PC4-2133P-R Kit)
HDD	1 x 1.2TB 10000 rpm SAS drive configured with RAID 0
Network	4 x 1 Gig Broadcom NetXtreme BCM5719
Other	Power Supply: 1 x HP 500W FS Plat Ht Plg Pwr Supply Kit

- Avaya HyperSec Gateway

Component	Specification
CPU	Processor Name Intel(R) Xeon(R) CPU E3-1220 v5 @ 3.00GHz Processor Speed 2999 MHz Execution Technology 4 cores vCPU(s) 4 CPU socket(s) 1 Core(s) per socket 4
Memory	8 GB (HPE 4GB 1Rx8 PC4-2133P-R Kit x 2)
HDD	8GB SD card
Network	4 x 1 Gig Intel Gigabit Ethernet 2 x 1 Gig Broadcom NetXtreme BCM5720
Other	Power Supply: 1 x HP 290W FS Plat Ht Plg Pwr Supply Kit

Software

Software	File
SDN 2.0.1.0 SSD Upgrade Bundle	SDN-AFO-UPG-2.0.1.0.22-20170519-22.zip
	SDN-MSC-UPG-2.0.1.0.22-20170519-21.zip
	SDN-UPG-KVM-2.0.1.0.22-20170519-20.zip
	SDN-UPG-MAK-2.0.1.0.22-upgrade_bundle-20170519-20.zip
	SDN-UPG-ODL_BUNDLE-2.0.1.0.22-20171381319-20170519-20.zip
	SDN-UPG-SDN_Engines_bundle-2.0.1.0.22-20170519-20.zip
	compatibility_1_0.xml

Network Switches

The following switches and switch versions are supported:

Juniper EX4300 PoE and non-POE

Cisco 2950

Cisco 3560

Cisco 3560G PoE48

Cisco 3750

Cisco 3850 48 PoE+

HP ProCurve 2650
HP ProCurve 2824

ERS5900 releases 7.2.0.213, 7.2.0.009, 7.3.0

ERS4900 releases 7.2.0.213, 7.2.0.009, 7.3.0

ERS4500 releases 5.7.3.030/031, 5.7.2.012/013

ERS5500/ERS5600 releases 6.3.6.016/017, 6.3.5.024/025

ERS5600 releases 6.6.3.014/015, 6.6.2.012/013

ERS3500 releases 5.3.2.206/207, 5.3.2.016/017, 5.3.3

ERS3600

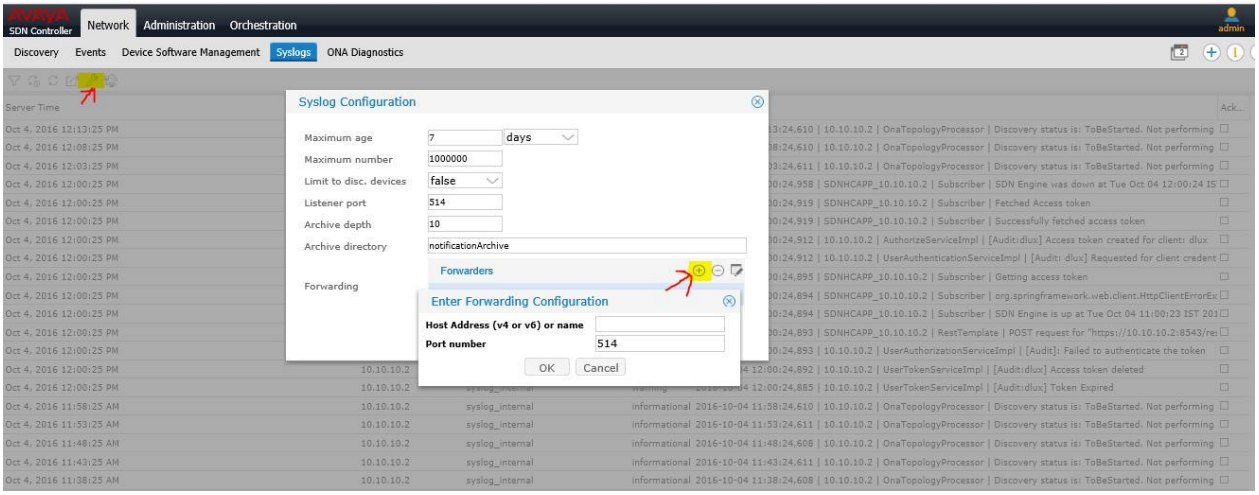
ERS4800	releases 5.9.3.022/023, 5.9.2.046/047, 5.10.0
VSP7000	releases 10.4.1.009, 10.4.0.003, 10.4.2

External Syslog server Support

All syslog messages generated by the Surge™ IoT Controller can be forwarded to external syslog servers.

Procedure:

1) Login to Platform UI and navigate to Network -> Syslogs menu
2) Click on "Settings" icon (highlighted in yellow in attached screenshot)
3) On the "Syslog Configuration" window, click on "Add" button
4) Add the external Syslog Host details and the syslog messages get forwarded to that server.



Other software/hardware requirements

- A DNS/DHCP server is required and must be set up prior to the Application installation
- Avaya Surge™ Solution Application version 2.0.1.0.22
- VEGA 3.0.1.0GA for ONA and HyperSec Gateway
- For Fabric Attach Network Devices
    - VOSS 5.0.0.0 and up
    - BOSS 5.9.2.047 and up
    - VEGA v3.0.0.0int005

Software Upgrade

- SDN 2.0.1.0.22 can be upgraded from SDN 2.0.0.0.199
- Following software are NOT supported as part of software upgrade
    - SDN 1.0.0.24
    - SDN 1.0.0.26
    - SDN 1.0.1.0

- ONA 3.0.1.0 can be upgraded from VEGA 2.0.0.0GA, VEGA 2.0.1.0GA and VEGA 3.0.0.0GA
- HyperSec Gateway can be upgraded from VEGA 3.0.0.0 to VEGA 3.0.1.0

Supported browsers

Surge™ Application:

- Internet Explorer – version 10, version 11
- Firefox – version 40 and above
- Safari
- Chrome - version 40 and above

Surge™ IoT Controller UI:

- Internet Explorer – version 10, version 11
- Firefox – version 40 and above

Known Limitations & Workarounds

Known Limitation in Surge™ 2.0.1.0

- Surge™ IoT Controller Backup the configuration file to external storage does not work in SDN 2.0 release.
- Backup and Restore can be performed when both Leader and Master nodes are in proper state and available. When both nodes are available and the role is swapped from the original configuration, restore the role back to original mode prior to starting Backup and Restore.
- During the backup and restore process, if the ONA certificate was changed due to normal administrative operation, create the new backup file again which archives new certificate in the Controller database so ONAs can be used with the Controller after restore. This includes when ONAs are offboarded from Controller as well. If the ONAs do not have a certificate but the backup file does, the Controller does not trust the ONAs due to security.

Known Issue

Issue ID	Summary	Description / Workaround
SDN-2359	Topology Manager – ACTIVE ONAs show up with a caution symbol/icon	After the "Start Network Discovery", ACTIVE ONAs show up with a "Caution" symbol when ERS switches are configured as Fabric Server mode.
SDN-2569	Surge App UI browser certificate issue	Redundant Surge App UI default certificate from different software installation can cause certificate error in Browser. Please, make sure to delete the ROOTCACert from browser certificate keystore
SDN-2630 **SDN-4091**	ONA state show Inactive or Error after network disruption	In the event of network anomalies such as unexpected switch restart, broadcast storm or max out the throughput etc, ONA state could be transition in to wrong state Please, use Surge App UI to Revoke and Assign the license to reinitialize the ONA back to normal state.
SDN-2753	iLO-IPMI v2.0 Password Hash Security Disclosure	The following known vulnerability was reported on the HP iLO The remote host supports IPMI v2.0. The Intelligent Platform Management Interface (IPMI) protocol is affected by an information disclosure vulnerability due to the support of RMCP+ Authenticated Key-Exchange Protocol (RAKP) authentication. A remote attacker can obtain password hash information for valid user accounts via the HMAC from a RAKP message 2 response from a BMC. There is no patch for this vulnerability; it is an inherent problem with the specification for IPMI v2.0. Suggested mitigations include :

		- Disabling IPMI over LAN if it is not needed. - Using strong passwords to limit the successfulness of off-line dictionary attacks. - Using Access Control Lists (ACLs) or isolated networks to limit access to your IPMI management interfaces.
SDN-2755	The SDN Health Care login user name is saved in lowercase format	When creating a new user with uppercase characters, the username is saved with all lowercase characters.
SDN-3376	Avaya Surge™ Admin UI Dashboard does not synchronize the changes done through Internet Explorer and Firefox	The issue is due to browser incompatibility. Please, follow work-around in Internet Explorer: Select Tools >> Internet Options. Click the Settings button in Browsing History. Select the Every time I visit the webpage radio button. Click OK to close the Settings dialog. Click OK to close the Internet Options dialog. Set the Disk space to use (1024)
SDN-3481	Management IP address of HyperSec Gateway is configured on different Ethernet interface	Use static IP address instead of DHCP for management IP address.
SDN-3676	Surge Controller in partitioned network state when leader node reboot in 2 minutes after master node reboot	Surge Controller could go partitioned network state when leader node reboot in 2 minutes after master node reboot. This is an intermittent issue and follow the split-brain recovery procedure in the user manual to restore the controller into proper state.
SDN-3696	Surge Administration UI login error with “Max Allowed Concurrent Limits Reached”	This is an intermittent issue. Please, contact Avaya support for assistant.
SDN-3913	After restore the backup configuration some ONAs could be in error state	This is an intermittent issue when restoring the backup configuration, some ONAs failed to become Active state. Please, use Surge App UI to Revoke and Assign the license to reinitialize the ONA back to normal state.
SDN-3961 VOSS-6999	ONA becomes “error” state with reason “FA failed for this ONA” when VSP4K with “Zero Touch Client” enabled	This is known issue and will be addressed in future release. Please, disable “Zero Touch Client” in VSP4K.

SDN-3987	Surge App UI Device Inventory Export menu does not work with Safari Browser	This is known issue and will be addressed in future release. Please, use other supported browsers.
SDN-4052 **SDN-4140**	Incorrect behavior in Surge UI when concurrent user operations being performed	SDN 2.0 release does not support concurrent user operation in Surge UI. Performing concurrent operations in different instances of browser could result in unexpected behavior. This is known issue and will be addressed in future release.
SDN-4332	HyperSec GW upgrade error	HyperSec GW upgrade could fail due to timeout if administrator initiates the upgrade in parallel with large number of ONAs or during the network peak hour. This is known issue and will be address in future release. Customers are advised to upgrade ONA and HyperSec GW during the network maintenance window and separate HyperSec GW upgrade from ONA upgrade.

Backup and Restore Procedures

1. Disable Device bridge of Surge Controller
   - Login to both Surge Controller (leader and master) and run following command.
     - *ip link set dev eno2 down*
2. Reboot HyperSec Gateway (performed in HyperSec Gateway)
   - Login to HyperSec Gateway as *rwa* user
     - *set system power reboot*
3. Perform the Restore procedure
   - In Surge Administration ADM UI, turn "on" Maintenance Mode
   - In order to run restore script, please login to MSC
     - Login to Surge Controller as an admin and then MSC
       - *ssh admin@<surge controller management IP>*
       - *sudo su -*
       - *ssh 10.10.10.7*
     - Execute the following command in MSC
       - */opt/avaya/smgr/backuprestore/backupRestoreCluster.sh --restore*
4. Clear "ipsectunnel" table entries
   - In order to run additional backup utility script, please login to SDN Engines
     - Login to Surge Controller as an admin and then SDN Engines (Leader node only)
       - *ssh admin@<surge controller management IP>*
       - *sudo su -*
       - *ssh 10.10.10.2*

        - Execute the following command in SDN Engines :
        - *python /usr/local/sdnframework/bin/db_api_delete_table_entries.py -t ipsectunnel --uniqueid tunneled*
        - *python /usr/local/sdnframework/bin/db_api_update_concentratorinventory.py -s 10.10.10.1*
5. Enable Device bridge of Surge Controller
    - Login to both Surge Controller (leader and master) and run following command
        - *ip link set dev eno2 up*
    - wait for 2 min. for all ONAs state changes to INACTIVE/ACTIVE/ERROR states
6. Disable Device bridge of Surge Controller
    - Login to both Surge Controllers (leader and master) and run following command
        - *ip link set dev eno2 down*
    - wait for HyperSec Gateway state changes to ONBOARDED state
7. Enable device bridge of Surge controller again
    - Login to both Surge Controllers (leader and master) and run following command
        - *ip link set dev eno2 up*
    - wait for 2 min. for all ONAs state changes to ACTIVE/ERROR states
8. Revoke license for all the ONAs
    - Go to Surge Application
    - Select all the ONAs and revoke the license
    - All ONAs changes to UNLICENSED state
9. Revoke certificate on all the ONAs (This will reboot the ONAs)
    - Select all the ONAs and revoke the Certificate
    - All ONAs state changes to ACTIVE state

Configuration Procedures

Configuring a HP ProCurve 2650 to Deploy into the Surge™ 2.0.1.0 Solution

Before you begin:

- Identify ONA Management VLAN.
- Identify the port or trunk which will be used for uplink.
- Identify the ports where ONAs will be connected.
- Identify the VLANs which will used to connect Medical Devices.

In this example, the following are the inputs:

- VLAN 600 is used for ONA Management.
- Trunk ‘Trk1’ is used for uplink, port 49 and 50 are part of this trunk.
- Port 1 and 2 are the ports where ONAs will be connected.
- VLAN 3401 and VLAN 3402 are used for connecting the Medical Devices.

Procedure

1 Access the switch.

2 Create ONA Management VLAN.

```
ProCurve Switch 2650-PWR(config)# vlan 600
ProCurve Switch 2650-PWR(vlan-600)# name "ONA-Mgmt"
```

3 Add the ONA ports as untagged ports to this VLAN.

```
ProCurve Switch 2650-PWR(vlan-600)# untagged 1-2
```

4 Add the uplink trunk to this VLAN as tagged ports.

```
ProCurve Switch 2650-PWR(vlan-600)# tagged Trk1
```

5 Create VLAN 3401.

```
ProCurve Switch 2650-PWR(config)# vlan 3401
ProCurve Switch 2650-PWR(vlan-3401)# name ONA-1_VLAN
```

6 Add the ONA port (Port-1) and uplink trunk (Trk1) as tagged ports to this VLAN.

```
ProCurve Switch 2650-PWR(vlan-3401)# tagged 1,Trk1
```

7 Create VLAN 3402.

```
ProCurve Switch 2650-PWR(config)# vlan 3402
ProCurve Switch 2650-PWR(vlan-3402)# name ONA-2_VLAN
```

8 Add the ONA port (Port-2) and uplink trunk (Trk1) as tagged ports to this VLAN.

```
ProCurve Switch 2650-PWR(vlan-3402)# tagged 2,Trk1
```

Additional Information

Use the following command to create a trunk:

```
ProCurve Switch 2650-PWR(config)# trunk 49-50 Trk1 Trunk
```

When a Trunk is created, by default LACP is disabled, user can configure LACP based on the configuration on the UP-Link Switch. When connecting the trunk to Avaya's MLT/SMLT link, LACP can be disabled.

Config Dump of the switch after completion

```
ProCurve Switch 2650-PWR# show running-config


Running configuration:
```

```
; J8165A Configuration Editor; Created on release #H.08.98

hostname "ProCurve Switch 2650-PWR"
interface 49
   no lacp
exit
interface 50
   no lacp
exit
trunk 49-50 Trk1 Trunk
vlan 1
   name "DEFAULT_VLAN"
   untagged 3-47,Trk1
   no ip address
   no untagged 1-2
   exit
vlan 3401
   name "ONA-1_VLAN"
   tagged 1,Trk1
   exit
vlan 3402
   name "ONA-2_VLAN"
   tagged 2,Trk1
   exit
vlan 600
   name "ONA-Mgmt"
   untagged 1-2
   tagged Trk1
   exit
spanning-tree Trk1 priority 4

ProCurve Switch 2650-PWR#
```

Verifying Connectivity

After boot up ONA's status LED should change to fast blinking "GREEN", and ONA should register on the Surge™ HealthCare APP.

User can connect a Laptop/PC at port 1 or 2, it should get DHCP Lease, and it should be able to ping "avayasdncontroller".

Quick recovery

If medical device needs to be connected directly to the port, user can turn off tagging using the following command, and connect the device.

```
ProCurve Switch 2650-PWR(config)# vlan 3401
ProCurve Switch 2650-PWR(vlan-3401)# untagged 1
```

Configuring a Juniper Switch to Deploy into the Surge™ 2.0.1.0 Solution

The following Juniper switches were tested:

- Juniper EX4200 PoE
- Juniper EX4300 PoE

Before you begin:

- Identify ONA Management VLAN.
- Identify the port or trunk which will be used for uplink.
- Identify the ports where ONAs will be connected.
- Identify the VLANs which will used to connect Medical Devices.

In this example, following are the inputs:

- VLAN 300 is used for ONA Management.
- Redundant Link: In a network composed of distribution and access layers, a redundant trunk link provides a simple solution for trunk interface network recovery. When a trunk interface fails, data traffic is routed to another trunk interface, thereby keeping network convergence time to a minimum.
- Ports 09 and 10 are part of the redundant link.
- Port 06 and 07 are the ports where ONAs will be connected.
- VLAN 3010 and VLAN 3020 are used for connecting the Medical Devices.

Procedure

1 Login to the Juniper switch.

2 Create an ONA Management VLAN.

```
root@Juniper-EX4200-PWR(config)# set vlans MGMT-vlan vlan-id 300
```

3 Create ONA Data VLAN for 2 ONAs.

```
root@Juniper-EX4200-PWR(config)# set vlans ONA1 vlan-id 3010
root@Juniper-EX4200-PWR(config)# set vlans ONA2 vlan-id 3020
```

4 Configure the ports to which the 2 ONAs to be connected to as trunk ports allowing the management VLAN and the corresponding data VLAN.

```
root@Juniper-EX4200-PWR(config)#
set interfaces ge-0/0/09 unit 0 family ethernet-switching port-mode trunk
set interfaces ge-0/0/09 unit 0 family ethernet-switching vlan members
ONA1,ONA2
set interfaces ge-0/0/09 unit 0 family ethernet-switching vlan members MGMT-
vlan
set interfaces ge-0/0/09 unit 0 family ethernet-switching native-vlan-id 300
set interfaces ge-0/0/10 unit 0 family ethernet-switching port-mode trunk
set interfaces ge-0/0/10 unit 0 family ethernet-switching vlan members
ONA1,ONA2
set interfaces ge-0/0/10 unit 0 family ethernet-switching vlan members MGMT-
vlan
set interfaces ge-0/0/10 unit 0 family ethernet-switching native-vlan-id 300
```

5 Configure the redundant links which is connecting to the uplink.

```
root@Juniper-EX4200-PWR(config)#
set ethernet-switching-options redundant-trunk-group group rtg0 interface ge-
0/0/9.0 primary
set ethernet-switching-options redundant-trunk-group group rtg0 interface ge-
0/0/10.0
```

6 Optional - Change the length of time (from the default 120 seconds) that a re-enabled primary link waits to take over for an active secondary link.

```
root@Juniper-EX4200-PWR(config)#
set ethernet-switching-options redundant-trunk-group group rtg0 preempt-
cutover-timer 60
```

Additional Information

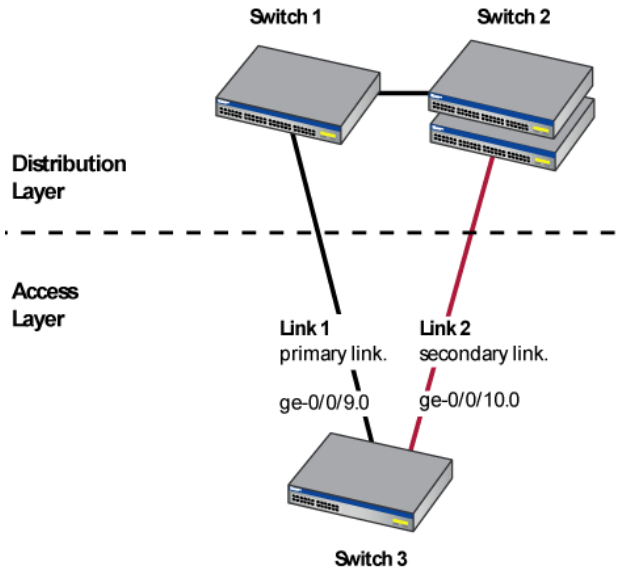
Rapid Spanning Tree Protocol (RSTP) is enabled by default on EX Series switches to create a loop-free topology, but an interface is not allowed to be in both a redundant trunk group and in a spanning-tree protocol topology at the same time. You will need to disable RSTP on the two distribution switches in the example, Switch 1 and Switch 2. Spanning-tree protocols can, however, continue operating in other parts of the network—for example, between the distribution switches and also in links between distribution switches and the core.

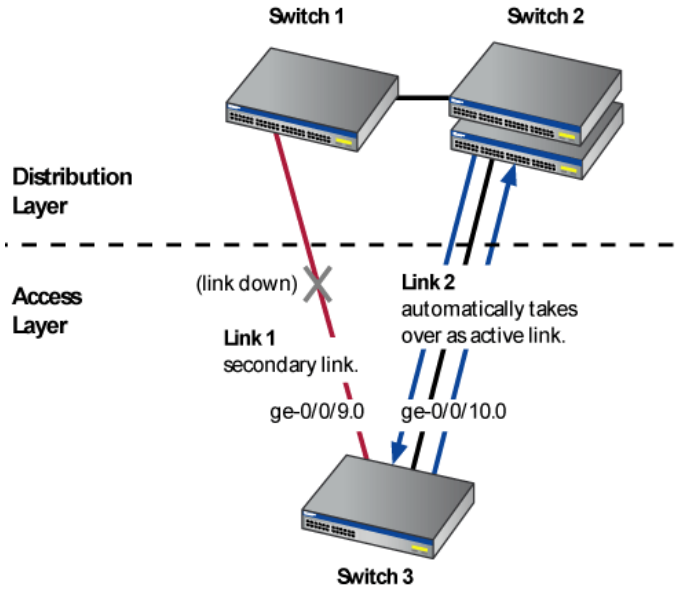
Configuration of the switch after completion

```
root@Juniper-EX4200-PWR>show configuration| display set


set interfaces ge-0/0/6 unit 0 family ethernet-switching port-mode trunk
```

```
set interfaces ge-0/0/6 unit 0 family ethernet-switching vlan members ONA1,ONA2
set interfaces ge-0/0/6 unit 0 family ethernet-switching native-vlan-id 300
set interfaces ge-0/0/7 unit 0 family ethernet-switching port-mode trunk
set interfaces ge-0/0/7 unit 0 family ethernet-switching vlan members ONA1,ONA2
set interfaces ge-0/0/7 unit 0 family ethernet-switching native-vlan-id 300

set protocols stp interface ge-0/0/9.0 disable
set protocols stp interface ge-0/0/10.0 disable
set protocols rstp interface ge-0/0/9.0 disable
set protocols rstp interface ge-0/0/10.0 disable

set interfaces ge-0/0/09 unit 0 family ethernet-switching port-mode trunk
set interfaces ge-0/0/09 unit 0 family ethernet-switching vlan members
ONA1,ONA2
set interfaces ge-0/0/09 unit 0 family ethernet-switching native-vlan-id 300
set interfaces ge-0/0/10 unit 0 family ethernet-switching port-mode trunk
set interfaces ge-0/0/10 unit 0 family ethernet-switching vlan members
ONA1,ONA2
set interfaces ge-0/0/10 unit 0 family ethernet-switching native-vlan-id 300


set ethernet-switching-options redundant-trunk-group group rtg0 preempt-
cutover-timer 60
set ethernet-switching-options redundant-trunk-group group rtg0 interface ge-
0/0/9.0 primary
set ethernet-switching-options redundant-trunk-group group rtg0 interface ge-
0/0/10.0
set ethernet-switching-options storm-control interface all
set vlans MGMT-vlan vlan-id 300
set vlans ONA1  vlan-id 3010
set vlans ONA2  vlan-id 3020
set poe interface all
```

Sample Topology





Show Commands

If medical device needs to be connected directly to the port, user can turn off tagging using the following command, and connect the device.

root@Juniper-EX4200-Edge1> show redundant-trunk-group group-name rtg0

Interface	State	Bandwidth	Time of last flap	Flap count

```
ge-0/0/9.0 Up/Pri/Act  1 Gbps      2015-10-15 13:17:00 UTC (5w1d 02:33 ago)     1
ge-0/0/10.0 Up             1 Gbps      2015-10-15 13:17:01 UTC (5w1d 02:33 ago)     1

root@Juniper-EX4200-Edge1> show ethernet-switching interfaces ge-0/0/6.0
Interface    State  VLAN members        Tag   Tagging  Blocking
ge-0/0/6.0   up     MGMT-vlan            300   untagged unblocked
                       ONA1,ONA2           3010 tagged   unblocked

{master:0}
root@Juniper-EX4200-Edge1> show ethernet-switching interfaces ge-0/0/7.0
Interface    State  VLAN members        Tag   Tagging  Blocking
ge-0/0/7.0   up     MGMT-vlan            300   untagged unblocked
                     ONA1,ONA2          3010  tagged   unblocked
{master:0}
root@Juniper-EX4200-Edge1> show ethernet-switching interfaces ge-0/0/9
Interface    State  VLAN members        Tag   Tagging  Blocking
ge-0/0/9.0  up     MGMT-vlan            300   untagged unblocked
               MGMT-vlan            300   tagged   unblocked
               ONA1,ONA2          3010  tagged   unblocked

{master:0}
root@Juniper-EX4200-Edge1> show ethernet-switching interfaces ge-0/0/10.0
Interface    State  VLAN members        Tag   Tagging  Blocking
ge-0/0/10.0  up     MGMT-vlan            300   untagged blocked by RTG(rtg0)
               MGMT-vlan            300   tagged   blocked by RTG (rtg0)
               ONA1,ONA2          3010  tagged   blocked by RTG(rtg0)
```

Port Mirroring: Debugging Purpose

```
set ethernet-switching-options analyzer mon1 input ingress interface ge-0/0/9.0
set ethernet-switching-options analyzer mon1 input ingress interface ge-0/0/10.0
set ethernet-switching-options analyzer mon1 input egress interface ge-0/0/9.0
set ethernet-switching-options analyzer mon1 input egress interface ge-0/0/10.0
set ethernet-switching-options analyzer mon1 output interface ge-0/0/2.0
```

Configuring Cisco switches to Deploy into the Surge™ 2.0.1.0 Solution

The following Cisco switches were tested:

- Cisco 2950
- Cisco 3560
- Cisco 3560G PoE48
- Cisco 3750
- Cisco 3850 48 PoE+

Before you begin:

- Identify ONA Management VLAN.
- Identify the port or trunk which will be used for uplink.
- Identify the ports where ONAs will be connected.
- Identify the VLANs which will used to connect Medical Devices

In this example, following are the inputs:

- VLAN 300 is used for ONA Management.
- **Ether Channel:** For the purposes of aggregating available bandwidth and to provide physical redundancy, Avaya had tested the Surge™ solution with the above switches by using Cisco's EtherChannel mode/feature. In this mode, aggregation is achieved by manually (statically) configuring the ports. Cisco's LACP Active/Passive mode to achieve the aggregation is not yet tested with the Surge™ solution.

  Ether Channel 'Port-channel1' is used for uplink, ports 23 and 24 are used to be part of this ether channel.
- Port 1 and 2 are the ports where ONAs will be connected.
- VLAN 2000 and VLAN 2001 are used for connecting the Medical Devices.

Procedure

1 Access the switch.

2 Create ONA Management VLAN.

```
vlan  300
name ONA-DHCP_DNS
```

3 Create ONA Data VLAN for two ONAs.

```
vlan 2000
```

```
name ONA-1_VLAN
!
vlan 2001
name ONA-2_VLAN
```

4 Configure an EtherChannel

```
interface Port-channel1
     switchport trunk encapsulation dot1q
     switchport trunk native vlan 300
     switchport trunk allowed vlan 300,2000,2001
     switchport mode trunk
     switchport nonegotiate
     no ip address
```

5 Configure the ports to which the 2 ONAs to be connected to as trunk ports allowing the management vlan and the corresponding data vlan.

```
interface Port-channel1
     switchport trunk encapsulation dot1q
     switchport trunk native vlan 300
     switchport trunk allowed vlan 300,2000,2001
     switchport mode trunk
     switchport nonegotiate
     no ip address
!
interface GigabitEthernet1/0/2
    switchport trunk encapsulation dot1q
    switchport trunk native vlan 300
    switchport trunk allowed vlan 300,2001
    switchport mode trunk
!
```

6 Configure the uplink EtherChannel ports.

```
interface FastEthernet0/23
    switchport trunk native vlan 300
    switchport mode trunk
    switchport nonegotiate
    channel-group 1 mode on
!
interface FastEthernet0/24
    switchport trunk native vlan 300
```

```
        switchport mode trunk
        switchport nonegotiate
        channel-group 1 mode on
    !
```

Verifying Connectivity

After boot up ONA's status LED should change to fast blinking "GREEN", and ONA should register on the Surge™ HealthCare APP.

User can connect a Laptop/PC at port 1 or 2, it should get DHCP Lease, and it should be able to ping "avayasdncontroller".

Documentation list

The following table lists the documents related to the Avaya Surge™ Solution. Download the documents from the Avaya Support website at http://support.avaya.com/.

Document	Description
Avaya Surge Solution Description, NN48200-100	This document offers a high-level description of the Avaya Surge Solution.
Avaya Surge Application User Guide, NN48200-101	This document describes how to use the Avaya Surge Application features.
Quick Start Guide for Avaya Surge IoT Controller, NN48200-103	This document describes where to find critical information to configure and deploy the Surge IoT Controller and Avaya Surge Solution.
Quick Start Guide for Avaya Surge HyperSec Gateway, NN48200-105	This document describes where to find critical information to configure and deploy the HyperSec Gateway and Avaya Surge Solution.
Deploying Avaya Surge, NN48200-300	This document contains Avaya Surge™ Healthcare Solution installation, configuration, initial administration, and basic maintenance checklist and procedures
Maintaining Avaya Surge, NN48200-500	This document contains the Avaya SDN HealthCare Solution maintenance procedures and best practices for routine maintenance. Routine maintenance practices include regularly scheduled backup and restoration, daily monitoring, and verification testing.
Administering Avaya Surge, NN48200-600	This document contains information about how to perform the Avaya SDN HealthCare Solution administration tasks including how to use management tools, how to manage data and security, and how to perform periodic maintenance tasks.
Troubleshooting Avaya Surge, NN48200-700	This document describes how to use the Avaya SDN HealthCare Solution troubleshooting tools and utilities. The document also describes the procedures to contact Avaya Support and contains typical error messages and resolution tasks.
Avaya Open Networking Adapter 1101GT Installation Job Aid, NN48800-300	This installation job aid provides an overview of the Open Networking Adapter (ONA).

Avaya Open Networking Adapter 1101GT Software Update Requirement, NN48800–302	The software upgrade requirement document provides information about the requirement to upgrade your Open Networking Adapter (ONA) devices to the final software version.
Avaya Open Networking Adapter 1101GT Release Notes, NN48800-400	The *Avaya Open Networking Adapter 1101GT Release Notes* (NN48800-400) provide important information about this release of the Open Networking Adapter (ONA).
Avaya Open Networking Adapter 1101GT Read Me, NN48800–401	The read me document provides a brief description on where to find the documentation for the Open Networking Adapter (ONA) devices.