



Common Configuration Tasks for Layer2 ICX Running Fastiron 8.X

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ICX Step by Step

- Build Stack
- Temporarily assign IP address for Code Upgrade
- Upgrade Code
- Edge Ports
- Uplink Ports
- Link Aggregation
- VLANs
- Per VLAN Rapid Spanning Tree



ICX Steps

- Configure Assign IP Parameters
- Configure Administrative Parameters
- Copy Configuration to TFTP Server
- RELOAD and Verify Working System
- Utilizing Templates



Building ICX Stack



ICX Stack Notes

- Following slide show generic procedure for creating ICX stack
- Specific details not covered
 - Stacking capable ports and speeds
 - Stacking cables
 - Correct cabling connections
- Refer to “Fastiron Ethernet Switches Stacking Configuration Guide”

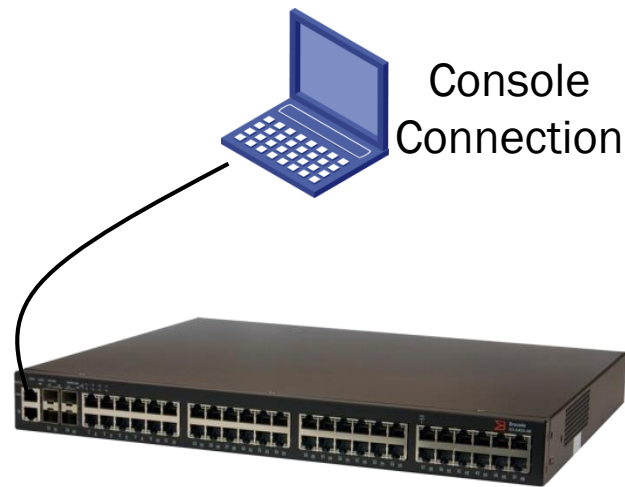


ICX Erase Configuration

Erase Existing Configuration on Individual Switches

- Console to Individual Units
- Power On Units
- Perform the following steps:

```
ICX6450-24P Switch>enable  
No password has been assigned yet...  
ICX6450-24P Switch#erase startup-config  
ICX6450-24P Switch#reload
```





ICX Stacking Steps

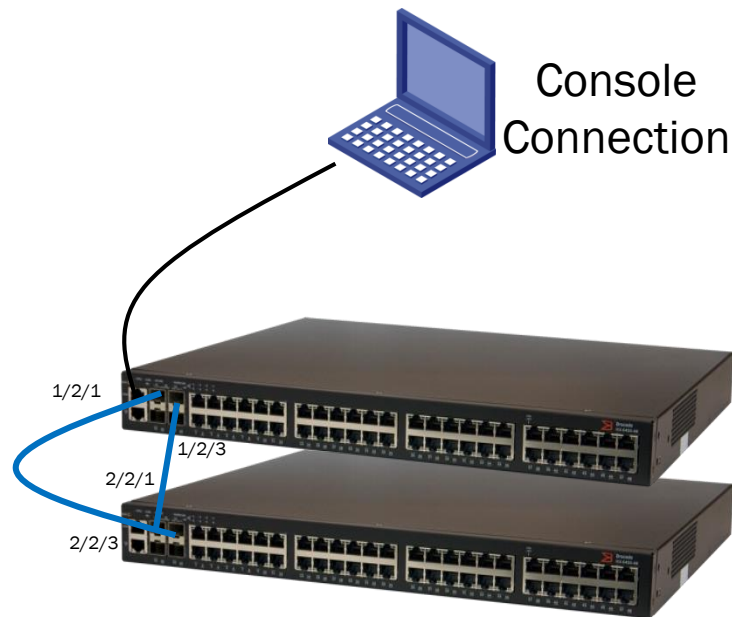
Stack Secure Setup

- Connect Console to Top Unit
- Power On All Units
- Perform on Top Unit Only

```
ICX6450-24P Switch#config t  
ICX6450-24P Switch(config)#stack enable
```

Enable stacking. This unit actively participates in stacking stacking is enable. optical monitoring for stacking ports 1/2/1, 1/2/3 is not available.

```
ICX6450-24P Switch(config)#exit  
ICX6450-24P Switch#stack secure-setup
```





ICX Stacking Steps

Verify Stack Secure-Setup Discovers Ring Topology

```
ICX6610-24P Switch#Discovering the stack topology...
```

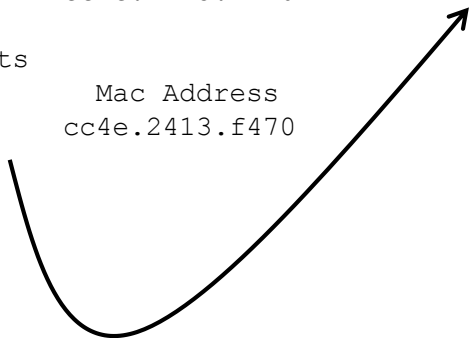
```
Current Discovered Topology - RING
```

```
Available UPSTREAM units
```

Hop(s)	Id	Type	Mac Address
1	new	ICX6610-24P	cc4e.2413.f470

```
Available DOWNSTREAM units
```

Hop(s)	Id	Type	Mac Address
1	new	ICX6610-24P	cc4e.2413.f470



Continued

```
Do you accept the topology (RING) (y/n)? : y
```

```
Selected Topology:
```

Active	Id	Type	Mac Address
	1	ICX6610-24P	748e.f8e8.750a

```
Selected UPSTREAM units
```

Hop(s)	Id	Type	Mac Address
1	2	ICX6610-24P	cc4e.2413.f470

```
Selected DOWNSTREAM units
```

Hop(s)	Id	Type	Mac Address
1	2	ICX6610-24P	cc4e.2413.f470

```
Do you accept the unit id's (y/n)? : y
```



ICX Stacking Steps

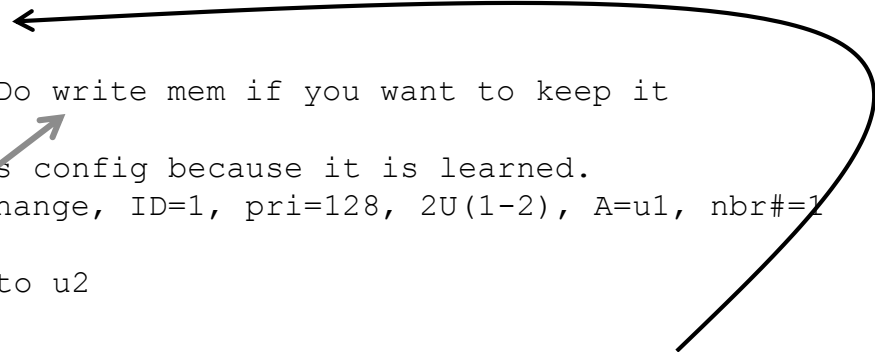
CLI Feedback

```
ICX6610-24P Switch#T=10m0.0: Election, was alone --> active, ID=1, pri=128, 2U(1-2), A=u1, nbr#=1 1, reason: u2: SecureS, ,  
T=10m3.1: reset unit 2: u2 bo-id=1
```

```
Config changed due to add/del units. Do write mem if you want to keep it  
T=10m6.1: Unit 1 loses all neighbors.  
T=10m6.2: Active U1 deletes U2 and its config because it is learned.  
T=12m52.6: Election, was active, no change, ID=1, pri=128, 2U(1-2), A=u1, nbr#=1 1, reason: u2: port-up, ,  
T=12m54.1: Synchronize webauth files to u2  
Detect stack member 2 POE capable
```

Unit 1 Becomes Master
With Priority 128

Automatically Assigned



Save Running Config to Startup

Assign Next Switch Unit 2
Reloads Unit 2 Automatically



ICX Stacking Steps

Verify Configuration

```
ICX6610-24P Switch#show run
Current configuration:
!
ver 08.0.10kT7f1
!
stack unit 1
  module 1 icx6610-24p-poe-port-management-module
  module 2 icx6610-qsfp-10-port-160g-module
  module 3 icx6610-8-port-10g-dual-mode-module
  priority 128
  stack-trunk 1/2/1 to 1/2/2
  stack-trunk 1/2/6 to 1/2/7
  stack-port 1/2/1 1/2/6
stack unit 2
  module 1 icx6610-24p-poe-port-management-module
  module 2 icx6610-qsfp-10-port-160g-module
  module 3 icx6610-8-port-10g-dual-mode-module
  stack-trunk 2/2/1 to 2/2/2
  stack-trunk 2/2/6 to 2/2/7
  stack-port 2/2/1 2/2/6
stack enable
```



ICX Stacking Steps

Verify Stack

```
ICX6610-24P Switch#show stack
```

```
alone: standalone, D: dynamic config, S: static config
```

ID	Type	Role	Mac Address	Pri	State	Comment
1	S	ICX6610-24P	active 748e.f8e8.750a	128	local	Ready
2	S	ICX6610-24P	standby cc4e.2413.f470	0	remote	Ready

```

      active          standby
      +---+          +---+
=2/6| 1 |2/1==2/1| 2 |2/6=
|   +---+          +---+   |
|                               |
|-----|

```

Standby u2 - No hitless failover. Reason: hitless-failover not configured

Current stack management MAC is 748e.f8e8.750a

Note: no "stack mac" config. My MAC will change after failover.



ICX Stacking Steps

Verify Flash

```
ICX6610-24P Switch#show flash
```

```
Stack unit 1:
```

```
  Compressed Pri Code size = 7288396, Version:08.0.10kT7f1 (/Images/FCXS08010k.bin)  
  Compressed Sec Code size = 9698106, Version:08.0.10kT7f3 (/Images/FCXR08010k.bin)  
  Compressed Boot-Monitor Image size = 370695, Version:10.1.00T7f5  
  Code Flash Free Space = 47841280
```

```
Stack unit 2:
```

```
  Compressed Pri Code size = 7288396, Version:08.0.10kT7f1 (/Images/FCXS08010k.bin)  
  Compressed Sec Code size = 9698106, Version:08.0.10kT7f3 (/Images/FCXR08010k.bin)  
  Compressed Boot-Monitor Image size = 370695, Version:10.1.00T7f5  
  Code Flash Free Space = 48103424
```



ICX Stacking Steps

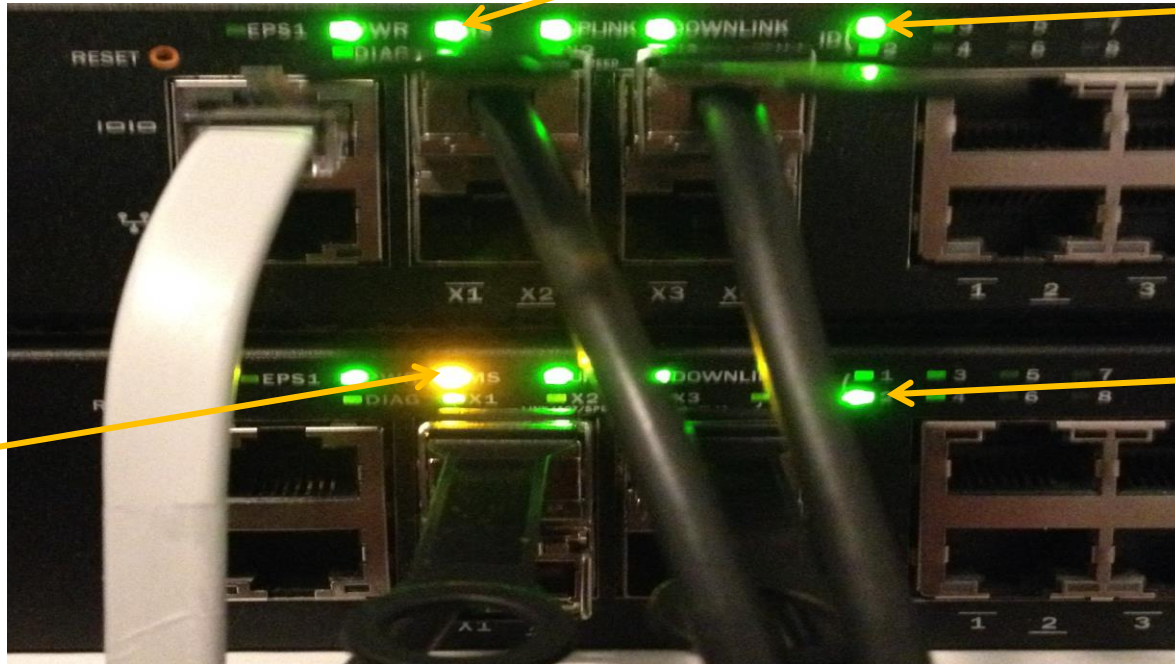
Verify LEDs

Master UNIT
"Green"

UNIT ID 1

UNIT ID 2

Standby UNIT
"Amber"





ICX Stacking Steps

Additional Steps

- Enable Hitless Failover
- Manually Set Stack MAC to address of Active Unit
- Enable Per VLAN Per Port ACL

```
ICX6610-24P Switch(config)#hitless-failover enable
```

```
Default stack MAC address 748e.f8e8.750a assigned
```

```
ICX6610-24P Switch(config)#enable acl-per-port-per-vlan
```

```
Reload required. Please write memory and then reload or power cycle.
```

```
ICX6610-24P Switch(config)#exit
```

```
ICX6610-24P Switch#wri mem
```

**WAIT UNTIL STACK HITLESS FAILOVER
IS OPERATIONAL BEFORE RELOAD
PERFORM 'SHOW STACK' TO VERIFY**



ICX Stacking Steps

Verify Hitless Failover and Reload

```
ICX6610-24P Switch#show stack
alone: standalone, D: dynamic config, S: static config
ID   Type           Role    Mac Address      Pri State  Comment
1   S ICX6610-24P   active  748e.f8e8.750a  128 local  Ready
2   S ICX6610-24P   standby cc4e.2413.f470   0  remote Ready
```

```
      active           standby
      +----+          +----+
=2/6| 1 |2/1==2/1| 2 |2/6=
|   +----+          +----+ |
|                               |
|-----|
Standby u2 - protocols ready, can failover
Current stack management MAC is 748e.f8e8.750a
```

```
ICX6610-24P Switch#reload
Are you sure? (enter 'y' or 'n'): y
Reload request sent to attached stack member(s)...
```



Upgrade Stack Code



ICX Assign IP Address

- For switch code, IP address assigned for entire stack
- By default, IP address can be reached from any VLAN
- Assign 'management-vlan' to limit source reachability of IP address
- IP address can be learned from DHCP server as well – Default Behavior

```
zappa(config)#no ip dhcp-client enable
zappa(config)#ip address 192.168.13.71/24
zappa(config)#ip default-gateway 192.168.13.1
zappa(config)#ip dns server-address 8.8.8.8
zappa(config)#ip dns domain-name brocade.com
zappa(config)#show ip
```

```
Switch IP address: 192.168.13.71
```

```
Subnet mask: 255.255.255.0
```

```
Default router address: 192.168.13.1
TFTP server address: 192.168.13.3
Configuration filename: None
Image filename: None
IP MTU: 1500
```



ICX Upgrade Software

Upgrade Bootrom Always

Command copies
Image to all units

```
zappa#copy tftp flash 192.168.13.40 grz10100.bin bootrom
zappa#Load to buffer (8192 bytes per dot)
Automatic copy to member units: 2
.....Write to boot flash..
TFTP to Flash Done.
```

```
zappa#show flash
Stack unit 1:
  Compressed Pri Code size = 7288396, Version:08.0.10kT7f1 (/Images/FCXS08010k.bin)
  Compressed Sec Code size = 9698106, Version:08.0.10kT7f3 (/Images/FCXR08010k.bin)
  Compressed Boot-Monitor Image size = 370695, Version:10.1.00T7f5
  Code Flash Free Space = 47710208
Stack unit 2:
  Compressed Pri Code size = 7288396, Version:08.0.10kT7f1 (/Images/FCXS08010k.bin)
  Compressed Sec Code size = 9698106, Version:08.0.10kT7f3 (/Images/FCXR08010k.bin)
  Compressed Boot-Monitor Image size = 370695, Version:10.1.00T7f5
  Code Flash Free Space = 47972352
```



ICX Upgrade Software

Upgrade Image Always

- 2 images of Fastiron Code may be used
- Best Practice to copy image to Primary and Secondary
- Switch Image (icx64s0xxxxx.bin)
 - Performs Layer 2 functions only
 - Single IP address/default gateway for management
- Router Image (icx64r0xxxxx.bin)
 - Performs Base Layer 3 functions
 - Performs Dynamic Layer 3 functions with License
 - IP address assign per VE and IP routes configured/learned



ICX Upgrade Software

Upgrade Image Always

Command copies
Image to all units

```
zappa#copy tftp flash 192.168.13.40 FCXS08010k.bin primary
zappa#Flash Memory Write (8192 bytes per dot)
Automatic copy to member units: 2
```

```
.....
.....
.....
TFTP to Flash Done.
```

**DOTS CUT FOR
BREVITY**

```
zappa#show flash
Stack unit 1:
  Compressed Pri Code size = 7288396, Version:08.0.10kT7f1 (FCXS08010k.bin)
  Compressed Sec Code size = 9698106, Version:08.0.10kT7f3 (/Images/FCXR08010k.bin)
  Compressed Boot-Monitor Image size = 370695, Version:10.1.00T7f5
  Code Flash Free Space = 47710208
Stack unit 2:
  Compressed Pri Code size = 7288396, Version:08.0.10kT7f1 (FCXS08010k.bin)
  Compressed Sec Code size = 9698106, Version:08.0.10kT7f3 (/Images/FCXR08010k.
  Compressed Boot-Monitor Image size = 370695, Version:10.1.00T7f5
  Code Flash Free Space = 47972352
```

**Best Practice to
copy to Primary
and Secondary**



ICX Upgrade Software

Upgrade POE Firmware (if necessary)

```
zappa#show inline power detail
```

```
Firmware          Check Firmware
Version          Version for each
-----          Unit
02.1.0 Build 001
```

```
zappa#inline power install-firmware stack-unit 1 tftp 192.168.13.30 fcx_poeplus_02.1.0.fw
zappa#Flash Memory Write (8192 bytes per dot)
Automatic copy to member units: 2
.....
tftp download successful stackId = 1 file name = poe-fw
```

Perform for each
unit in stack

See CLI output below with
Logging Console Enabled





ICX Upgrade Software

Reload Stack

- Reload after bootrom and images are copied to Flash

```
zappa#reload
Are you sure? (enter 'y' or 'n'): y
Reload request sent to attached stack
member(s)...
zappa#Halt and reboot
Sent SIGTERM to all processes
Sent SIGKILL to all processes
Requesting system reboot
Restarting system.
```



ICX Upgrade Software

Verify Running Software and Flash

```
zappa#show ver
Copyright (c) 1996-2014 Brocade Communications Systems, Inc. All rights reserved.
  UNIT 1: compiled on May 07 2015 at 16:19:35 labeled as FCXS08010k
           (7288396 bytes) from Primary /Images/FCXS08010k.bin
           SW: Version 08.0.10kT7f1
  UNIT 2: compiled on May 07 2015 at 16:19:35 labeled as FCXS08010k
           (7288396 bytes) from Primary /Images/FCXS08010k.bin
           SW: Version 08.0.10kT7f1
Boot-Monitor Image size = 370695, Version:10.1.00T7f5 (grz10100)
```

```
zappa#show flash
Stack unit 1:
  Compressed Pri Code size = 7288396, Version:08.0.10kT7f1 (FCXS08010k.bin)
  Compressed Sec Code size = 7288396, Version:08.0.10kT7f1 (FCXS08010k.bin)
  Compressed Boot-Monitor Image size = 370695, Version:10.1.00T7f5
  Code Flash Free Space = 50069504
Stack unit 2:
  Compressed Pri Code size = 7288396, Version:08.0.10kT7f1 (FCXS08010k.bin)
  Compressed Sec Code size = 7288396, Version:08.0.10kT7f1 (FCXS08010k.bin)
  Compressed Boot-Monitor Image size = 370695, Version:10.1.00T7f5
  Code Flash Free Space = 50069504
```



Edge Port Configuration



ICX Edge Port POE Configuration

- ICX POE Models do not enable inline power by default on ports
- Ports must be configured to provide inline power
- All port 802.3at compliant

```
zappa(config)#interface e 1/1/1 to 1/1/24  
zappa(config-mif-1/1/1-1/1/24)#inline power
```



ICX Edge Port POE Verification

```
zappa#show inline power
```

```
Power Capacity:          Total is 370000 mWatts. Current Free is 340000 mWatts.
```

```
Power Allocations:      Requests Honored 25 times
```

Port	Admin State	Oper State	---Power(mWatts)---		PD Type	PD Class	Pri	Fault/Error
			Consumed	Allocated				
1/1/1	On	Off	0	0	n/a	n/a	3	n/a
1/1/2	On	On	11925	30000	802.3at	Class 4	3	n/a
1/1/3	On	Off	0	0	n/a	n/a	3	n/a
1/1/4	On	Off	0	0	n/a	n/a	3	n/a
1/1/5	On	Off	0	0	n/a	n/a	3	n/a
1/1/6	On	Off	0	0	n/a	n/a	3	n/a



ICX Edge Port Loop Detection Config

- Spanning tree provides a loop-free topology in a Layer 2 network between ports
- Loops can occur downstream on a single port with unknown network equipment connected to edge ports
- Strict Loop Detection detects loop on an individual port
- Port will be placed into ERR-DISABLED state with active loop

```
zappa(config-if-e1000-1/1/1)#lo
zappa(config-if-e1000-1/1/1)#loop-detection
zappa(config-if-e1000-1/1/1)#exit
```

```
zappa(config)#show run | incl errdisable
errdisable recovery cause all
errdisable recovery interval 30
```

Port will remove itself from ERR-DISABLE state after 30 seconds. If loop detected again, port placed into ERR-DISABLE state.



ICX Edge Port Loop Detection Verification

```
zappa#Loop-detection: port 1/1/1 (vlan=10), put into errdisable state
```

```
zappa#show errdisable recovery
```

ErrDisable Reason	Timer Status
-----	-----
all reason	Enabled
bpduguard	Disabled
loopDetection	Disabled
invalid license	Disabled
Reload the switch or stack to enable this port in 10G speed	Disabled

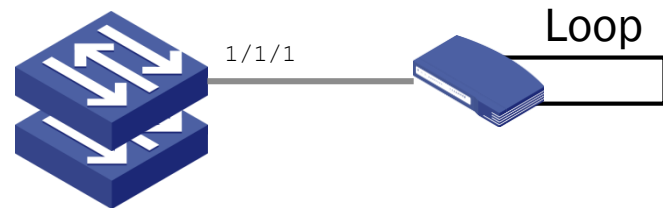
```
Timeout Value: 30 seconds
```

```
Interface that will be enabled at the next timeout:
```

Interface	Errdisable reason	Time left (sec)
-----	-----	-----
Port 1/1/1	loopDetection	27

```
zappa#show errdisable sum
```

```
Port 1/1/1 ERR_DISABLED for loopDetection (vlan 10)
```





ICX Enable Spanning Tree Edge Features

Spanning Tree Edge Port Parameter

- Edge Ports transition directly to forwarding state
- No topology change notification generated for edge port transition
- Receiving a BPDU will change edge port to non-edge port
- Recommend BPDU Guard to prevent unexpected Spanning Tree Participation

```
zappa(config)#interface ethernet 1/1/1
zappa(config-if-e1000-1/1/1)#span 8 admin-edge-port
zappa(config-if-e1000-1/1/1)#stp-bpdu-guard
```

```
zappa#show run interface e 1/1/1
```

```
interface ethernet 1/1/1
spanning-tree 802-1w admin-edge-port
stp-bpdu-guard
```

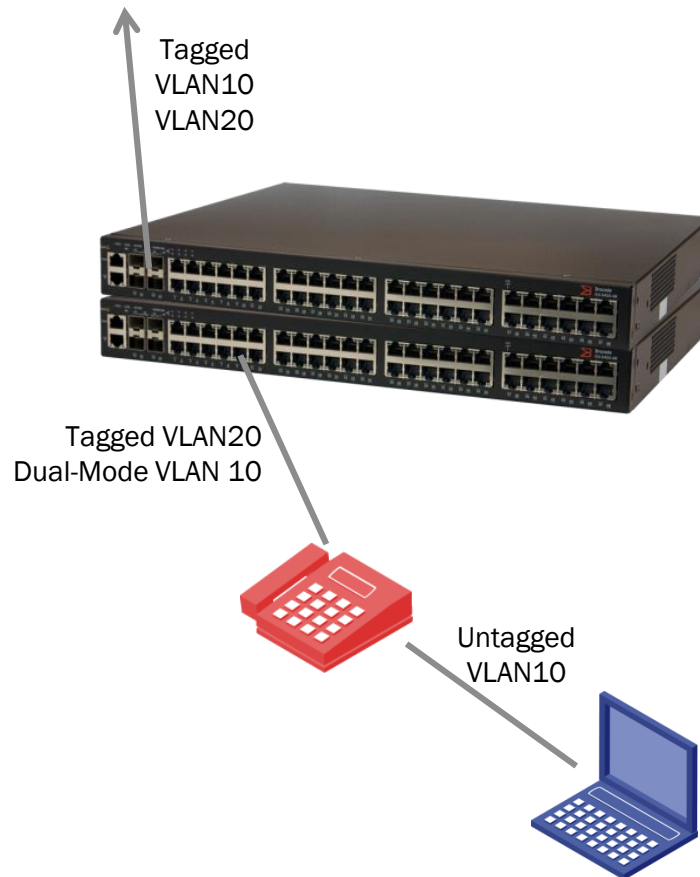
← IF PORT RECEIVES
BPDU, TRANSITIONS TO
ERR-DISABLE





ICX Dual Mode Ports

- Some ports need to accept Tagged and Untagged Traffic
- Common deployment scenario in VoIP and WLAN
- Dual Mode Port accepts tagged/untagged traffic
- Configure 'Dual-Mode' at port level
- Untagged traffic assigned to Dual-Mode VLAN configured on port





ICX Dual Mode Ports

```
zappa(config)#vlan 10 20
zappa(config-mvlan-10*20)#tagged e 1/1/20 to 1/1/22 e 2/1/20 to 2/1/22
zappa(config-mvlan-10*20)#
Added tagged port(s) ethe 1/1/20 to 1/1/22 ethe 2/1/20 to 2/1/22 to port-vlan 10.
Added tagged port(s) ethe 1/1/20 to 1/1/22 ethe 2/1/20 to 2/1/22 to port-vlan 20.
```

```
zappa(config-mvlan-10*20)#exit
zappa(config)#interface e 1/1/20 to 1/1/22
zappa(config-mif-1/1/20-1/1/22)#dual-mode 10
zappa(config-mif-1/1/20-1/1/22)#exit
zappa(config)#interface e 2/1/20 to 2/1/22
zappa(config-mif-2/1/20-2/1/22)#dual-mode 10
zappa(config-mif-2/1/20-2/1/22)#
```

Port will accept
Tagged Traffic Only
for VLAN20

Port will accept
Tagged and Untagged
traffic for VLAN10



ICX Dual Mode Ports

```
zappa#show vlan
PORT-VLAN 10, Name DATA, Priority level0, Spanning tree On
  Untagged Ports: (U1/M1)  1  2  3  4  5  6  7  8  9  10
    Tagged Ports: (U1/M2)  2
    Tagged Ports: (U2/M2)  2
    Uplink Ports: None
DualMode Ports: (U1/M1)  20  21  22
DualMode Ports: (U2/M1)  20  21  22
  Mac-Vlan Ports: None
    Monitoring: Disabled
PORT-VLAN 20, Name VOICE, Priority level0, Spanning tree On
  Untagged Ports: (U1/M1)  11  12  13
  Untagged Ports: (U2/M1)  1  2  3  4  5  6  7  8  9  10
    Tagged Ports: (U1/M1)  20  21  22
    Tagged Ports: (U1/M2)  2
    Tagged Ports: (U2/M1)  20  21  22
    Tagged Ports: (U2/M2)  2
    Uplink Ports: None
  DualMode Ports: None
  Mac-Vlan Ports: None
    Monitoring: Disabled
```



ICX Enable Admin-Edge Port

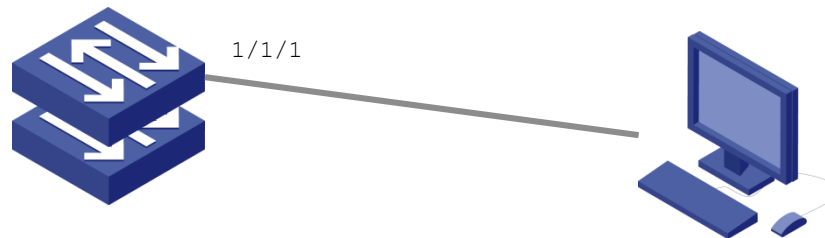
Spanning Tree Edge Port Parameter

- Edge Ports connect end devices
- Edge Ports transition directly to forwarding state
- No topology change notification generated for edge port transition

```
zappa(config)#interface ethernet 1/1/1
zappa(config-if-e1000-1/1/1)#span 8 admin-edge-port
zappa(config-if-e1000-1/1/1)#stp-bpdu-guard
```

```
zappa#show run interface e 1/1/1
```

```
interface ethernet 1/1/1
spanning-tree 802-1w admin-edge-port
stp-bpdu-guard
```





ICX Enable BPDU Guard

Spanning Tree Edge Port Parameter

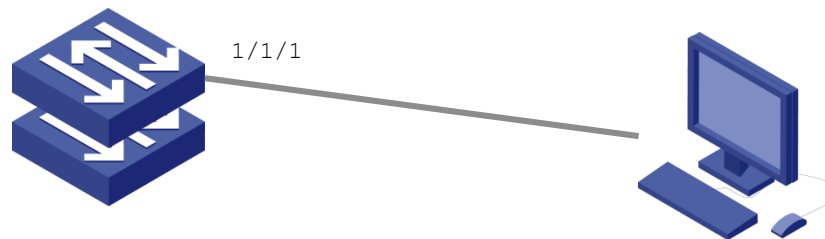
- Receiving a BPDU will change edge port to non-edge port
- Recommend BPDU Guard to prevent unexpected Spanning Tree Participation

```
zappa(config)#interface ethernet 1/1/1
zappa(config-if-e1000-1/1/1)#span 8 admin-edge-port
zappa(config-if-e1000-1/1/1)#stp-bpdu-guard
```

```
zappa#show run interface e 1/1/1
```

```
interface ethernet 1/1/1
spanning-tree 802-1w admin-edge-port
stp-bpdu-guard
```

← IF PORT RECEIVES
BPDU, TRANSITIONS TO
ERR-DISABLE





ICX QoS Configuration

Edge Ports Can Be Configured to Honor DSCP If Needed

- 6450 provides 8 queues per interface for scheduling and prioritization
- 802.1p bits automatically honored placing frames in the appropriate queues
- IP DSCP can be honored in deployments where 802.1p bits are not implemented OR at Routed Aggregation Points

```
zappa(config)#interface ethernet 1/1/20  
zappa(config-if-e10000-1/2/2)#trust dscp
```



Uplink Configuration



ICX 6610 10G SFP Uplinks

- ICX6610-10G-LIC-POD upgrades 4 Ports on Module 3 to 10G
- Configure 10G speed duplex
- Ports 1G by default

```
hendrix#show license
```

Index	License Name	Lid	License Type	Status	License Period
Stack unit 1:					
1	ICX6610-PREM-LIC-SW	dzoHKFI1FMg	Normal	Active	Unlimited
2	ICX6610-10G-LIC-POD	dzoHKFI1FMg	Normal	Active	Unlimited
3	ICX6610-ADV-LIC-SW	dzoHKFI1FMg	Normal	Active	Unlimited

```
hendrix(config)#interface e 1/3/1 to 1/3/4
```

```
hendrix(config-mif-1/3/1-1/3/4)#speed-duplex 10g-full
```



ICX 6610 1G SFP Uplinks

- By Default, Module 3 ports on 6610 enabled for 1G
- License required for 10G upgrade

```
hendrix#show int e 1/3/1
10GigabitEthernet1/3/1 is down, line protocol is down
  Hardware is 10GigabitEthernet, address is 748e.f8e8.7527 (bia 748e.f8e8.7527)
  Interface type is unknown
  Configured speed 1Gbit, actual unknown, configured duplex fdx, actual unknown
```



ICX 6450 10G SFP Uplinks

- 10G Ports use short-preamble format for stacking by default
- Enable Long Preamble on 10G ports used for Data Traffic
- LACP will not operate until Long Preamble enabled

```
zappa(config)#interface e 1/2/2
zappa(config-if-e10000-1/2/2)#long-preamble
zappa(config-if-e10000-1/2/2)#exit
zappa(config)#interface e 2/2/2
zappa(config-if-e10000-2/2/2)#exit
zappa(config)#interface e 1/2/4
zappa(config-if-e10000-1/2/4)#long-preamble
zappa(config-if-e10000-1/2/4)#exit
zappa(config)#interface e 2/2/4
zappa(config-if-e10000-2/2/4)#long-preamble
```



ICX 6450 1G SFP Uplinks

- By Default, Module 2 ports on 6450 will be configured at 10G
- Ports x/2/1 and x/2/3 licensed for 10G with unit purchase
- Ports x/2/2 and x/2/4 require new license for 10G capability
- Ports will be ERR-DISABLE without 10G license or changing to 1G
- To enable 1G functionality, speed-duplex must be manually set

```
zappa#show errdisable summary
Port 1/2/2    ERR_DISABLED for invalid license
Port 1/2/4    ERR_DISABLED for invalid license
Port 2/2/2    ERR_DISABLED for invalid license
Port 2/2/4    ERR_DISABLED for invalid license
```

```
zappa(config)#interface e 1/2/2 e 2/2/2
zappa(config-mif-1/2/2,2/2/2)#speed-duplex 1000-full-ma
zappa(config-mif-1/2/2,2/2/2)#exit
```

```
zappa#show interfaces brief | incl /2/2
1/2/2    Up          Forward Full 1G
2/2/2    Up          Forward Full 1G
```

```
zappa#show errdisable summary
zappa#
```

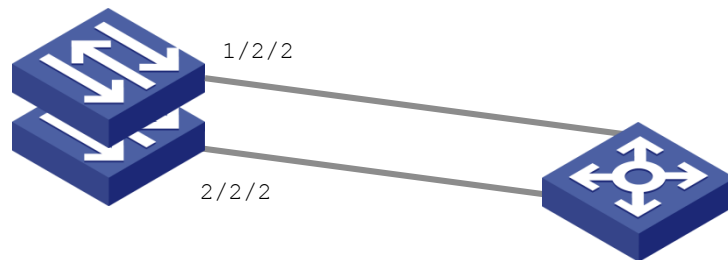


ICX Enable Spanning Tree

Spanning Tree Uplink Port Parameter

- RSTP takes advantage of Point-to-Point links between network elements
- Point-to-Point configuration speeds convergence
- Switch negotiates rapid transition to other port in loop-free manner

```
zappa(config)#interface e 1/2/2
zappa(config-if-e10000-1/2/2)#span 8 admin-pt2pt-mac
zappa(config-if-e10000-1/2/2)#exit
zappa(config)#interface e 2/2/2
zappa(config-if-e10000-2/2/2)#span 8 admin-pt2pt-mac
```





ICX QoS Configuration

- 6450 provides 8 queues per interface for scheduling and prioritization
- By default, 802.1p bits are honored placing frames in the appropriate queues
- IP DSCP can also be honored in deployments where 802.1p bits are not implemented OR at Routed Aggregation Points

```
zappa(config)#interface ethernet 1/2/2  
zappa(config-if-e10000-1/2/2)#trust dscp
```

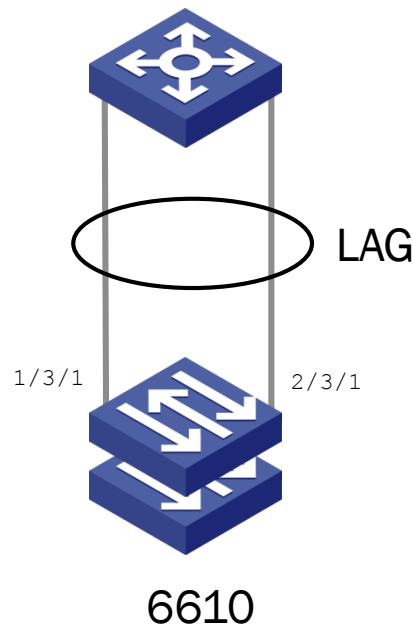


Link Aggregation Configuration



ICX Dynamic Link Aggregation

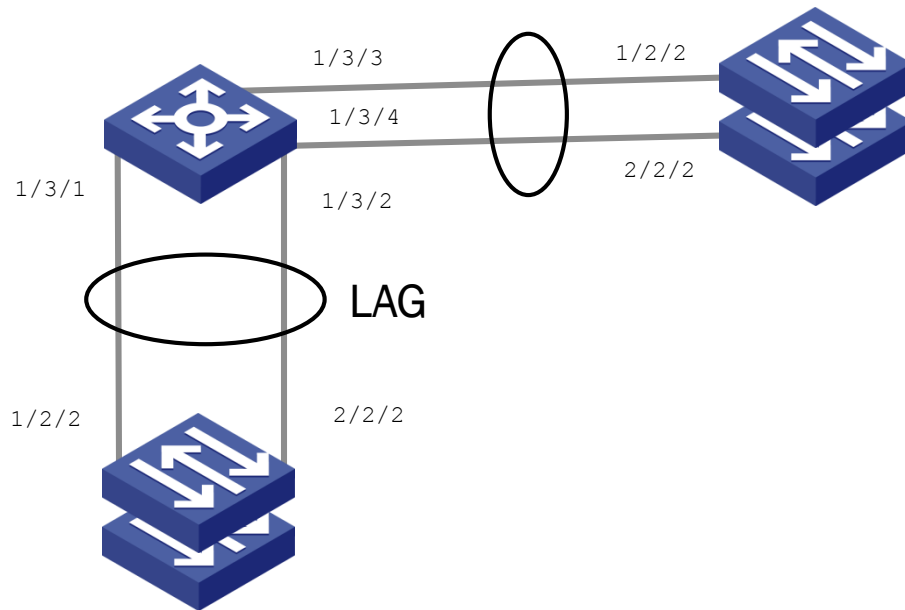
- Link Aggregation provides resilient paths between two network elements
- Port links can be used to forward packets
- Spanning Tree does not block links in Link Agg Group
- LACP (protocol) provides dynamic formation and consistency check for LAG to form - RECOMMENDED





ICX Dynamic Link Aggregation

- ≤ 8 Links can form a single LAG
- LAGs explicitly configured with Name and Member Ports
- Configuration Keys automatically generated by software
- Dynamic LAG configuration will initiate LACP protocol
- VLANs and Speed/Duplex must be consistent between port members





ICX Link Aggregation Configuration

- Ensure Speed/Duplex consistency

```
zappa#show vlan e 1/3/1 | incl PORT-VLAN
Total PORT-VLAN entries: 4
Maximum PORT-VLAN entries: 64
PORT-VLAN 10, Name DATA, Priority level0, Spanning tree On
PORT-VLAN 20, Name VOICE, Priority level0, Spanning tree On
PORT-VLAN 99, Name Management, Priority level0, Spanning tree On
```

- Ensure VLAN consistency

- Configure same Configuration Key on each Port in LAG

```
zappa#show vlan e 2/3/1 | incl PORT-VLAN
Total PORT-VLAN entries: 4
Maximum PORT-VLAN entries: 64
PORT-VLAN 10, Name DATA, Priority level0, Spanning tree On
PORT-VLAN 20, Name VOICE, Priority level0, Spanning tree On
PORT-VLAN 99, Name Management, Priority level0, Spanning tree On
```

- Configure Active LACP on each port

```
zappa#show int brief | incl /3/1
1/3/1   Up       Forward Full 1G      None  Yes N/A  0
2/3/1   Up       Forward Full 1G      None  Yes N/A  0
```

- Any port configuration from this point will be done on 1st port in LAG group



ICX Link Aggregation Configuration

- Ensure Speed/Duplex consistency
- Ensure VLAN consistency
- Give LAG a Name
- Dynamic = LACP
- Any port configuration from this point will be done on 1st port in LAG group

```
zappa(config)#lag T06450 dynamic
zappa(config-lag-T06450)#ports e 1/3/1 e 2/3/1
zappa(config-lag-T06450)#primary-port 1/3/1
zappa(config-lag-T06450)#deploy
LAG T06450 deployed successfully!
```

```
zappa(config)#vlan 50
zappa(config-vlan-50)#tagged e 1/3/1
```

```
Added tagged port(s) ethe 1/3/1 ethe 2/3/1 to port-vlan 50.
```



ICX Link Aggregation Verification

```
zappa#show lag
Total number of LAGs:          1
Total number of deployed LAGs: 1
Total number of trunks created:1 (119 available)
LACP System Priority / ID:     1 / 748e.f8e8.750a
LACP Long timeout:            90, default: 90
LACP Short timeout:           3, default: 3
=== LAG "TO6450" ID 1 (dynamic Deployed) ===
LAG Configuration:
  Ports:          e 1/3/1 e 2/3/1
  Port Count:     2
  Primary Port:   1/3/1
  Trunk Type:     hash-based
  LACP Key:       20001
Deployment: HW Trunk ID 1
```

Port	Link	State	Dupl	Speed	Trunk	Tag	Pvid	Pri	MAC	Name
1/3/1	Up	Forward	Full	1G	1	Yes	N/A	0	748e.f8e8.752d	
2/3/1	Up	Forward	Full	1G	1	Yes	N/A	0	748e.f8e8.752d	

Port	[Sys P]	[Port P]	[Key]	[Act]	[Tio]	[Agg]	[Syn]	[Col]	[Dis]	[Def]	[Exp]	[Ope]
1/3/1	1	1	20001	Yes	L	Agg	Syn	Col	Dis	No	No	Ope
2/3/1	1	1	20001	Yes	L	Agg	Syn	Col	Dis	No	No	Ope

Make Sure Link Aggregation
is Operational for all Ports





VLAN Configuration



ICX Create VLANs

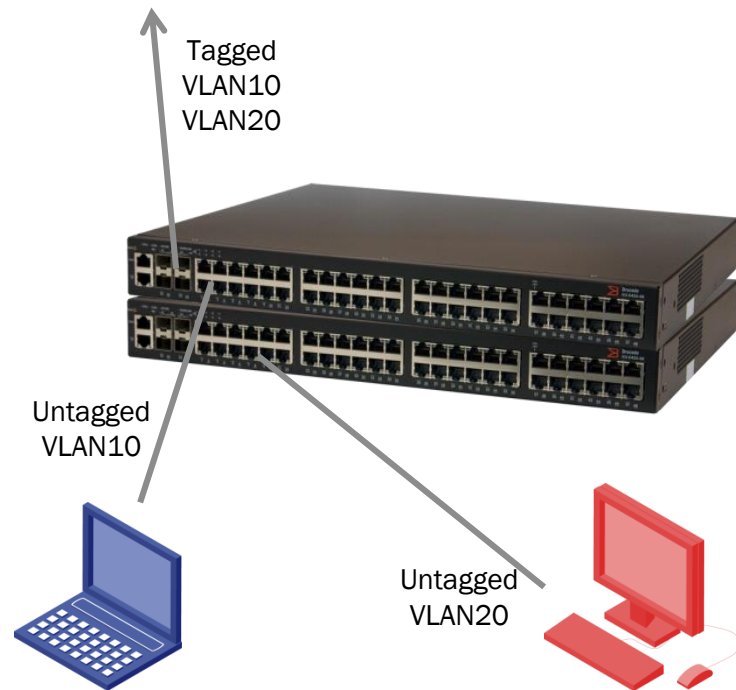
- By default, all ports belong to DEFAULT VLAN which was modified earlier
- Ports associated with newly created VLAN are removed from DEFAULT VLAN
- User friendly names can be configured with each VLAN
- VLAN 4087, 4090, 4093 and 4094 are reserved

```
zappa(config)#vlan 10 name DATA
zappa(config-vlan-10)#exit
zappa(config)#vlan 20 name VOICE
zappa(config-vlan-20)#exit
```



ICX Assign Ports to VLANs

- Ports are assigned to VLAN
- Ports support Tagged and Untagged traffic
- Tagged traffic will carry 802.1q tag with data traffic
- Unknown tagged traffic will be dropped
- Ranges can be used for ports and VLANs to speed configuration





ICX Assign Ports to VLANs

```
zappa(config)#vlan 10
zappa(config-vlan-10)#untagged e 1/1/1 to 1/1/10
Added untagged port(s) ethe 1/1/1 to 1/1/10 to port-vlan 10.
zappa(config-vlan-10)#exit
```

```
zappa(config)#vlan 20
zappa(config-vlan-20)#untagged e 1/1/11 to 1/1/13 e 2/1/1 to 2/1/10
Added untagged port(s) ethe 2/1/1 to 2/1/10 to port-vlan 20.
zappa(config-vlan-20)#exit
```

```
zappa(config)#vlan 10 20
zappa(config-mvlan-10*20)#tagged e 1/2/2 e 2/2/2
zappa(config-mvlan-10*20)#Added tagged port(s) ethe 1/2/2 ethe 2/2/2 to port-vlan 10.
Added tagged port(s) ethe 1/2/2 ethe 2/2/2 to port-vlan 20.
```

Ranges can be used
to speed
configuration



ICX Verify VLANs

```
zappa#show vlan
Total PORT-VLAN entries: 3
Maximum PORT-VLAN entries: 64
```

Legend: [Stk=Stack-Id, S=Slot]

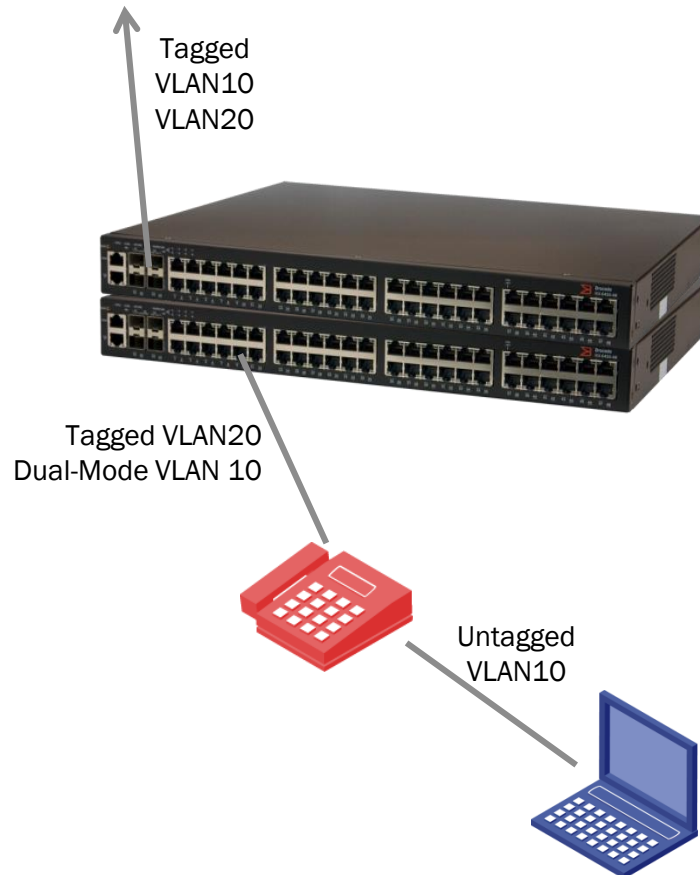
```
PORT-VLAN 10, Name DATA, Priority level0, Spanning tree On
  Untagged Ports: (U1/M1)  1  2  3  4  5  6  7  8  9  10
    Tagged Ports: (U1/M2)  2
    Tagged Ports: (U2/M2)  2
    Uplink Ports: None
    DualMode Ports: None
    Mac-Vlan Ports: None
    Monitoring: Disabled
PORT-VLAN 20, Name VOICE, Priority level0, Spanning tree On
  Untagged Ports: (U1/M1) 11 12 13
  Untagged Ports: (U2/M1)  1  2  3  4  5  6  7  8  9  10
    Tagged Ports: (U1/M2)  2
    Tagged Ports: (U2/M2)  2
    Uplink Ports: None
    DualMode Ports: None
    Mac-Vlan Ports: None
    Monitoring: Disabled
```

DEFAULT VLAN NOT
SHOWN FOR BREVITY



ICX Dual Mode Ports

- Some ports need to accept Tagged and Untagged Traffic
- Common deployment scenario in VoIP and WLAN
- Dual Mode Port accepts tagged/untagged traffic
- Configure 'Dual-Mode' at port level
- Untagged traffic assigned to Dual-Mode VLAN configured on port





ICX Dual Mode Ports

```
zappa(config)#vlan 10 20
zappa(config-mvlan-10*20)#tagged e 1/1/20 to 1/1/22 e 2/1/20 to 2/1/22
zappa(config-mvlan-10*20)#
Added tagged port(s) ethe 1/1/20 to 1/1/22 ethe 2/1/20 to 2/1/22 to port-vlan 10.
Added tagged port(s) ethe 1/1/20 to 1/1/22 ethe 2/1/20 to 2/1/22 to port-vlan 20.
```

```
zappa(config-mvlan-10*20)#exit
zappa(config)#interface e 1/1/20 to 1/1/22
zappa(config-mif-1/1/20-1/1/22)#dual-mode 10
zappa(config-mif-1/1/20-1/1/22)#exit
zappa(config)#interface e 2/1/20 to 2/1/22
zappa(config-mif-2/1/20-2/1/22)#dual-mode 10
zappa(config-mif-2/1/20-2/1/22)#
```

Port will accept
Tagged Traffic Only
for VLAN20

Port will accept
Tagged and Untagged
traffic for VLAN10



ICX Dual Mode Ports

```
zappa#show vlan
PORT-VLAN 10, Name DATA, Priority level0, Spanning tree On
  Untagged Ports: (U1/M1)  1  2  3  4  5  6  7  8  9  10
    Tagged Ports: (U1/M2)  2
    Tagged Ports: (U2/M2)  2
    Uplink Ports: None
DualMode Ports: (U1/M1)  20  21  22
DualMode Ports: (U2/M1)  20  21  22
  Mac-Vlan Ports: None
    Monitoring: Disabled
PORT-VLAN 20, Name VOICE, Priority level0, Spanning tree On
  Untagged Ports: (U1/M1) 11 12 13
  Untagged Ports: (U2/M1)  1  2  3  4  5  6  7  8  9  10
    Tagged Ports: (U1/M1) 20 21 22
    Tagged Ports: (U1/M2)  2
    Tagged Ports: (U2/M1) 20 21 22
    Tagged Ports: (U2/M2)  2
    Uplink Ports: None
  DualMode Ports: None
  Mac-Vlan Ports: None
    Monitoring: Disabled
```



ICX Specifying Management VLAN

- A single VLAN can be configured to accept management traffic
- Other VLANs will drop management traffic
- Reduces scope of management engagement from security perspective

```
zappa(config)#vlan 99 name Management
zappa(config-vlan-99)#tagged e 1/2/2 e 2/2/2
Added tagged port(s) ethe 1/2/2 ethe 2/2/2 to
port-vlan 99.
zappa(config-vlan-99)#management-vlan
zappa(config-vlan-99)#
```



Spanning Tree Configuration



ICX Enable Spanning Tree

Per VLAN Rapid Spanning Tree

- Best practice to enable spanning tree to prevent loops in network
- MDF locations need to be Root through priority assignment (lower number wins Root election)
- IDF locations typically do not require priority assignment if there is only a 2 layer network

```
zappa(config)#vlan 10 20 99
zappa(config-mvlan-10*99)#span 8
    Enable Rapid Spanning Tree IEEE 802.1w
zappa(config-mvlan-10*99)#span 802-1w
zappa(config-mvlan-10*99)#span 802-1w priority 1024
```



ICX Spanning Tree Configuration

MDF Configuration

```
vlan 10 name DATA by port
  tagged ethe 1/1/20 to 1/1/22 ethe 1/2/2 ethe 2/1/20 to 2/1/22 ethe 2/2/2
  untagged ethe 1/1/1 to 1/1/10
  spanning-tree 802-1w
  spanning-tree 802-1w priority 1024
vlan 20 name VOICE by port
  tagged ethe 1/1/20 to 1/1/22 ethe 1/2/2 ethe 2/1/20 to 2/1/22 ethe 2/2/2
  untagged ethe 1/1/11 to 1/1/13 ethe 2/1/1 to 2/1/10
  spanning-tree 802-1w
  spanning-tree 802-1w priority 1024
vlan 99 name Management by port
  tagged ethe 1/2/2 ethe 2/2/2
  spanning-tree 802-1w
  spanning-tree 802-1w priority 1024
  management-vlan
  default-gateway 192.168.13.1 1

interface ethernet 1/2/2
  spanning-tree 802-1w admin-pt2pt-mac
interface ethernet 2/2/2
  spanning-tree 802-1w admin-pt2pt-mac
```



ICX Spanning Tree Configuration

IDF Configuration

```
vlan 10 name DATA by port
  tagged ethe 1/1/20 to 1/1/22 ethe 1/2/2 ethe 2/1/20 to 2/1/22 ethe 2/2/2
  untagged ethe 1/1/1 to 1/1/10
  spanning-tree 802-1w
vlan 20 name VOICE by port
  tagged ethe 1/1/20 to 1/1/22 ethe 1/2/2 ethe 2/1/20 to 2/1/22 ethe 2/2/2
  untagged ethe 1/1/11 to 1/1/13 ethe 2/1/1 to 2/1/10
  spanning-tree 802-1w
vlan 99 name Management by port
  tagged ethe 1/2/2 ethe 2/2/2
  spanning-tree 802-1w
  management-vlan
  default-gateway 192.168.13.1 1

interface ethernet 1/1/1
  spanning-tree 802-1w admin-edge-port
  stp-bpdu-guard
interface ethernet 1/2/2
  spanning-tree 802-1w admin-pt2pt-mac
interface ethernet 2/2/2
  spanning-tree 802-1w admin-pt2pt-mac
```



ICX Enable Spanning Tree

Spanning Tree Edge Port Parameter

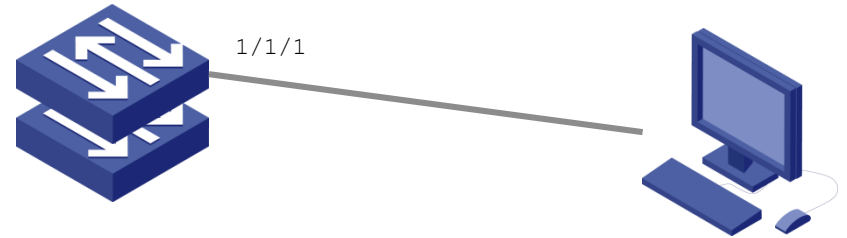
- Edge Ports end devices
- Edge Ports transition directly to forwarding state
- No topology change notification generated for edge port transition
- Receiving a BPDU will change edge port to non-edge port
- Recommend BPDU Guard to prevent unexpected Spanning Tree Participation

```
zappa(config)#interface ethernet 1/1/1
zappa(config-if-e1000-1/1/1)#span 8 admin-edge-port
zappa(config-if-e1000-1/1/1)#stp-bpdu-guard
```

```
zappa#show run interface e 1/1/1
```

```
interface ethernet 1/1/1
spanning-tree 802-1w admin-edge-port
stp-bpdu-guard
```

← IF PORT RECEIVES
BPDU, TRANSITIONS TO
ERR-DISABLE



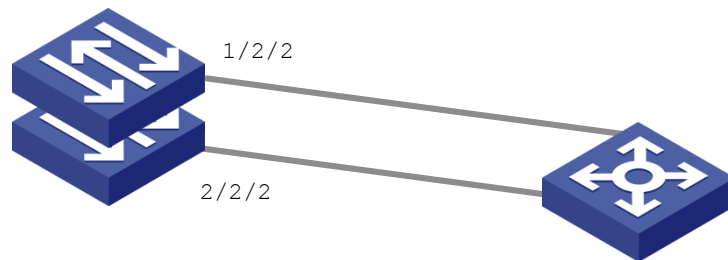


ICX Enable Spanning Tree

Spanning Tree Uplink Port Parameter

- RSTP takes advantage of Point-to-Point links between network elements
- Point-to-Point configuration speeds convergence
- Switch negotiates rapid transition to other port in loop-free manner

```
zappa(config)#interface e 1/2/2
zappa(config-if-e10000-1/2/2)#span 8 admin-pt2pt-mac
zappa(config-if-e10000-1/2/2)#exit
zappa(config)#interface e 2/2/2
zappa(config-if-e10000-2/2/2)#span 8 admin-pt2pt-mac
```





ICX Spanning Tree Verification

Make Sure Root and Root Port Correctly Chosen

```
zappa#show 8 vlan 10
--- VLAN 10 [ STP Instance owned by VLAN 10 ] -----
Bridge IEEE 802.1W Parameters:
```

Priority
8000 Hex
32768 Dec

Bridge Identifier	Bridge MaxAge	Bridge Hello	Bridge FwdDly	Force Version	tx Hold
hex	sec	sec	sec	Default	cnt
8000 748ef883d560	20	2	15	Default	3

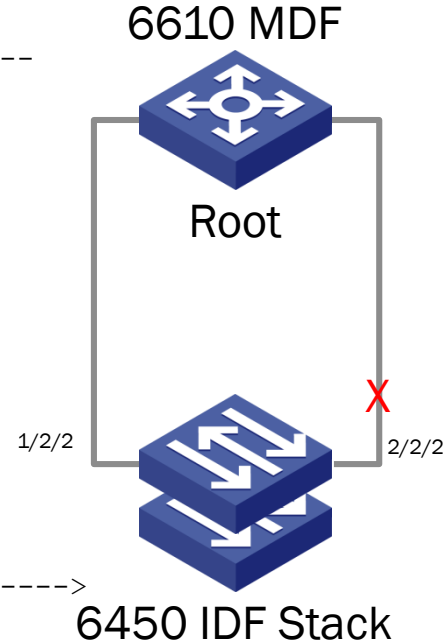
Priority
0400 Hex
1024 Dec

RootBridge Identifier	RootPath Cost	DesignatedBridge Identifier	Root Port	Max Age	Fwd Dly	Hel lo
hex		hex		sec	sec	sec
0400 748ef8e8750a	20000	0400748ef8e8750a	1/2/2	20	15	2

```
Port IEEE 802.1W Parameters:
```

EdgePort FWD
Uplink ROOT
Uplink BLK

Port Num	Pri	PortPath Cost	P2P Mac	Edge Port	Role	State	Designated cost	Designated bridge
1/1/1	128	200000	F	F	DESIGNATED	FORWARDING	20000	8000748ef883d560
1/2/2	128	20000	F	F	ROOT	FORWARDING	0	0400748ef8e8750a
2/2/2	128	20000	F	F	ALTERNATE	DISCARDING	0	0400748ef8e8750a





IP Parameter Configuration



ICX Assign IP Parameters

- For switch code, IP address assigned for entire stack
- By default, IP address can be reached from any VLAN
- Assign 'management-vlan' to limit source reachability of IP address
- IP address can be learned from DHCP server as well – Default Behavior

```
Switch(config)#no ip dhcp-client enable
Switch(config)#ip address 192.168.13.71/24
Switch(config)#ip default-gateway 192.168.13.1
Switch(config)#ip dns server-address 4.2.2.2
Switch(config)#ip dns domain-name brocade.com
```

```
zappa#show ip
```

```
Switch IP address: 192.168.13.71
```

```
Subnet mask: 255.255.255.0
```

```
Default router address: 192.168.13.1
```

```
TFTP server address: 192.168.13.40
```

```
Configuration filename:
```

```
fcx_poeplus_02.1.0.b004.fw
```

```
Image filename: FCXS08010k.bin
```

```
IP MTU: 1500
```



Sflow Configuration



ICX SFLOW Configuration

- SFLOW is a standards-based protocol that allows network traffic to be sampled at a user-defined rate for the purpose of monitoring traffic flow patterns and identifying packet transfer rates on user-specified interfaces.
- Enable SFLOW globally
- Enable SFLOW per interface
- Specify SFLOW collector(s)

```
zappa(config)#interface e 1/1/1
zappa(config-if-e1000-1/1/1)#sflow forwarding
zappa(config-if-e1000-1/1/1)#exit
zappa(config)#sflow destination 192.168.1.100
sFlow collector added; 1 collectors configured.
zappa(config)#sflow enable
```



ICX SFLOW Verification

```
zappa#show sflow
sFlow version: 5
sFlow services are enabled.
sFlow agent IP address: 192.168.13.60
Collector IP 192.168.1.100, UDP 6343
UDP source port: 8888 (Default)
Polling interval is 20 seconds.
Configured default sampling rate: 1 per 4096 packets.
Actual default sampling rate: 1 per 4096 packets.
The maximum sFlow sample size: 128.
sFlow exporting cpu-traffic is disabled.
47 UDP packets exported
0 sFlow flow samples collected.
sFlow ports: ethe 1/1/1
Module Sampling Rates
-----
Port Sampling Rates
-----
Port=1/1/1, configured rate=4096, actual rate=4096
```

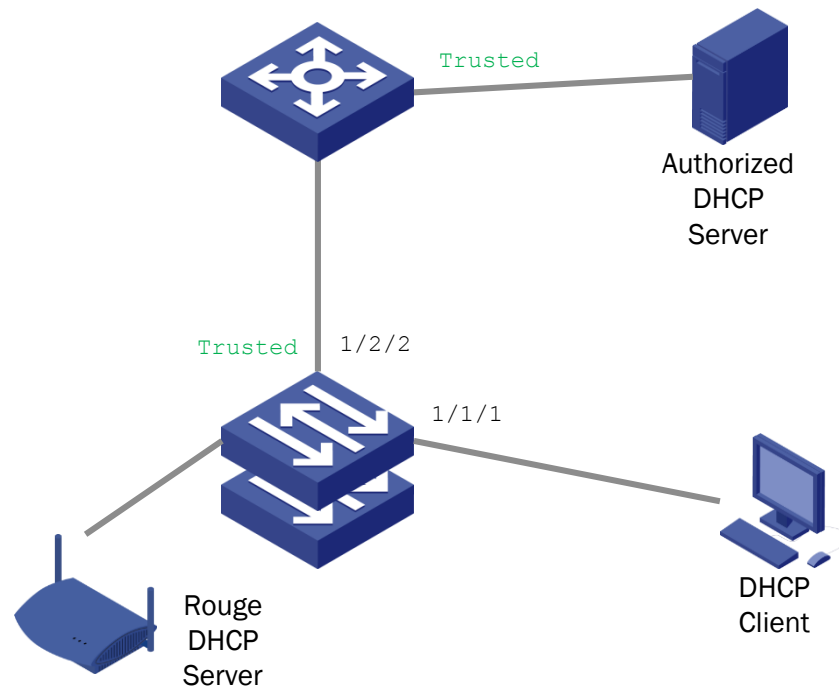


DHCP and IGMP Snooping



ICX DHCP Snooping

- Rouge DHCP Servers disrupt network connectivity and present security risk
- DHCP Snooping blocks DHCP replies on Untrusted Ports
- DHCP Snooping configured on Per VLAN Basis
- Ports must be configured to trust DHCP replies





ICX DHCP Snooping Configuration

- Rouge DHCP Servers disrupt network connectivity and present security risk
- DHCP Snooping blocks DHCP replies on Untrusted Ports
- DHCP Snooping configured on Per VLAN Basis
- Ports must be configured to trust DHCP replies

```
zappa(config)#ip dhcp snooping vlan 10
zappa(config)#interface e 1/2/2
zappa(config-if-e10000-1/2/2)#dhcp snooping trust
zappa(config-if-e10000-1/2/2)#exit
zappa(config)#interface e 2/2/2
zappa(config-if-e10000-2/2/2)#dhcp snooping trust
```

```
zappa#show ip dhcp snooping
IP DHCP snooping enabled on 1 VLAN(s):
    VLAN: 10
zappa#show ip dhcp snooping vlan 10
IP DHCP snooping VLAN 10: Enabled
    Trusted Ports :   ethe 1/2/2 ethe 2/2/2
    Untrusted Ports : ethe 1/1/1 to 1/1/10 ethe
1/1/20 to 1/1/22 ethe 2/1/20 to 2/1/22
    Relay Agent Information disabled on Ports : None
```



ICX Multicast IGMP Snooping

- By default, IGMP snooping disabled

```
zappa(config)#ip multicast passive
zappa(config)#exit
```
- Any multicast packet will be treated as a broadcast packet and flooded

```
zappa#show ip multicast
Summary of all vlans. Please use "sh ip mu vlan <vlan-id>" for
details
Version=2, Intervals: Query=125, Group Age=260, Max Resp=10,
Other Qr=260

VL10: dft V2, glb cfg passive, 0 grp, 0 (*G) cache, no rtr port,
VL20: dft V2, glb cfg passive, 0 grp, 0 (*G) cache, no rtr port,
VL99: dft V2, glb cfg passive, 0 grp, 0 (*G) cache, no rtr port,
VL299: dft V2, glb cfg passive, port down, 0 grp, 0 (*G) cache,
no rtr port,
```
- To limit flooding, enable IGMP Snooping function
- Active should only be used when no routers are configured for IGMP/PIM in the network



Administrative Parameters Configuration



ICX System Administration Information

- Enter the following from CLI:

- System Name
- Contact Information
- Location

```
ICX6450-24P Switch(config)#hostname zappa
zappa(config)#snmp-server location Centerville
zappa(config)#snmp-server contact Support Services
zappa(config)#exit
zappa#wri mem
```



ICX Enable Telnet and Set Password

- Telnet server can be enabled on system for management
- Unique password can also be setup locally on the system
- Example to right shows straight forward example to set password
- System also supports Radius and TACACS

```
zappa(config)#telnet server
zappa(config)#enable telnet password brocade
```



ICX Set Enable Password

- Fastiron code can set password to limit access to 'enable' mode
- Regardless if other authentication methods are deployed, set an enable password local on the system
- Password encrypted and not readable from configuration

```
zappa(config)#enable super-user-password brocade
zappa(config)#exit
zappa#exit
zappa>en
Password:
zappa#
```



ICX NTP and Clock Configuration

- Providing consistent time among network elements proves invaluable in troubleshooting activities
- NTP enables synchronization across the enterprise
- NTP Synchronization can take 5-10 minutes

```
zappa(config)#ntp
zappa(config-ntp)#server 192.168.13.42
zappa(config-ntp)#exit
zappa(config)#clock timezone us central
zappa(config)#clock summer-time
```

```
zappa#show clock
15:51:48.105 Central Wed May 27 2015
```

```
zappa#show ntp status
Clock is synchronized, stratum 7, reference clock is
192.168.13.42
precision is 2**-16
reference time is 3641748597.1462168574 (14:49:57.1462168574
Central Wed May 27 2015)
clock offset is -33.2244 msec, root delay is 1.5514 msec
root dispersion is 49.0082 msec, peer dispersion is 11.8871
msec
system poll interval is 64, last clock update was 91 sec ago
NTP server mode is enabled, NTP client mode is enabled
NTP master mode is disabled, NTP master stratum is 8
NTP is not in panic mode
```



ICX SNMP and Syslog Configuration

- Setup community strings for RW and RO
- Specify SNMP Trap destination
- ACLs can be utilized to restrict SNMP access

```
zappa(config)#snmp-server community brocade ro
zappa(config)#snmp-server community brocade rw
zappa(config)#snmp-server host 192.168.1.100
zappa(config)#logging host 192.168.1.100
```



ICX Secure Shell Configuration

- SSH allows secure remote access to management functions on a Brocade device
- SSH2 supported
- Key generation can take several minutes – BE PATIENT
- CPU Priority can be given to key generation during maintenance window

```
zappa(config)#crypto key generate
```

```
Creating DSA key pair, please wait...  
zappa(config)#  
DSA Key pair is successfully created  
.
```

TO DELETE KEY

```
zappa(config)#crypto key zeroize
```



ICX Enable Link Layer Discovery Protocols

- Link layer discover protocols can be enabled on the system
- Fastiron supports the following:
 - FDP (Foundry Discovery Protocol)
 - CDP (Cisco Discovery Protocol)
 - LLDP (Link Layer Discovery Protocol)

```
zappa#config t
zappa(config)#lldp run
zappa(config)#fdp run
zappa(config)#show fdp
Global FDP information:
  Sending FDP packets every 60 seconds
  Sending a holdtime value of 180 seconds
zappa(config)#show lldp
LLDP transmit interval           : 30 seconds
LLDP transmit hold multiplier    : 4 (transmit TTL:
120 seconds)
LLDP transmit delay              : 2 seconds
LLDP SNMP notification interval  : 5 seconds
LLDP reinitialize delay          : 2 seconds
LLDP-MED fast start repeat count : 3

LLDP maximum neighbors           : 392
LLDP maximum neighbors per port  : 4
zappa(config)#
```



Configuration Snippets



Edge Port Config Snippet

```
interface ethernet 1/1/1
  loop-detection
  dual-mode 10
  spanning-tree 802-1w admin-edge-port
  inline power
  voice-vlan 20
  stp-bpdu-guard
  sflow forwarding
```



1G Uplink Port Config Snippet

```
interface ethernet 1/2/2
  dhcp snooping trust
  speed-duplex 1000-full-master
  long-preamble
  spanning-tree 802-1w admin-pt2pt-mac
  trust dscp
```



10G Uplink Port Config Snippet

```
interface ethernet 1/2/2
  dhcp snooping trust
  long-preamble
  spanning-tree 802-1w admin-pt2pt-mac
  trust dscp
```



LAG Configuration Snippet

```
lag "T06450" dynamic id 1
  ports ethernet 1/3/1 ethernet 2/3/1
  primary-port 1/3/1
  deploy
```



VLAN/802.1w Configuration Snippet

```
vlan 10 name DATA by port
  tagged ethe 1/1/1 to 1/1/24 ethe 1/2/2 ethe 2/1/1 to 2/1/24 ethe 2/2/2
  spanning-tree 802-1w
  spanning-tree 802-1w ethe 2/2/2 admin-pt2pt-mac
!
vlan 20 name VOICE by port
  tagged ethe 1/1/1 to 1/1/24 ethe 1/2/2 ethe 2/1/1 to 2/1/24 ethe 2/2/2
  spanning-tree 802-1w
  spanning-tree 802-1w ethe 2/2/2 admin-pt2pt-mac
!
vlan 99 name Management by port
  tagged ethe 1/2/2 ethe 2/2/2
  spanning-tree 802-1w
  spanning-tree 802-1w ethe 2/2/2 admin-pt2pt-mac
  management-vlan
  default-gateway 192.168.13.1 1
!
vlan 299 name DEFAULT-VLAN by port
```



DHCP Snooping Config Snippet

```
ip dhcp snooping vlan 10
ip dhcp snooping vlan 20

interface ethernet 1/2/2
  dhcp snooping trust
  speed-duplex 1000-full-master
  long-preamble
  spanning-tree 802-1w admin-pt2pt-mac
  trust dscp

interface ethernet 2/2/2
  dhcp snooping trust
  speed-duplex 1000-full-master
  long-preamble
  spanning-tree 802-1w admin-pt2pt-mac
  trust dscp
```



IGMP Snooping Config Snippet

```
ip multicast passive
```



Misc Config Snippet

```
stack enable
stack mac 748e.f883.d560
errdisable recovery cause all
errdisable recovery interval 30
default-vlan-id 299
enable telnet password .....
enable acl-per-port-per-vlan
enable super-user-password .....
hostname zappa
ip dhcp snooping vlan 10
ip dhcp snooping vlan 20
ip address 192.168.13.60 255.255.255.0
ip dns domain-name brocade.com
ip dns server-address 4.2.2.2
no ip dhcp-client enable
ip multicast passive
fdp run
```

```
snmp-server community ..... ro
snmp-server community ..... rw
snmp-server contact Support Services
snmp-server location Centerville
snmp-server host 192.168.1.100 version v1
.....
clock summer-time
clock timezone us Central
ntp
server 192.168.13.42

hitless-failover enable
```

Continued



Utilizing Deployment Templates



Why Create Templates

- Most configuration parameters will be consistent across ICX Stack Deployments
- Creating a template will enforce consistency across enterprise
- Template reduce error and increase deployment efficiency



Create Template

- Develop “Gold” Config on ICX Stack
- Copy startup config from ICX Stack to TFTP server
- Creates most accurate duplicate of configuration including passwords

```
zappa#copy startup-config tftp 192.168.13.30 icx6450-2-template.txt  
zappa#Upload startup-config to TFTP server done.
```



Edit Template and Save As New File

```
43 !
44 !
45 !
46 !
47 !
48 enable recovery cause all
49 enable recovery interval 30
50 default-vlan-id 299
51 enable enable password 8 $1$0ktnFPXn$ZGUu6/CxhBxOGoeGtunK1/
52 enable enable per-port-per-vlan
53 enable super-user-password 8 $16j4yX0PkH8Ege4Iy$S$WU3oxGcTfS3HK/
54 hostname icx6450-2
55 ip dhcp snooping vlan 10
56 ip dhcp snooping vlan 20
57 ip address 192.168.13.60 255.255.255.0
58 ip dns domain-name brocade.com
59 ip dns server-address 4.2.2.2
60 no ip dhcp-client enable
61 ip multicast passive
62 fdp run
63 snmp-server community 1 $2Uad!8n xQ
64 snmp-server community 1 $2Uad!8n xM
65 snmp-server contact Support Services
66 snmp-server location Centerville
67 snmp-server host 192.168.1.100 version v1 1 $S12^=d
68 clock summer-time
69 clock timezone us Central
70 snmp server 192.168.1.100 4
71
72 hitless-failover enable
73 interface ethernet 1/1/1
74   loop-detection
75   ip access-group 195 in
76   spanning-tree 802-1w admin-edge-port
77   inline power
78   stp-bpdu-guard
79   sflow forwarding
80 !
81 interface ethernet 1/1/2
82   inline power
83 !
```



Deploy Stack

- Build New Stack
- Upgrade Code
- Reload
- Assign Temporary IP parameters
- Copy Config File from TFTP Server to Startup Config
- Reload

```
ICX6450-24P Switch#copy tftp startup-config 192.168.13.30
icx6450-reform.txt
```

```
ICX6450-24P Switch#
Automatic copy to member units: 2
Download startup-config from TFTP server done.
```

```
ICX6450-24P Switch#reload
Are you sure? (enter 'y' or 'n'): y
Running Config data has been changed. Do you want to
continue
the reload without saving the running config? (enter 'y'
or 'n'): y
Reload request sent to attached stack member(s)...
```

```
ICX6450-24P Switch#Halt and reboot
Sent SIGTERM to all processes
Sent SIGKILL to all processes
Requesting system reboot
Restarting system.
```



Confirm New Stack Config

- Confirm hostname change
- Confirm login password
- Connect to network
- Confirm operation

```
moon>  
moon>en  
Password:  
moon#show lag
```

Port	[Sys P]	[Port P]	[Key]	[Act]	[Tio]	[Agg]	[Syn]	[Col]	[Dis]	[Def]	[Exp]	[Ope]
1/2/2	1	1	10001	Yes	L	Agg	Syn	Col	Dis	No	No	Ope
2/2/2	1	1	10001	Yes	L	Agg	Syn	Col	Dis	No	No	Ope