



# Open Networking Switch Cluster Deployments

## The Requirements for Clusters

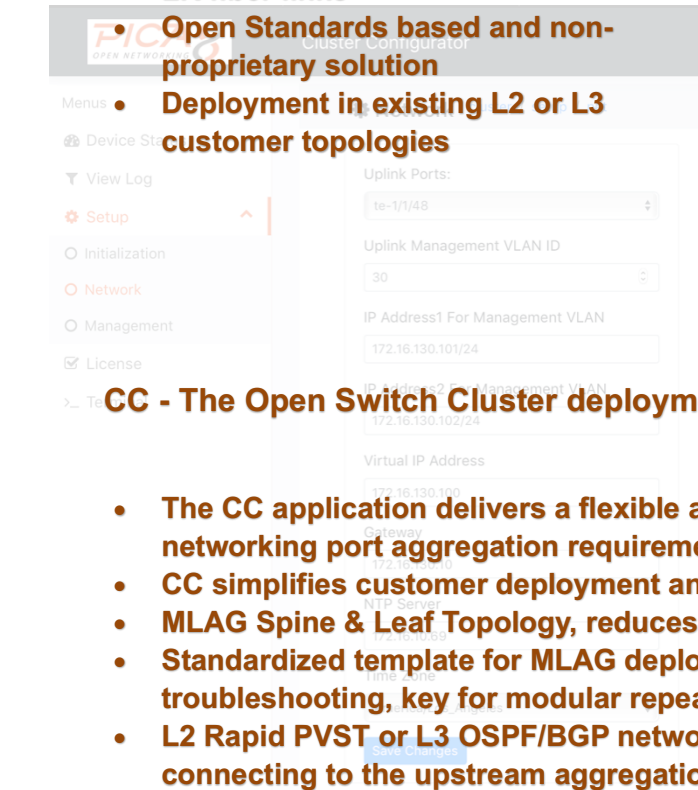
- Simplify initial bring up
- Streamline Installation and Operations
- Repeatability of deployment and configuration
- Flexibility to mix and match different switches based on speed and desired connectivity requirements
- Redundant Control/Data-Plane
- Campus-wide distributed cluster with LR fiber links
- Open Standards based and non-proprietary solution
- Deployment in existing L2 or L3 customer topologies

## The Solution – Cluster Configurator

- Single Management IP
- Single CLI shell for all switches
- No OOB connectivity required for leaves
- Commands to configure and manage cluster operations
- Aggregation and relay of Syslog and SNMP
- Centrally managed SSH, NTP etc. configurations
- Single point of failure resiliency
- Redundant Configuration-Plane
- Redundant Control/Data-Plane
- Auto/ZTP provisioning for scaling and replacements with no downtime
- Simplified Licensing
- Web Interface

## CC - The Open Switch Cluster deployment, configuration and management solution

- The CC application delivers a flexible and scalable approach to address customer networking port aggregation requirements
- CC simplifies customer deployment and operational workflows
- MLAG Spine & Leaf Topology, reduces dependency on STP and increases link utilization
- Standardized template for MLAG deployment making for easy deployment and troubleshooting, key for modular repeatability in an enterprise scale deployment
- L2 Rapid PVST or L3 OSPF/BGP network boundary on the cluster spine switches connecting to the upstream aggregation/core network



Cluster Configurator
Logout

## Cluster Configurator (CC) Benefit Summary

| #    | Role      | IP            | Ping Status | License Status | Operation        |
|------|-----------|---------------|-------------|----------------|------------------|
| 1    | leaf      | 192.168.1.101 | Success     | No license     | Install, Restart |
| 2    | leaf      | 192.168.1.102 | Success     | No license     | Install, Restart |
| 3    | leaf      | 192.168.1.103 | Success     | No license     | Install, Restart |
| 4    | leaf      | 192.168.1.104 | Success     | No license     | Install, Restart |
| 5    | leaf      | 192.168.1.105 | Success     | No license     | Install, Restart |
| 6    | leaf      | 192.168.1.106 | Success     | No license     | Install, Restart |
| self | peer      | 192.168.1.2   | Success     | Installed      | Install, Restart |
| peer | secondary | 192.168.1.1   | Success     | Installed      | Install, Restart |

**Greater Availability:** Enabling MLAG technology increases network availability and redundancy. Reduces network downtime and enables uninterrupted business operations.

**Better Performance:** The ability to span access and aggregation network tiers and interconnect n-number of switches in deployments with the ability to do easy sparing of leaf switches.

**Scalability and Flexibility:** Pay-as-you-grow scalability on fixed configuration switches -- from 1GbE to 100GbE allows flexible growth as network requirements follow the ASICs performance curve.

**Dual Control Plane implementation:** Leverage PICA8's CrossFlow functionality that enables OpenFlow/OVS to exert control on active L2/L3 ports without impacting network traffic.

**Large Product Portfolio:** Choice of different deployment configurations, offering different switch platforms with varying bandwidth and port density options. No vendor lock-in, no vendor-imposed scale limitations.

**Orchestration and Management:** Auto detection and provisioning for new switches allowing configuration updates across the stack through a single operation and centralized CLI using a single IP address.

**Resiliency and Redundancy:** Automatic switch failover in a fully resilient deployment. No dependency on any protocol requiring re-convergence. Uses SSH for secure connection between the nodes and LLDP for neighbor discovery.

**Backup & Restore:** Ability to perform up to 3 backups and restore in addition to factory default rollback behavior.

**Log Aggregation:** Provides aggregated Syslog and SNMP capability which can be also relayed to external servers.

**Reduced OpEx/CapEx:** Network OpEx and CapEx plummets, even compared to heavily discounted legacy alternatives.

**Open Networking:** Simple, Economical, Vendor agnostic, Flexible, Modular solution that leverages no proprietary protocols or applications and delivers a fully programmable and extensible networking platform.

Cluster Configurator
Logout

Synchronizing configuration...Ok.

```

admin@primary> cc
A Simple Interactive shell for Cluster Configurator.
Launching ... Cluster Configurator #
#####
CC-) showleafs
  Key      Port      Mac              IP              Last Seen      Mode  LinkState
  ---      -
  1        te-1/1/1  CC:37:AB:56:6E:81 192.168.1.101  2019-09-30 19:01:49 >      G
  2        te-1/1/2  8C:EA:1B:88:5B:81 192.168.1.102  2019-09-30 19:01:49 >      G
  3        te-1/1/3  CC:37:AB:4F:A2:81 192.168.1.103  2019-09-30 19:01:49 -      G
  4        te-1/1/4  CC:37:AB:4F:AD:01 192.168.1.104  2019-09-30 19:01:49 -      G
  5        te-1/1/5  8C:EA:1B:88:5B:C1 192.168.1.105  2019-09-30 19:01:49 >      G
  peer    xe-1/1/2  A8:2B:B5:BD:08:AC 192.168.1.1    2019-09-30 19:01:51 >      G
  peer    -         A8:2B:B5:D2:9C:EF 192.168.1.2    2019-09-30 19:02:10 >      G
  CC-)
  .last_tb  file_del  setup
  config_copy  file_get  showleafs
  config_restore  file_push  ssh
  config_restore_ovs  manage_license  switch_reinit
  config_save  push_autorun  switch_rekey
  config_save_ovs  rem  viewlog
  exit  runscript
  CC-) █
          
```