

## Product Highlights

By combining Arista CloudEOS™ with Kubernetes, customers are able to take advantage of the Arista EOS® and CloudVision® platforms in their Kubernetes on-premises clusters.

### Key Benefits

- Cloud-grade routing for on-premises Kubernetes clusters
- Provides enhanced security and improved visibility in Kubernetes
- Integration with leading Kubernetes CNIs - Calico and Cilium
- Consistent operational model across on-premises, hosted, and public cloud workloads
- Industry-leading programmability and automation features
- Full access to Linux shell and tools, including all cloud-native APIs

### Supported Platforms

- Kubernetes 1.16 or later
- Centos Linux 7.6 or later
- Red Hat® OpenShift® 4.1 or later
- Docker CE 18.06 or later with systemd cgroup driver
- Calico 3.8 or later with policy deployment
- Cilium 1.7 or later

### Routing Highlights

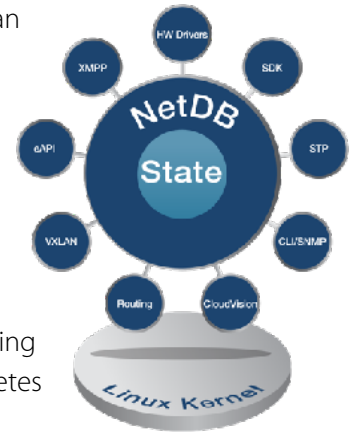
- Layer-3 routing
- Kubernetes configuration
- EOS API (eAPI) and SDK

### Provisioning & Monitoring

- CloudVision turnkey automation
- Template-based deployment
- Event monitoring & management
- Onboard packet capture analysis
- Cloud Tracer™ Telemetry

## Overview

Arista CloudEOS™ Router for Kubernetes provides an open and scalable solution for customers that are deploying cloud-native infrastructure. Leveraging a containerized version of Arista EOS software (CloudEOS-CR), including the same software binary utilized by all Arista networking platforms, each Kubernetes node now has access to the full power of Arista EOS and CloudVision. This combination provides consistent cloud-grade routing and real-time state streaming telemetry to Kubernetes clusters for the first time.



As customers deploy Kubernetes for container orchestration — managing and securing the container networking infrastructure remains challenging. A number of Container Network Interface (CNI) plugins for Kubernetes exist to address this, but alone they are often difficult for the network team to manage and monitor. The tools used to manage most CNIs are often foreign and complex to experienced network engineers, and the open-source routing stacks lack familiarity and on-par features. These CNIs also lack tools used to monitor network health and state that are vital to effective troubleshooting and operations.

Arista CloudEOS and CloudVision software provide a consistent operational model for container networking CNIs, private on-premises clouds, public cloud infrastructures, and bare metal environments. As applications move to cloud-native computing and micro-services, CloudEOS enables hyper-scale customers, service providers, and enterprises to deploy workloads into any location, and support them in any place in the cloud – hence enabling rapid time-to-market, massive scalability and unprecedented agility for any workload. Some of the benefits of CloudEOS for Kubernetes include:

- Network operator visibility into what is happening with the container networking environment, with a toolset that looks and feels just like the rest of the data center and cloud infrastructure
- Familiar APIs and commands that are used to operate and troubleshoot the network in every place in the cloud
- Platforms are based on open standards such as Linux, BGP, and JSON APIs
- Real-time analytics for the container network infrastructure that is visible in the same dashboard as the rest of your cloud, data center, and campus
- Correlation between the physical network infrastructure, virtual machine hosts, and containerized workloads that provides seamless visibility

Arista CloudEOS delivers an open networking platform, with best-in-class networking, enhanced security, and cluster management that preserves architectural choices for customers as they embark on their Kubernetes journey.

## Technical Description

Arista CloudEOS along with CloudVision allows customers to create and manage secure global network topologies spanning multiple regions across multiple clouds and their Kubernetes clusters on-premises. In this solution, Kubernetes provides the underlying cluster lifecycle management, as well as user access control.

During deployment of a Kubernetes cluster, a customer needs to define the network infrastructure including the CNI. Calico and Cilium are supported as underlying CNIs.

If Calico is chosen as the CNI, it needs to be installed using the “policy only” option to work with CloudEOS. By choosing policy only, Calico will not create a routing daemon. Arista CloudEOS is then deployed as a Kubernetes daemonset, creating a CloudEOS pod on every node in the cluster to serve as the routing engine.

If Cilium is chosen as the CNI, CloudEOS is deployed in parallel with the standard Cilium installation process. Cilium should be configured to not use an overlay network. Refer to the the CloudEOS documentation for more information.

The recommended BGP peering configuration is an iBGP session between CloudEOS on the Kubernetes nodes and an adjacent top-of-rack (ToR) switch, which is acting as a route reflector. Once BGP peering has been established, Kubernetes POD networks are fully routed through the enterprise network without the need for any proprietary encapsulation or out-of-band management.

After initial deployment, CloudEOS can be configured and monitored using standard EOS CLI commands, Arista’s JSON eAPI, OpenConfig, and real-time state streaming telemetry APIs used by Arista CloudVision.

Whether on premises or in the cloud, the CloudEOS helps enterprises and service providers build the best possible hybrid cloud networks without compromising on security, reliability and performance.

## Layer-3 Routing Features

- Routing Protocols: BGPv4
- Equal-Cost Multi-Path Routing (ECMP)\*
- Route Reflector (BGP RR AF IPv4)
- 802.1AB Link Layer Discovery Protocol

## Kubernetes Configuration

- Configuration through Kubernetes ConfigMaps
- Feature configurable through environment variables and Kubernetes annotations
- Install with choice of CNI for policy control

## Security Features

- Role Based Access Control (RBAC)\*
- TACACS+, RADIUS Auth., Authorization and Accounting

## Advanced Monitoring and Provisioning

- Integrated packet capture/analysis (tcpdump/libpcap)
- Real-time streaming telemetry (gRPC)
- Google Network Management Interface (GNMI)
- OpenConfig

## Extensibility

- Advanced Event Management (AEM)
  - CLI Scheduler / Event Manager / Event Monitor
- Linux Tools
  - Bash shell access and scripting
  - Linux RPM support and custom kernel modules
- DevOps/NetOps Tool Support
  - CloudVision
  - Ansible/Chef/Puppet/Salt or ServiceNow
- Programmatic access to network-wide state
  - JSON-RPC based eAPI or OpenConfig over gRPC
  - Python / C++ / Go

\*Contact Arista to verify availability of these features on your platform.

## System Requirements

System requirements include the following minimum recommended versions and hardware capabilities:

Attributes	Requirements
Minimum Server Requirements	<ul style="list-style-type: none"><li>Intel x86 with 2 cores running at 2.4GHz or greater with 16 GB memory</li></ul>
Kubernetes Platform Support	<ul style="list-style-type: none"><li>Kubernetes 1.16 or later, or Red Hat® OpenShift® 4.1 or later</li><li>Docker CE 18.06 with systemd cgroup driver</li><li>Calico 3.8 or later with policy deployment</li><li>Cilium 1.7 or later</li></ul>
Linux Platform Support	<ul style="list-style-type: none"><li>Red Hat Enterprise Linux 7.4 or later</li><li>Centos Linux 7.6-7.7 or later</li><li>Ubuntu 18.04 or later</li></ul>
Arista CloudVision Support	<ul style="list-style-type: none"><li>CloudVision Portal 2019.1.0 with TerminAttr 1.6.1 or later</li></ul>

## Arista CloudEOS Ordering Information

CloudEOS for Kubernetes is available as a software subscription via the following offerings:

### Product Number

### Product Description

SS-CLOUDEOS-CR-CV-B-1M	CloudEOS Router for Container/Kubernetes Software Subscription License for 1-Month. Includes dynamic routing features (BGP, OSPF), A-care SW support, and 1-Month CloudVision for a single CloudEOS instance (node)
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## Service and Support

Arista A-Care service offerings provide you with world-class support when you need it. A-Care service provides coverage for all Arista products including CloudEOS™ and CloudVision®. For more details see: <http://www.arista.com/en/service>

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