**Cisco Remote Integrated Service Engine with Cisco Prime Network Analysis Module**

**Introduction**

The next-generation data center requires tightly integrated layered network services along with data center integration to provide robust application delivery capabilities that accelerate application performance for all users while lowering data center costs by offloading server functions. Integrating the Cisco Prime Network Analysis Module (NAM) with the Cisco Nexus® 7000 Series Switches using Cisco® Remote Integrated Services Engine (RISE) technology provides these essential capabilities in a unique and powerful manner.

**Cisco Remote Integrated Service Engine (RISE)**

Cisco® Remote Integrated Services Engine (RISE) allows integration of a remote service appliance like NAM or an application delivery controller with the same functional capability as if it was attached to the switch backplane like an embedded services blade. RISE-enabled ports are configured on the Nexus 7000 Series switches and up to 4 dedicated ports per appliance can be configured for maximum throughput to connected devices. Cisco RISE establishes a communication path between the network data plane and the service application. This tight integration simplifies service deployments and optimizes application data paths within the data center. Appliance vendors benefit from not having to develop specific network-embedded modules of their products to install inside the chassis. They also save valuable slots without reducing the degree of traffic visibility and optimization for the appliance.

**Cisco Prime Network Analysis Module (NAM)**

Cisco Prime NAM is a traffic analysis and application performance monitoring engine deployed in the physical and virtual data center. NAM provides deeper Layer 4 -7 application visibility including encapsulated overlays such as Cisco OTV. NAM has high performance monitoring and packet capture capabilities, advanced filters and error scans to quickly troubleshoot critical applications in multigigabit networks. The NAM infrastructure includes a centralized management and reporting of traffic statistics, application response time metrics and video and voice analytics.

Cisco RISE can be used to tightly integrate the Cisco Nexus 7000 series switches with the Cisco Prime NAM to provide VDC awareness and SPAN traffic across multiple VDCs without burning slots on the switch. The integration includes the following main features:

* NAM appliance acts as a module on Nexus switches
* One NAM appliance can receive traffic from multiple Nexus VDCs without re-cabling
* One NAM appliance can collect interface statistics for multiple VDCs
* Dynamic vdc-aware SPAN configuration on Nexus switches using NAM GUI
* Up to 4 NAM ports can be automatically assigned to Nexus VDCs using NAM GUI
* Graph of per-interface ingress and egress statistics for multiple VDCs
* Auto-discovery and bootstrap of NAM appliance from Nexus switch
* Health monitoring of NAM appliance
* Visibility to multiple VDCs from one NAM appliance with ongoing VDC configuration updates
* Configurable timer intervals and VDC list for interface statistics collection
* User-friendly error handling for SPAN creation/deletion/modification
* Order of magnitude OPEX and CAPEX savings: reduction in configuration, simplified provisioning and data-path optimization

**Physical Topology**

**Logical RISE Topology**



**Control plane**



**Mgmt Link**

**SPAN Data Link**



**Nexus Switch**

Figure 1. RISE Physical and logical topology

**Deployment Modes**

Cisco RISE supports attachment to the NAM appliance in the following modes:

* Direct Attach mode with single NAM: The appliance has a management link that is directly attached to the Nexus switch. Up to 4 data links on the NAM can be attached to one or more VDCs on the Nexus switch to send SPAN traffic (Figure 1).



**Mgmt Link**

**NAM Appliance**

**SPAN Data Link**



**Nexus 7700**

Figure 2. Direct Attach Mode with single NAM

Direct Attach modes with multiple NAMs:



**Mgmt Link**

**Mgmt Link**

**SPAN**

**Data Link**

**Nexus 7700**

Figure 3: Direct Attach mode with multiple NAMs

**Core Functions**

Cisco RISE with NAM provides the following key features that allow the solution to provide traffic and performance analysis across all the VDCs on the Nexus switch without changing the wiring connections.

**Dynamic VDC-aware SPAN Configuration**

* Configure SPAN sessions for up to 4 NAM dataports from NAM GUI.
* Create, edit, delete SPAN sessions, select destination ports and source ports for the SPAN sessions.
* SPAN sessions can be configured in other VDCs by selecting VDC and data ports from NAM GUI. Dataport will be automatically moved to required VDC.
* The options of SPAN configuration available to N7K CLI users are available via NAM GUI using RISE.
* Provides visibility to all VDCs from one NAM.

**Multi-VDC Interface Statistics**

* Retrieve interface statistics of all VDCs on N7K via RISE
* Set short term and long term polling intervals for getting interface statistics
* Set the interested list of VDCs from which statistics needs to be retrieved
* Statistics can be viewed on per interface basis as a graph or data points

**Main Benefits**

* Enhanced application availability via simplified provisioning and efficient manageability.
* Data path optimization: ADC off-load, low latency policy engine.
* Dynamic VDC-aware SPAN configuration: Create SPAN sessions on any VDC
* Multi-VDC awareness: Deliver traffic and performance reports in multiple VDCs
* Cisco RISE provides significant savings in capital expenditures (CapEx) and operating expenses (OpEx) through simplified provisioning and data-plane optimizations:
* Dramatic OpEx savings: Reduction in configuration time and ease of deployment
* Dramatic CapEx savings: Reduced wiring, power, and rack-space needs
* The solution provides enhanced business resiliency and stickiness to Cisco products.

**Software Requirements**

Cisco RISE with NAM is supported on all Cisco Nexus 7000 Series Switches, in particular, the Cisco Nexus 7700 platform, and is available on Cisco NX-OS Software Release 7.1(0).

**Ordering Information**

Cisco RISE is supported in Cisco NX-OS Software Release 7.1(0) and requires the Enhanced Layer 2 Package license.

**For More Information**

For more end-customer information about Cisco RISE support in Cisco Nexus 7000 Series Switches, see http://cisco.com/go/rise. Please contact your local account representative for additional information