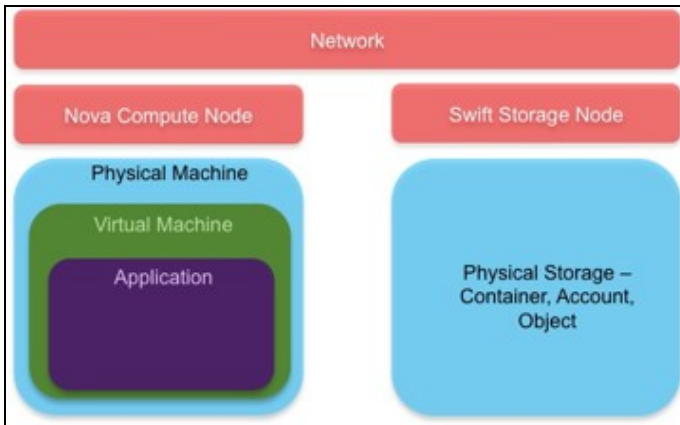


Title

1. Introduction

There are multiple layers that need to be monitored in a production Openstack deployment environment to achieve Service Assurance. At a high level, these layers have been captured in the figure below ?



The current Cisco edition supports compute monitoring and the details are captured below.

2. Monitoring Tools Info

a) Collectd

Collectd is an agent based system metrics collection tool. An agent is deployed on every host that needs to be monitored. It provides a configurable plugin architecture that enables collection, storage and processing of metrics based on need. The list of plugins supported by collectd is listed here [1].

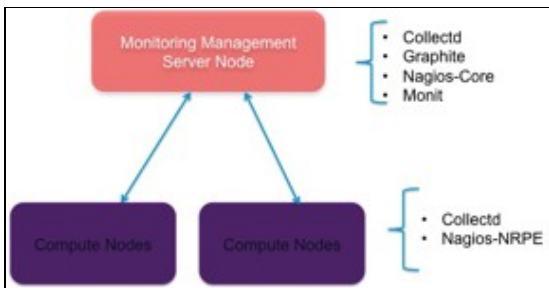
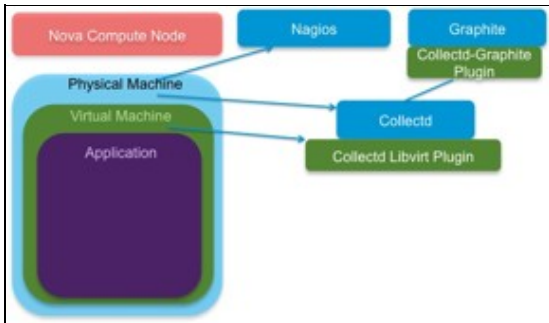
b) Graphite

Graphite is real-time graphing system. It is comprised of two components ? a webapp frontend and a backend storage application. It allows external application to feed monitoring data into it and then uses it?s ?carbon? backend agent to process the data and store it in a specialized graphite database (eg: whisper). The graphite processes need to be deployed on the monitoring management box only. Some of the advantages of using Graphite are captured here [2].

c) Nagios

OpenStack:Monitoring_Architecture

Nagios is a service health check alerting system. It has plugin model that allows service checks to be carried on host groups and generate alerts/notifications in case of any issues detected. The Nagios-Core agent is running on the monitoring management box that provides a webapp frontend and a daemon that reads configurations from its resource files and object-definition files. Nagios-NRPE is an add-on that allows Nagios to execute plugins on remote hosts.

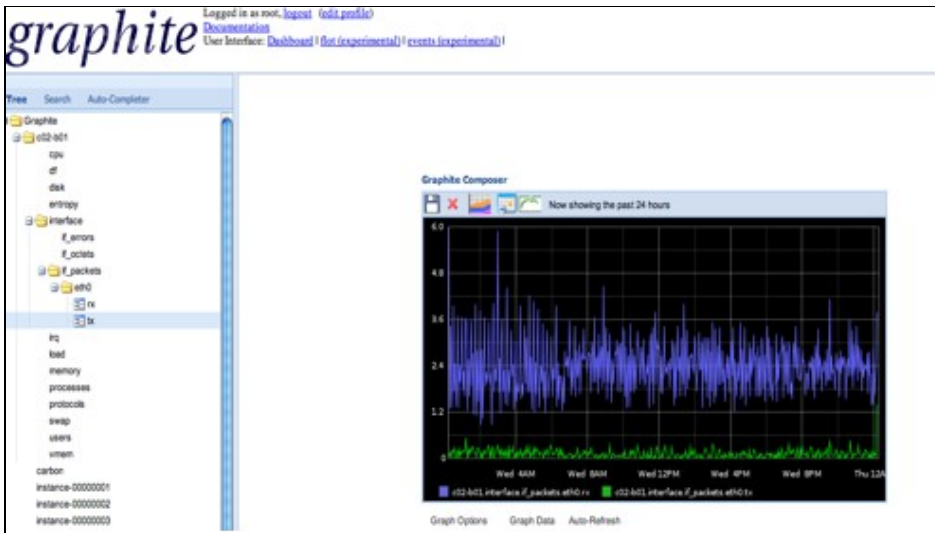


3. Monitoring Stack

Nagios can be used as a stand-alone monitoring tool for graphing and for system metric collection. Also, it can be integrated with an external metrics data collection tool such as collectd using plugins. For graphing purpose, collectd provides a plugin option to provide data to Graphite interface.

a) Graphite Interface integrated with Collectd

OpenStack:Monitoring_Architecture



b) Nagios Service Health Check Interface

Host	Service	Status	Last Check	Duration	Attempt	Status Information
v02-b01	Current Load	OK	2012-08-02 00:21:57	44d 10h 36m 26s	1/4	OK - load average: 0.51, 0.58, 0.63
	Current Users	OK	2012-08-02 00:22:37	44d 10h 36m 2s	1/4	USERS OK - 0 users currently logged in
	Glance Health	OK	2012-08-02 00:23:40	43d 18h 43m 3s	1/4	OK - Connection glance established
	HTTP	OK	2012-08-02 00:20:57	33d 22h 53m 54s	1/4	HTTP OK: HTTP/1.1 200 OK - 2185 bytes in 0.081 second response time
	Keystone Health	OK	2012-08-02 00:22:37	37d 8h 32m 14s	1/4	Get token ad24256447c48b3a20ffca6f649 for user (b879f138204c2a88cc20964c3ebb and tenant 9d776c4c78c4c6888cc28cc0733d9e
	Messages on Rabbitmq queue	OK	2012-08-02 00:23:59	37d 8h 31m 34s	1/4	RABBITMQ_QUEUE OK - messages OK (0) messages_ready OK (0) messages_unacknowledged OK (0)
	Messages on Rabbitmq server	OK	2012-08-02 00:20:57	43d 17h 43m 37s	1/4	RABBITMQ_OVERVIEW OK - messages OK (0) messages_ready OK (0) messages_unacknowledged OK (0)
	MySQL status	OK	2012-08-02 00:21:37	44d 10h 33m 46s	1/4	Uptime: 322762 Threads: 11 Questions: 15174938 Slow queries: 0 Opens: 1132 Flush tables: 1 Open tables: 94 Queries per second avg: 4.701
	Novus Api Health	OK	2012-08-02 00:20:17	36d 9h 19m 34s	1/4	OK - Novus-api Connection established
	Rabbitmq mirror health	OK	2012-08-02 00:23:23	43d 17h 45m 22s	1/4	RABBITMQ_SERVER OK - Memory OK (0.19%) Process OK (0.02%) FD OK (3.61%)
	Rabbitmq status	OK	2012-08-02 00:23:37	44d 10h 32m 51s	1/4	RABBITMQ_ALIVENESS OK - vhost: /
	SSH	OK	2012-08-02 00:24:17	44d 10h 32m 24s	1/4	SSH OK - OpenSSH_5.5p1 Debian-Substurl (protocol 2.0)
	Total Processes	WARNING	2012-08-02 00:23:44	37d 8h 34m 54s	4/4	PROCS WARNING: 316 processes
VM CPU and Memory	OK	2012-08-02 00:24:18	33d 22h 25m 33s	1/4	OK - Instance: instance-00000001, PID: 8246, CPU: 6.3%, Memory: 0.1% Instance: instance-00000005, PID: 8534, CPU: 6.4%, Memory: 0.2% Instance: instance-00000003, PID: 8607, CPU: 6.3%, Memory: 0.2% Instance: instance-00000002, PID: 22233, CPU: 7.3%, Memory: 0.2%	