

云本天成 云自天成

华胜天成-Openstack的思考&实践

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TEAMSUN
VP of Software & Solutions

- **Joined Teamsun in 2010**
- **Drives cloud technology & business planning**
- **Master of Computer Science University of Aeronautics & Astronautics Beijing**
- **Previously served Detecon (Deutsche Telecom Consulting) as Vice President China**

TEAMSUN



Founded in 1998
Headquartered Beijing

Mainland China, HongKong, Taiwan, Macau
and part of the Southeast Asia

5,000 employees

5 billion RMB revenue

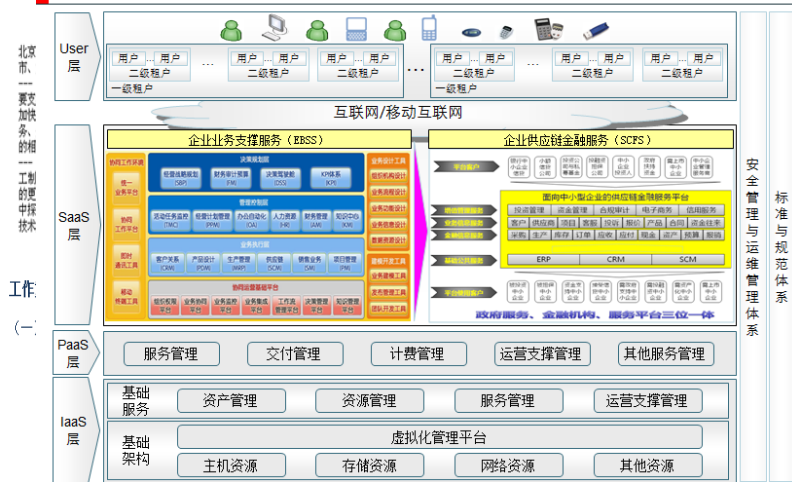
Listed SHSE: Teamsun (600410-SH)
Listed HKSE: ASL (00771-HK)



Teamsun- cloud leader

国家发展和改革委员会办公厅文件

中小企业业务支撑及供应链金融云服务平台



库建设（包括标准规范、业务模型、数据模型、应用软件构件、行业信息化分析报告和软件解决方案等）。

四是引导数字文化产业创新发展。

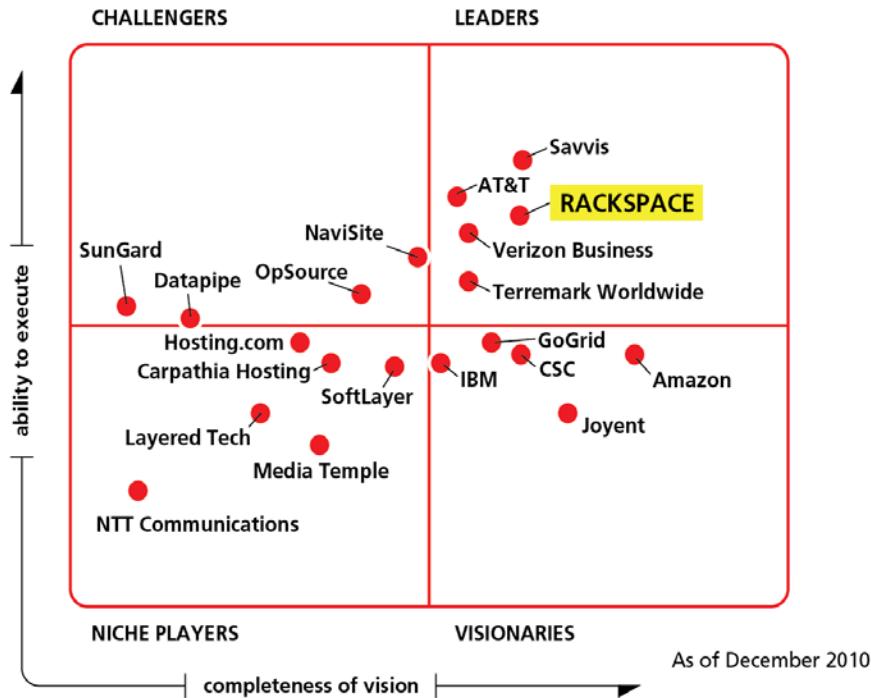
Government Telecom Finance Post Education



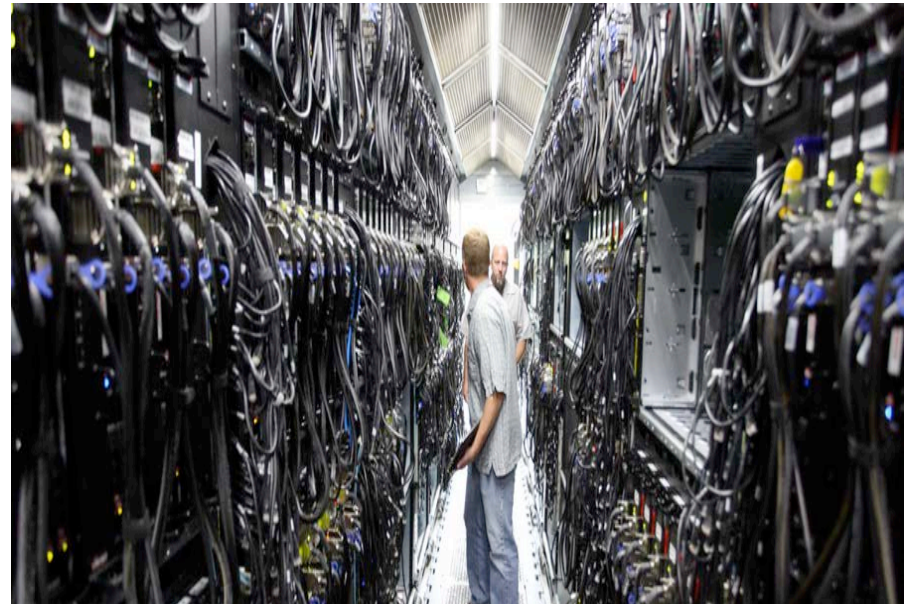
Service Platform
Resource Manage
Cloud Infrastructure

安全管理与运维管理体系

Teamsun - Openstack



Rackspace in the Gartner magic quadrant: a recognized leader



Rackspace Goal: Turn Commodity Hardware into a Cloud.

Hybrid hosting管理平台

Tempest集成测试工具

基于openstack的公有云集成方案

Openstack为使用者带来

- 高性价比的虚拟化资源管理能力
 - 计算能力虚拟化
 - 网络连通性的虚拟化
 - 面向对象的存储系统
- 云服务交付过程中的核心活动组件
 - 自助申请
 - 镜像管理
 - 资源分配与部署
 - 资源使用监控



- 更丰富的功能
 - 负载均衡
 - 虚拟机备份
- 更可控的活动链
 - 产品发布
 - 交付审核
- 多角度的资源调度
 - 管理员的资源调度策略
 - 云用户的资源采购策略
- 更灵活的计量计费
 - 一次批价与二次批价
- 更友好的用户体验



■ 适应场景

- 满足基本Hybrid hosting的运营需求：提供 Dedicated server、不同规格的云主机及其自服务、运维平台，重点关注SaaS服务提供商
- 满足SaaS服务提供商对SLA不同要求
- 避免SaaS服务提供商为业务峰值满配计算能力
- 避免SaaS服务提供商在业务初期独占Dedicated server一次性投入太大

- 基于Horizon，定制了国际化，样式以及权限控制

The screenshot displays a self-service portal interface. On the left is a navigation sidebar with the '天成云' (TEAMSUN CLOUD) logo and menu items: '项目' (Project), '管理' (Management), '系统面板' (System Dashboard), '预览' (Preview), '虚拟机' (Virtual Machine), '服务' (Service), '规格' (Specification), '镜像' (Image), '项目' (Project), and '用户' (User). The main content area is titled '预览' (Preview) and shows the current user as 'admin'. It includes a search filter for '七月' (July) in '2012' with a '提交' (Submit) button. Below this, it reports '运行中虚拟机: 3' (3 running VMs), '运行中内存: 1GB' (1GB running memory), '本月的虚拟处理器-小时时间: 205.56' (205.56 virtual processor hours this month), and '本月的硬盘-小时时间: 0.00' (0.00 disk hours this month). A '使用情况概览' (Usage Overview) section features a table with columns for '项目ID', '虚拟处理器', '硬盘', '内存', '虚拟处理器 小时时间', and '硬盘 小时时间'. The table lists two items, with the second one having 3 vCPUs and 1GB of memory. A '下载概览CSV' (Download Overview CSV) button is also present.

预览 目前登录者: admin [设置](#) [退出](#)

选择一个月份查询它的使用情况:

七月 2012

运行中虚拟机: 3 运行中内存: 1GB 本月的虚拟处理器-小时时间: 205.56 本月的硬盘-小时时间: 0.00

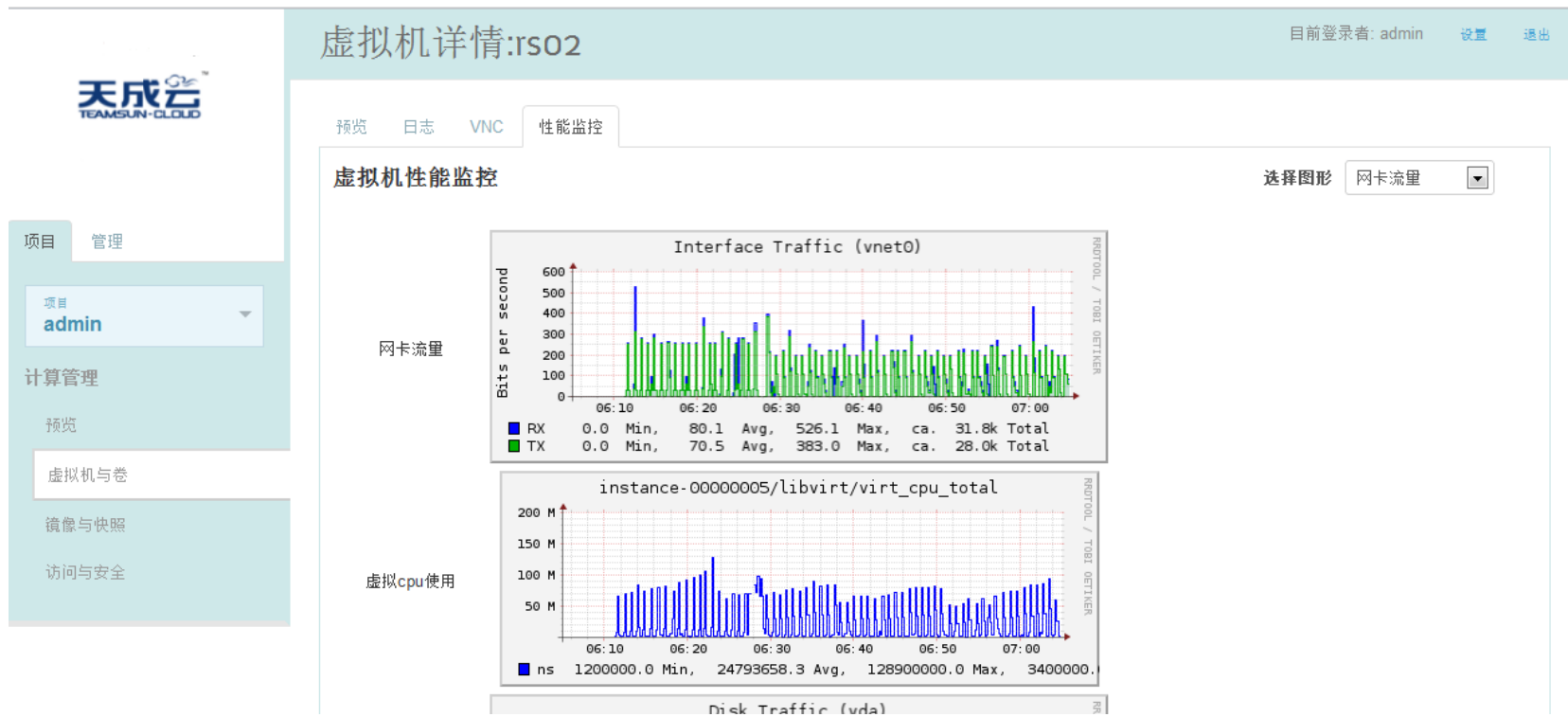
使用情况概览

项目ID	虚拟处理器	硬盘	内存	虚拟处理器 小时时间	硬盘 小时时间
853f8a15897243f9b63a236773162de9	-	-	-	19.65	0.00
16f5d7b1053c4313832e413406b72a7b	3	-	1GB	185.90	0.00

正显示2个项目

- Collectd + libvirt plugin + rrdtool
- Collectd 采集监控工具,libvirt插件利用libvirt的API来采集虚拟机的CPU,network interface and block device等信息
- Collection 3 is a web-based front-end to RRD files created bycollectd
- 将Collection3集成到Openstack horizon
- 定义预警规则，根据监控数据匹配阈值，支持阈值命中次数配置,根据级别不同调用不同的报警接口，如:发邮件,负载均衡自动化.

- 虚拟机监控
 - CPU使用
 - 硬盘I/O
 - 硬盘读写速度
 - 虚拟网络流量



主机及Openstack服务监控

- 宿主机监控
 - CPU使用
 - 内存使用
 - 硬盘I/O
 - 硬盘读写速度
- Openstack服务监控

Nagios
General: Home, Documentation
Current Status: Tactical Overview, Map, Hosts, Services, Host Groups, Service Groups, Problems, Reports, Availability, Trends, Alerts, Notifications, System, Comments, Downtime, Process Info, Performance Info, Scheduling Queue, Configuration

Current Network Status
Last Updated: Thu May 3 14:37:32 HKT 2012
Updated every 90 seconds
Nagios Core™ 3.2.1 - www.nagios.org
Logged in as nagiosadmin

Host Status Totals

Up	Down	Unreachable	Pending
2	0	0	0

Service Status Totals

OK	Warning	Unknown	Critical	Pending
15	0	0	1	0

Service Status Details For All Hosts

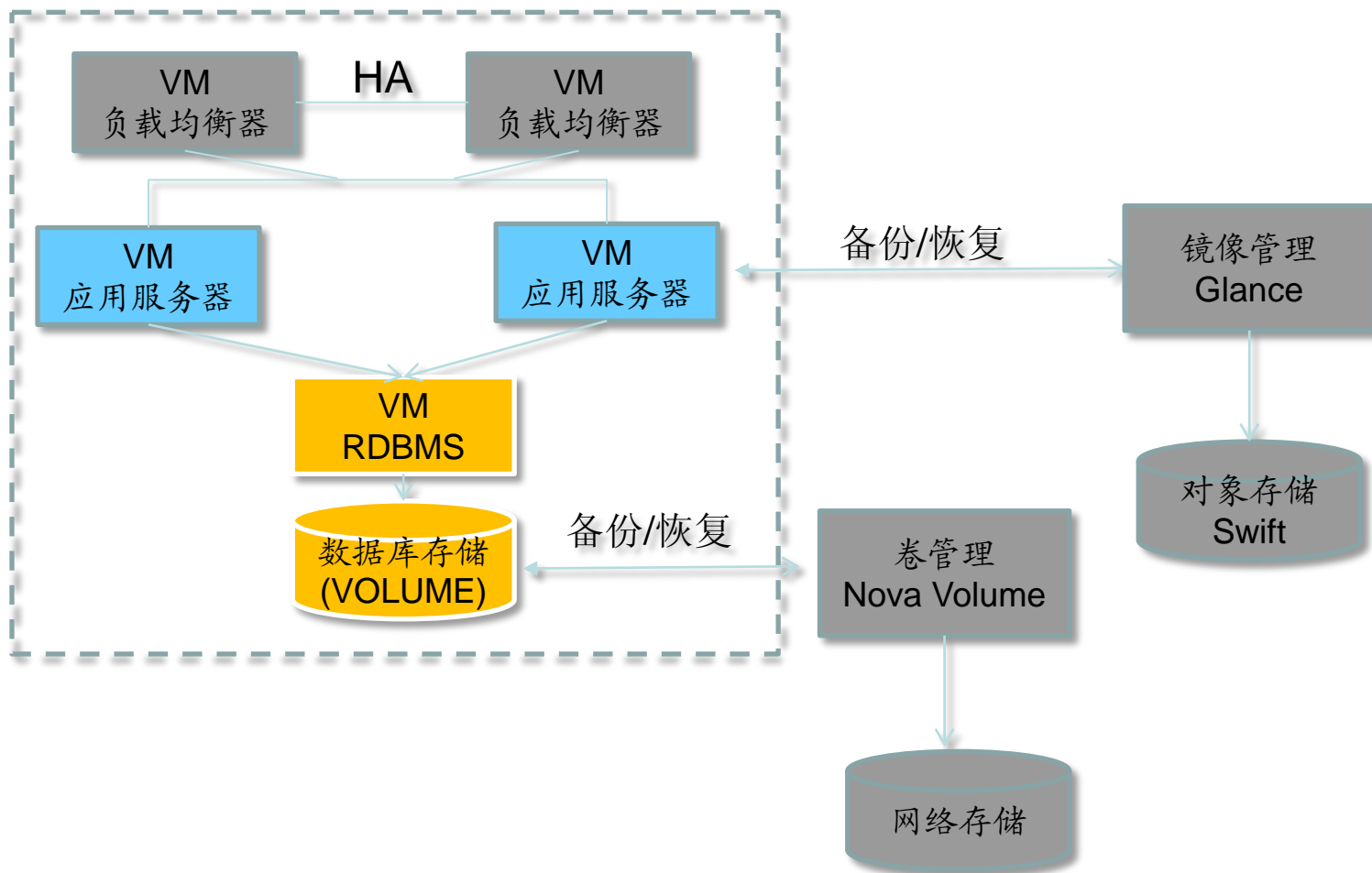
Host	Service	Status	Last Check	Duration	Attempt	Status Information
localhost	Current Load	OK	05-03-2012 14:37:00	8d 21h 28m 21s	1/4	OK - load average: 0.00, 0.01, 0.05
	Current Users	OK	05-03-2012 14:34:18	8d 21h 27m 43s	1/4	USERS OK - 2 users currently logged in
	HTTP	OK	05-03-2012 14:36:09	8d 21h 27m 6s	1/4	HTTP OK: HTTP/1.1 200 OK - 452 bytes in 0.001 second response time
	PING	OK	05-03-2012 14:34:00	8d 21h 26m 28s	1/4	PING OK - Packet loss = 0%, RTA = 0.07 ms
	Root Partition	OK	05-03-2012 14:34:04	8d 21h 25m 51s	1/4	DISK OK - free space: / 9816 MB (86% inodes=91%):
	SSH	OK	05-03-2012 14:37:19	8d 21h 25m 13s	1/4	SSH OK - OpenSSH_5.9p1 Debian-4ubuntu1 (protocol 2.0)
	Swap Usage	OK	05-03-2012 14:36:03	8d 21h 24m 36s	1/4	SWAP OK - 100% free (4091 MB out of 4091 MB)
Total Processes	OK	05-03-2012 14:36:39	8d 21h 12m 58s	1/4	PROCS OK: 40 processes with STATE = RSZDT	
openstack65	nova api	OK	05-03-2012 14:35:16	0d 20h 42m 16s	1/4	PROCS OK: 2 processes with args 'nova-api'
	nova compute	OK	05-03-2012 14:36:02	0d 20h 41m 30s	1/4	PROCS OK: 2 processes with args 'nova-compute'
	nova dashboard	OK	05-03-2012 14:37:20	0d 2h 25m 12s	1/4	PROCS OK: 2 processes with args 'dashboard'
	nova glance	OK	05-03-2012 14:36:52	0d 0h 40m 40s	1/4	PROCS OK: 6 processes with args 'glance'
	nova keystone	OK	05-03-2012 14:33:00	0d 0h 44m 32s	1/4	PROCS OK: 4 processes with args 'keystone'
	nova network	OK	05-03-2012 14:36:48	0d 20h 40m 44s	1/4	PROCS OK: 2 processes with args 'nova-network'
	nova scheduler	OK	05-03-2012 14:32:34	0d 20h 39m 58s	1/4	PROCS OK: 2 processes with args 'nova-scheduler'
nova volume	CRITICAL	05-03-2012 14:36:20	0d 20h 39m 12s	4/4	PROCS CRITICAL: 0 processes with args 'nova-volume'	

16 Matching Service Entries Displayed

1:1 上证 2402.11 ↑0.34% 宝光股份 6.80 ↓1.12% 蓝科高新 14.80 ↓1.80% 云南城投 7.71 ↑0.52% 北纬通信 18.47 ↓1.02% <>>

- 数据采集:Nova billing,
<https://github.com/30loops/nova-billing>
- 展现:horizon_billing,
<https://github.com/griddynamics/horizon-billing>
- Nova billing工作原理：
 - nova-billing的工作原理是连接到RabbitMQ，拦截routing_key为 'compute.#' 的消息，收集虚拟机运行情况，
 - 持久化(sqlite数据库)，
 - 通过Restful接口对外提供调用。
- 问题:
 - 目前nova-billing 只有计量功能,需要二次开发计费功能

备份和恢复



- 通过OS-API进行备份，编写脚本对系统内的需要备份的虚拟机或卷执行备份，通过策略定期执行。恢复时，用户可选择恢复某个时间点的虚拟机或卷。

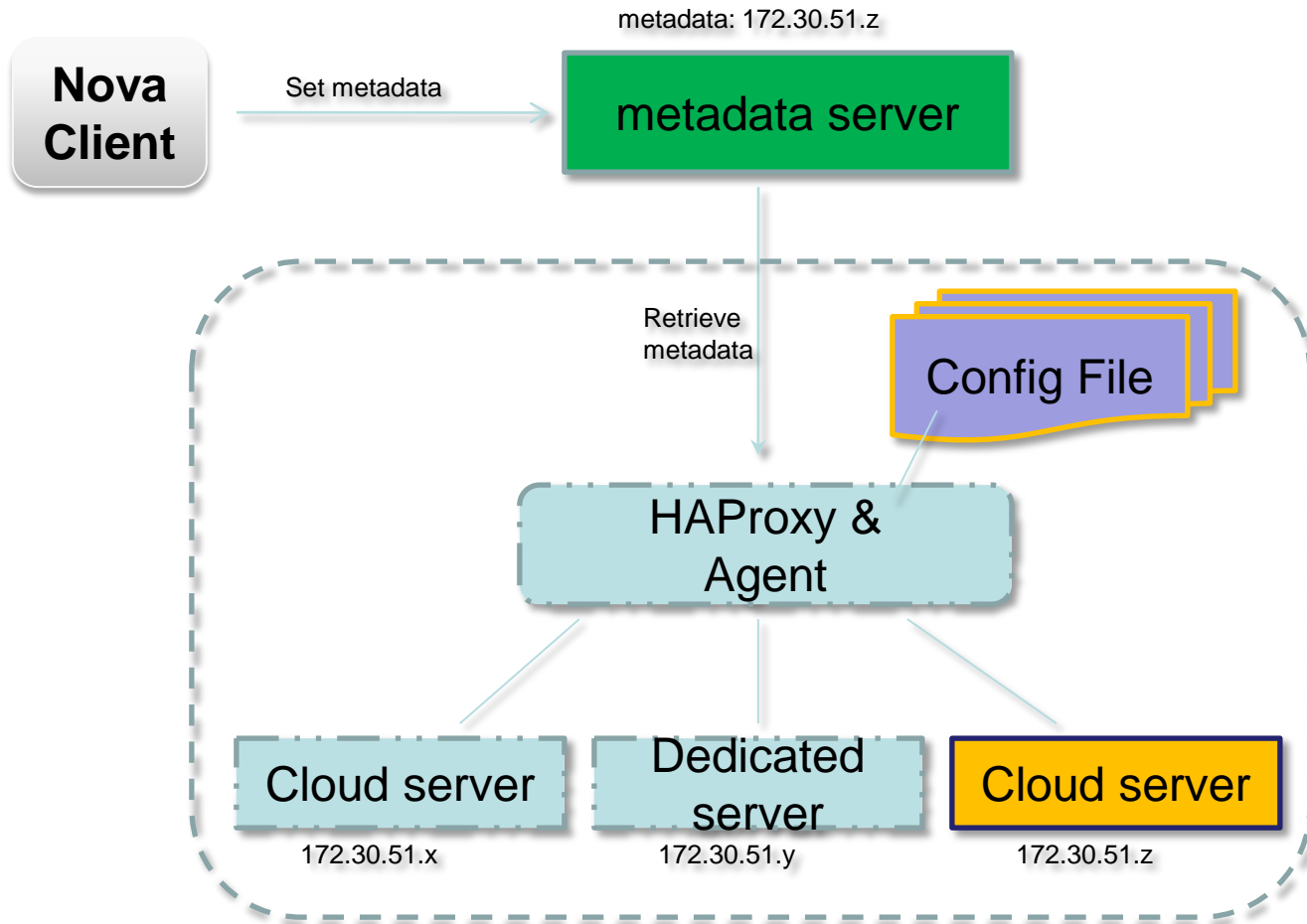
```
if 0: # local-ipv4 / public-ipv4
... params = '{"createBackup": {"name": "bak_%s", "backup_type": "daily", "rotation": 1}}' % vmname
... conn = httplib.HTTPConnection(urlparse(url_compute)[1])
... conn.request("POST", "%s/servers/%s/action" % (urlparse(url_compute)[2], vmid), params, headers)
... response = conn.getresponse().read()
... print response
... conn.close()

if 0:
... params = '{"snapshot": {"display_name": "snap-001", "volume_id": "4"}}'
... conn = httplib.HTTPConnection(urlparse(url_volume)[1])
... conn.request("POST", "%s/snapshots" % urlparse(url_volume)[2], params, headers)
... response = conn.getresponse().read()
... response = json.loads(response)
... print response
... conn.close()
```

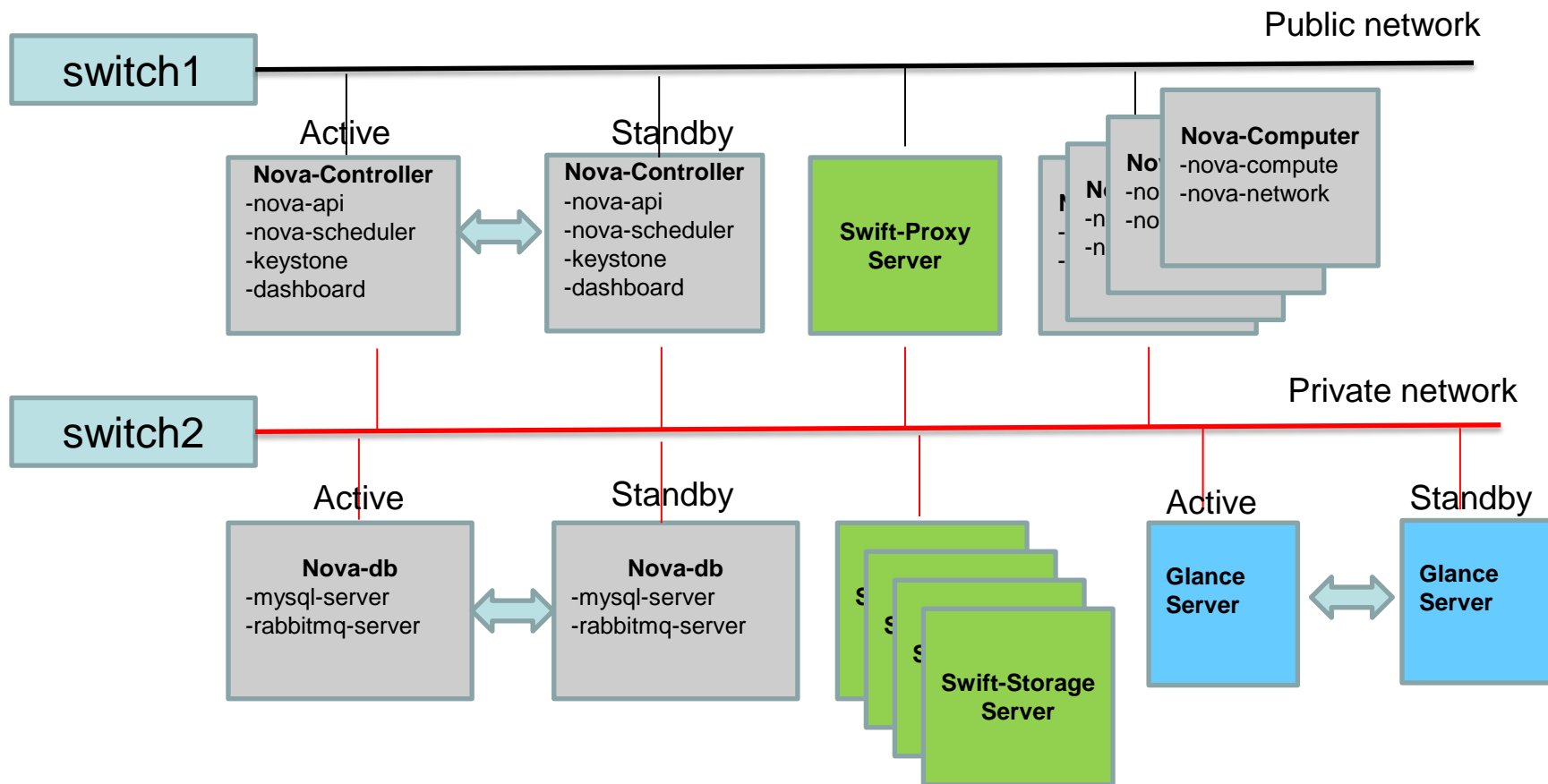
- 负载均衡，采用HAProxy
 - SaaS服务的基础套件
 - Hybrid connector，连接cloud servers和dedicated servers;
 - 自动伸缩：可配合预警规则，就可以起到自动横向伸缩的功能，例如检测cpu > 60%并持续命中5次就根据模板创建虚拟机加入负载均衡器。

软件负载均衡自动化

■ 技术方案



Openstack部署实例



- Tempest
 - <https://github.com/openstack/tempest>
 - 黑盒测试
 - 功能：功能测试、集成测试和压力测试
 - 版本：Diablo、Essex
 - 模块：nova、glance、keystone、horizon admin
 - 运行要求：Nose test runner , nosetests tempest/tests就会运行 openstack/tests下面的测试用例。
- 集成开发:将新增的功能加入了测试集合

公有云集成方案

业务云/行业云

企业应用商店

Cloud Hosting Dedicated Servers Hybrid hosting

SaaS

面向开发者的开发测试环境

PaaS



BOSH CPI for Openstack

云主机/云存储/企业私有云 云存储/云备份 云迁移/内部系统云化

IaaS

NOVA KVM/XEN

服务器虚拟化

NOVA volume Swift

弹性卷/云存储

Quantum

网络虚拟化

计费
监控
认证
门户

享受 originated from
TEAMSUN IT SERVICE 