数据中心操作系统浅析

一位Linux系统程序员眼中的Mesos

关于我

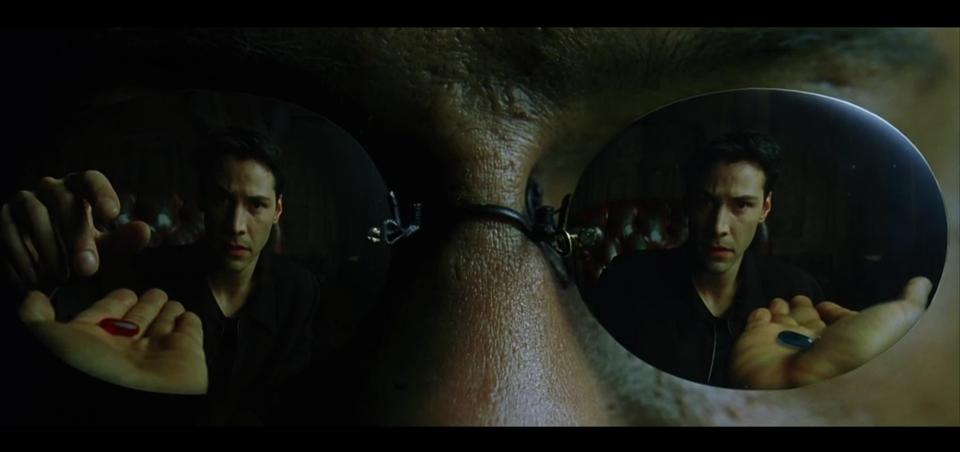
开放云精选创始人(ocselected.org)《开源虚拟化开发指南》一书作者2006~2010就职于红旗Linux

github: lijiangsheng1

Twitter: @lijiangsheng1

Blog: http://iaaslee.blogspot.com





No Silver Bullet

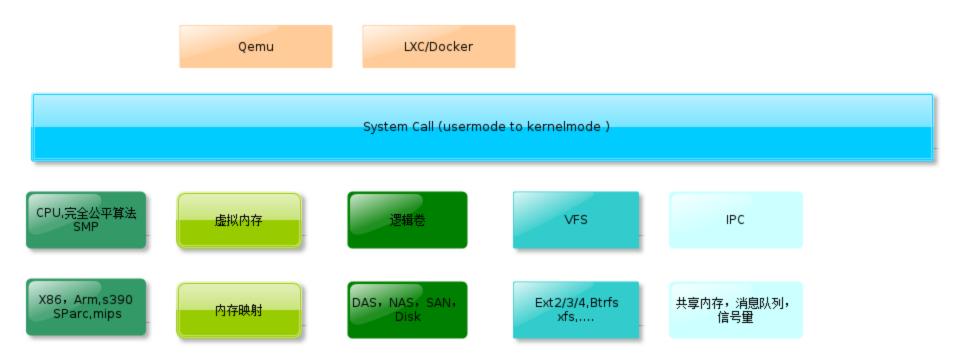
借鉴软件工程的一篇论文。

一药不能治百疾。

一个新平台的出现并不能解决所有问题。

The history of OS

纵观计算机的历史就是一部不断的抽取通用性、不断加入抽象层的历史!



Distributed computing

Naming	File Servic	File Services				
Services User Names	ration es ces s	Access Control				
	Resource Allo	Resource Protection				
Name Distributi	Algorithms for Load S Algorithms for Load B Process Migration Coo	Comm. Security & Authentication				
Name Resolution	Process Management	Deadlock Mgmt.	Capabilities Access Lists			
		Deadlock Detection Deadlock Recovery	Key Management Information Flow Control Data Encrption			
System Addresses System Routes	Operations on Local Processes Operations on Remote Processes Process Selection for Migration Process Migration Coordination	Process Sync. Mgmt.				
	s	Event Ordering Concurrency Control				
	Interprocesses Comm					
	Interprocess Communication Interprocess Communication	Data Encrption Protocols				
	IPC Support Protocols Interface	Kernel Security				

数据中心的运算单元

物理机 (X86,SPARC) 虚拟化 (KVM,Xen,VMware) laaS/PaaS 云计算 (VM instance)

安装、部署(Ansibe、puppet)、集群 --》提供服务/日常运维

Mesos

Why should 40,000 cores in a datacenter or cloud be any different than the 4 cores in a laptop?

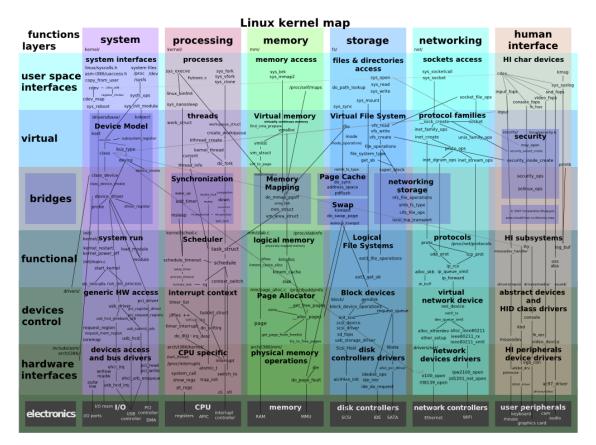
Why can't we use a command line or even a graphical UI to navigate a datacenter like it was a desktop machine? Why can't we install datacenter-scale services with the same ease that we install apps on our iPhones?

Because Of Google's Borg.

抽象CPU,内存资源,将数据中心视为一个大的计算机。

It's a Data Center. But It Looks Like a Chip

DCOS kernel VS linux kernel









Linux && Docker

mesos应用及支撑

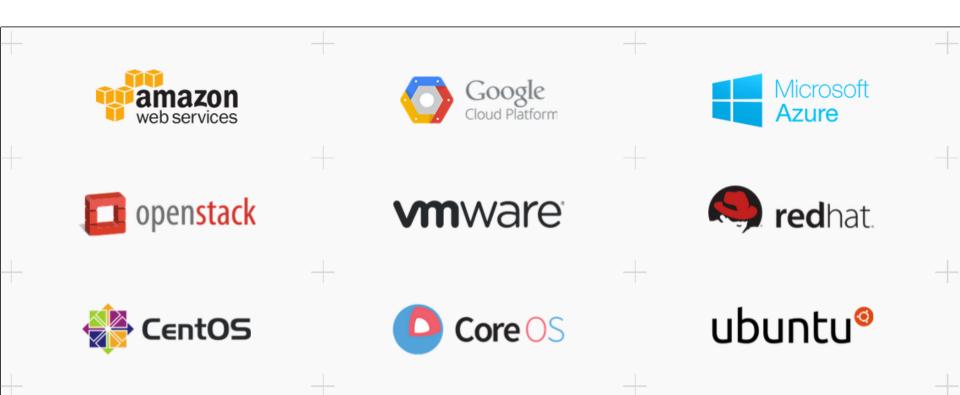
应用框架 0、Long Runnii	Aurora	Cc Cray Chapel	Dp Dpark	Ch Chronos	Jk Jenkins	
Aurora,Marat 1、大数据处理 Cray Chapel	Ma	E _X	Ha Hadoop	Tq Torque	Ca Cassandra	
2、批处理 Chronos,Jenkii 3、数据存储	SSSP	Mi	Sk Spark	St	E S ElasticSearch	Hypertable
Cassandra,ElasticSearch HyperTable						

Mesos

再归类一次

服务类型	应用举例	是否该使用Mesos?
无状态;无须在磁盘永久存储数据。	RoR, Memcached, Jenkins CI build slave.	是,
分布式即开即用	Elasticsearch, Spark,MPI	本来就为此而生。
有状态, 须在磁盘永久存储数据。 (传统企业级应用)	MySQL, Jboss	还没有准备好。

Mesos支撑



It's future, but need to do more

IoT thin task --> microservice 传统IT

更加友好的命令行接口, 而不仅仅是一个mesos-ps

对于分布式文件系统ceph,glusterfs的抽象支持! 不仅仅是HDFS。

对于其它容器LXC, Rocket的抽象支持, 不仅仅是Docker, cgroup.

是否引入网络的控制?SDN的control?

更多传统中间件的框架Jboss支持。

参考资料

http://www.osdata.com/kind/history.htm

http://docs.ocselected.org/mesos-docs/mesos-architecture.html

http://opensource.com/business/14/9/open-source-datacenter-computing-apache-mesos

http://mesos.berkeley.edu/mesos_tech_report.pdf

http://eurosys2013.tudos.org/wp-content/uploads/2013/paper/Schwarzkopf.pdf

http://www.wired.com/2013/03/google-borg-twitter-mesos/all/

https://www.youtube.com/watch?v=0I6qG9RQUnY

《Mesos in action》

Thanks for your Listening.

Any Questions?