



Ganeti

at

Bangladesh Export Import Company Limited
(BEXIMCO)

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IT Division

BEXIMCO

About Me

- Sr. Manager – Tech Support at Beximco – IT
- Lead System Administrator / Architect for Beximco Cloud using Ganeti.
- Linux System Administrator.
- Also serves as solution designer for corporate IT infrastructure.



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What is BEXIMCO

BEXIMCO Group is the largest private sector group in Bangladesh founded in the 1970's. It has a presence in industry sectors that account for nearly 75% of Bangladesh's GDP.

INDUSTRY VERTICALS :

- Textiles
- Pharmaceuticals
- Ceramics
- Real Estate & Trading
- ICT & Media
- Financial Services
- Energy



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Why we choose Ganeti:

- Open source
- Low Capex and Opex
- Scalability, Simplicity & Flexibility
- Share Nothing Architecture
- No administrative stack node node dependency.
- Easy to deploy in no SPoF architecture
- Easy to administer
- Proven stability.



Current Cluster:

- 7 physical Node
- 416 GB RAM
- 90 CPU Core
- 16TB RAW Disk Space
- 64 VM instance running
- KVM for Hypervisor
- Debian for Host OS
- Mostly Linux Based work Load.



Hardware we Use:

- Super micro 2U Twin Mixed with some HP and Dell Servers.
- Redundant power supply in every node.
- Raid-1 for OS partition.
- 4x Intel GbE NIC in each node
- Cisco 3750-E in redundant stacked
- 1U rack mount servers act as Active/Active firewall running PFSense.



Network :

Storage replication :

- LACP Bonded 2x Gigabit Interfaces for DRBD replication.
- Connected to 2 different stacked switch to avoid hardware failure.
- MTU set to 9000 with jumbo frame enabled.

Management and Instance networks :

- LACP Bonded 2x Gigabit Interfaces connected to 2 different stacked switch to avoid hardware failure.
- Bond interface is logically separated with 801q VLANs for management and other instance networks.
LACP → VLAN → Bridge
- All inter VLAN communication is strictly controlled using firewall policy's on dedicated hardware firewall.



Storage:

- All are SAS disks.
- Host OS on Raid-1 partition.
- Rest of the disks are in LVM vg for instances.
- Instance disks are Plain or BRBD replicated according to application need.
- All ISO and SNF-Images reside in a old NFS server mounted to every node.
- Node's Export directory is mounted to NFS for instance backup.



Security:

- Replication network is physically isolated.
- Cluster management network is behind physical firewall no access from outside.
- Instance networks reside behind a active/active HA firewall with strict security policy.
- We are using “PFSense” as our central firewall for instance network.
- “Snort” base IDS and IPS on Public facing networks for threat detection and mitigation.



Monitoring and reporting :

- Nagios – For real time incident alert on hosts.
- Ganglia – For cluster wide resource utilization and Load matrix display.
- Observium – for Historic data and IPMI monitoring of hosts.



Administration :

- Ganeti Web manager : Used for day to day administration of the cluster.
- Command Line (CLI) : For advance tasks and troubleshooting.



Workloads we run on our Cluster (Cont.):

OS : Debian, Ubuntu, CentOS, some Windows and very few FreeBSD Instances.

IP Telephony Services : Hosted PABX, Asterix, IPTSP Billing. Call conferencing servers.

Network monitoring services : Nagios, Cacti, Mrtg, Observium, Ganglia, Smokeping.

Email and Collaboration : Zimbra , Spam Filtering & Antivirus. MTA Clusters.



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Workloads we run on our Cluster :

DNS Name servers : Bind9

Web Servers : Apache2 , Nginx ,Lots of LAMP servers

Database : MYSQL , PostgreSQL, Maria DB Galera Cluster

Storage services : Owncloud, Seafile, Generic FTP

Hosting : CPanel Web Hosting

High Available applications: Web hosting, Galera DB Clusters, MTA Clusters.

Specialized Application : Pre Paid billing system for D2H Service, In-house HRM and customer management portals. Trouble ticketing system.



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We are happy using Ganeti :

1. Almost 85% of our production workload is shifted to Ganeti Cluster till now.
2. Administrative overhead reduced almost 80%
3. New Service deployment and testing is faster
4. Hosting some of our corporate customers workload in our Cluster.
5. Zero Service downtime for maintenance or upgrade.
6. Power saving due to service consolidation.



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Things we integrate with Ganeti :

1. Kernel same-page merging (KSM) to reduce memory stress on the nodes.
2. SNFImage or Faster instance creation and service deployment.
3. PFSense as Firewall, DHCP Server, Local DNS Cache and IDS/ IPS for the whole Cluster.



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Future plan:

- Integrating Ceph Cluster with current Ganeti cluster
- Grow the number of Nodes by this year to 12.
- Convert all of our workstations to VM instances on Ganeti Cluster.
- Have plan to run a test Open Nebula administration stack on Ganeti Cluster for providing IaaS type service.
- Have a second cluster to another datacenter.



Q & A



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Thank You



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