



PoliCloud :: Architecture and Roadmap

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- PoliCloud Workshop -

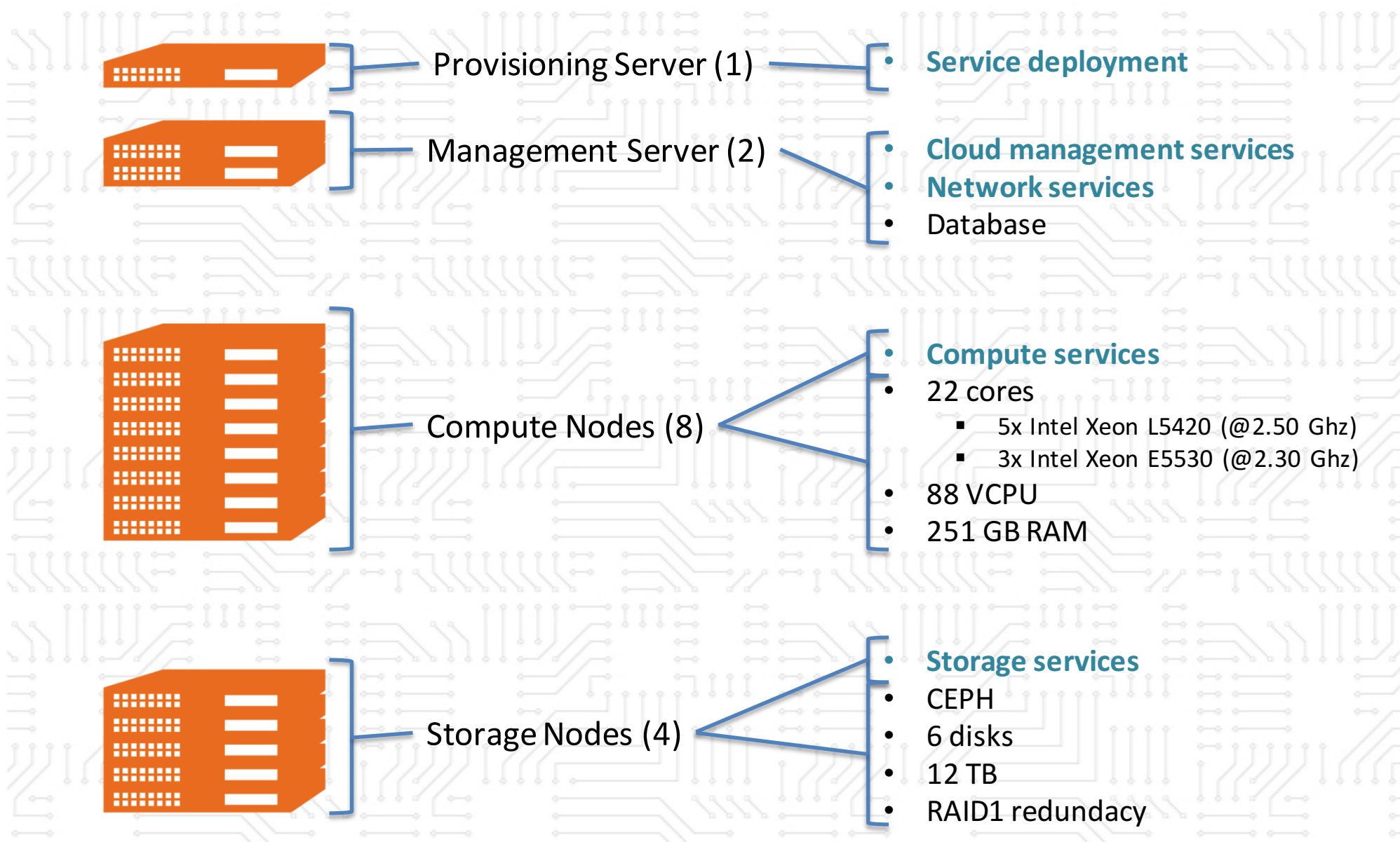
PoliCloud Architecture

- Multiple regions:
 - Milan – DEIB :: 15 servers
 - Como :: 29 servers
 - Milan – Z1 :: 39 servers
- Hypervisor: Linux QEMU/KVM
- Cloud management: OpenStack Havana / Juno
- Entirely built on commodity hardware

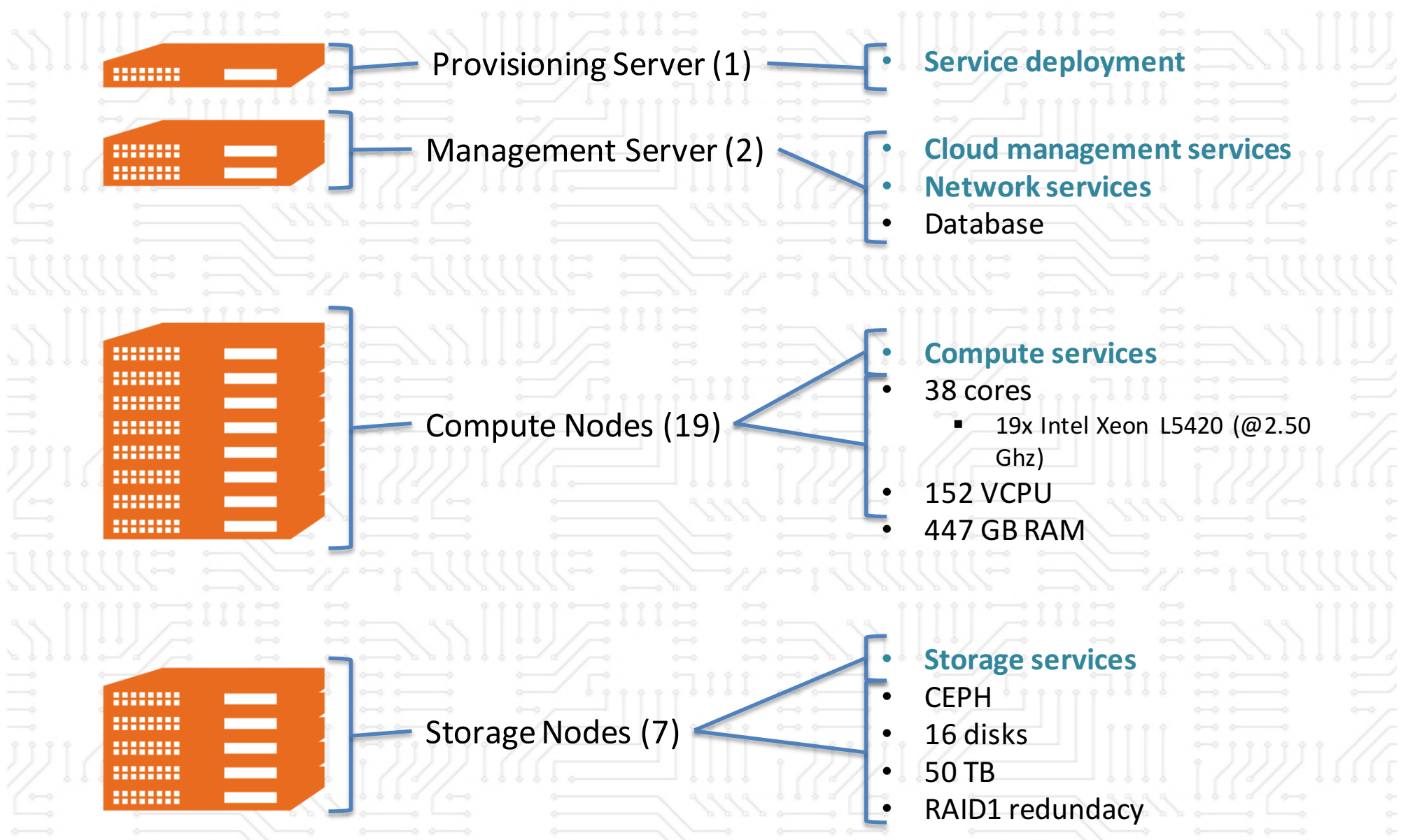
Operating systems

- 9 supported OS images
 - Ubuntu Server (14.04, 14.10, 15.04, 15.10, 16.04)
 - CoreOS
 - CentOS (6, 7)
 - Windows Server 2012 R2
 - ... custom images can be added

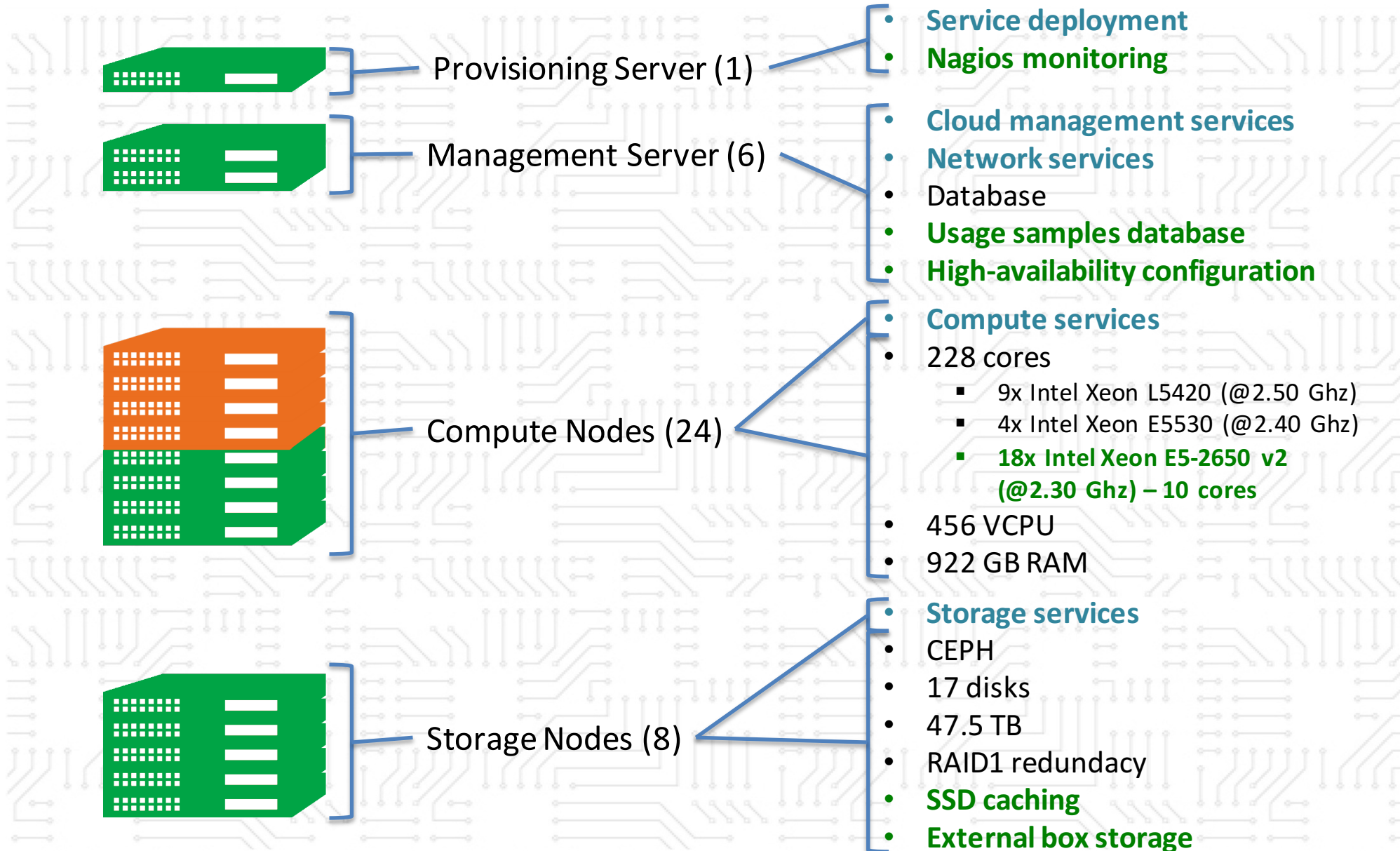
Milan – DEIB Environment



Como Environment



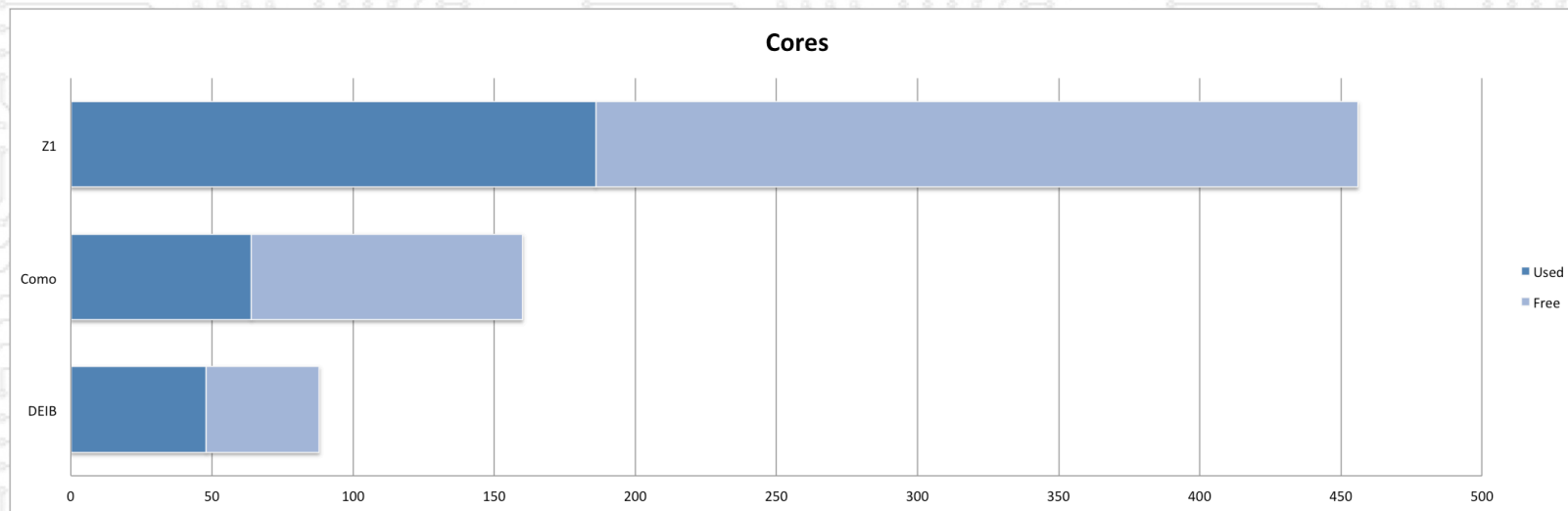
Milan – Z1 Environment



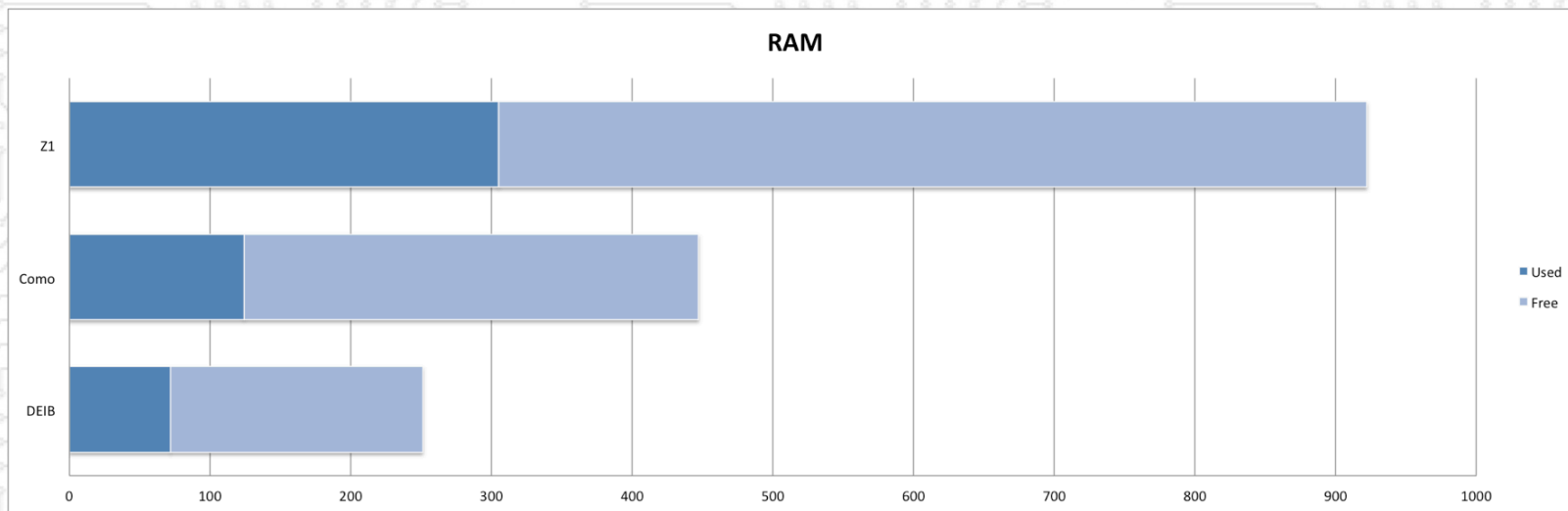
Services

Feature	Milan – Z1	Como	Milan – DEIB
Internal Gigabit network	Green	Green	Green
Latest generation hardware	Orange	Red	Red
UPS	Green	Green	Red
Power generator	Green	Red	Red
High availability	Green	Red	Red
External Access	Green	Green	Green
Public APIs	Red	Red	Red
VM Provisioning	Green	Green	Green
Storage service (S3)	Green	Red	Red
LoadBalancer-as-a-service	Green	Red	Red
Database-as-a-service	Red	Red	Red
Multiple zones	Green	Red	Red
Custom VM flavors	Green	Green	Green
Availability	1 day/year	5 days/year	20 days/year

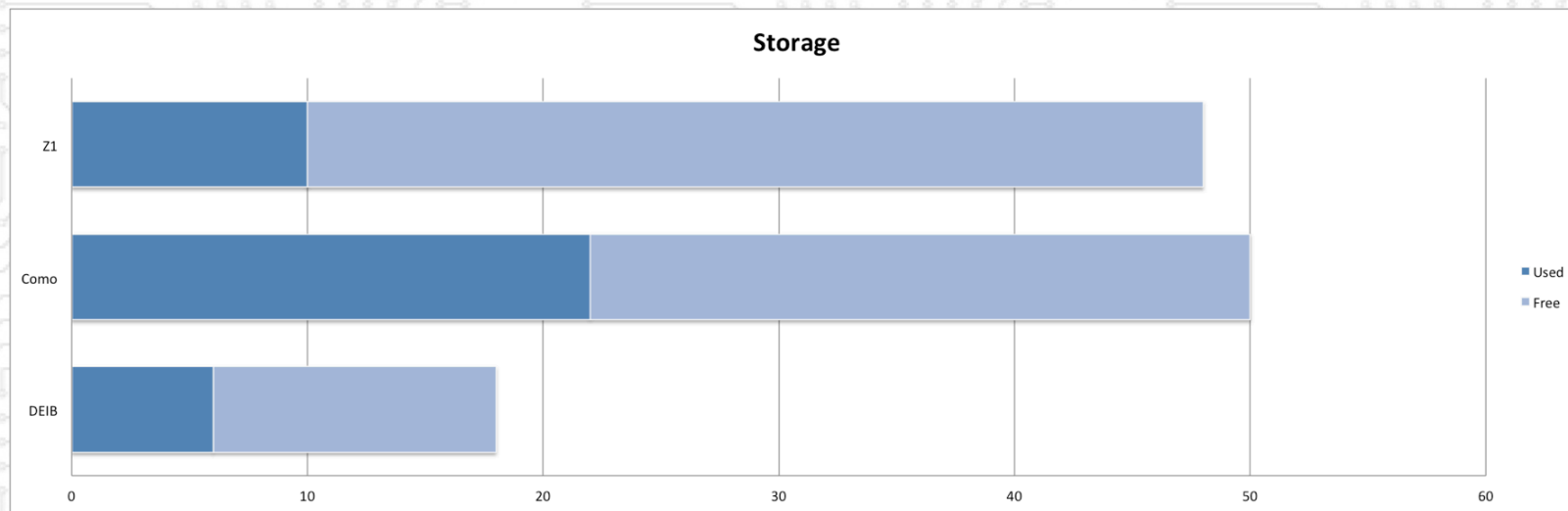
Current Usage – Cores



Current Usage - RAM



Current Usage - Storage



Roadmap

- Optimal scheduling
- New DEIB Environment
- Additional services
- Hardware replacement
- Exposed APIs

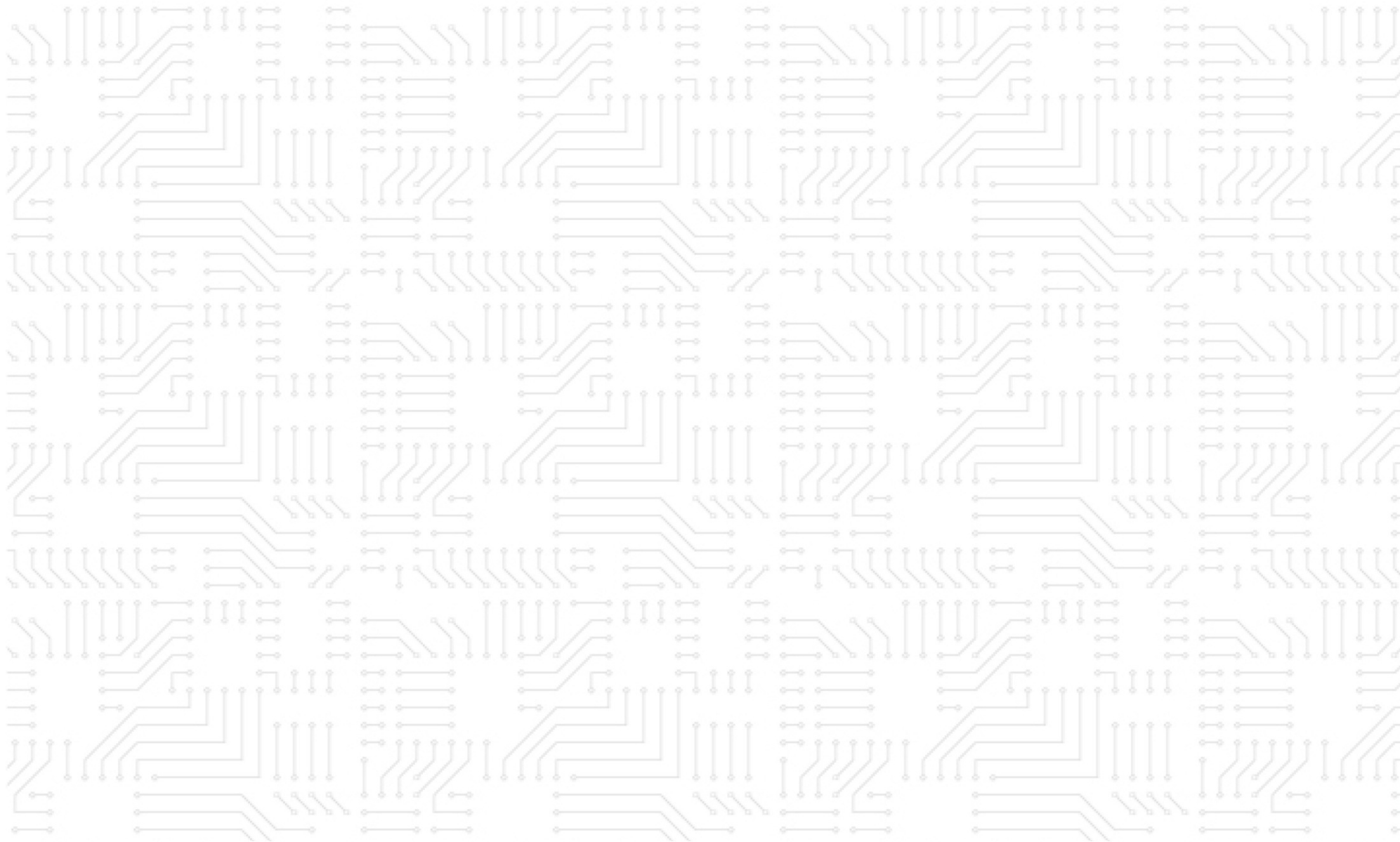
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<http://policloud.polimi.it>

PoliCloud



<https://goo.gl/Q9S4tL>



PoliCloud

- 227 server donati da Yahoo
 - 27x DELL PowerEdge 1950
 - Dual Intel® Xeon® L5335 (8 cores total)
 - 24 GB RAM
 - 21x HP ProLiant G6 DL160
 - Dual Intel® Xeon® E5620 (16 cores total)
 - 16 ~ 70 GB RAM
 - 179x HP ProLiant G5 SE1102
 - Dual Intel® Xeon® E5420 (8 cores total)
 - 16 GB RAM

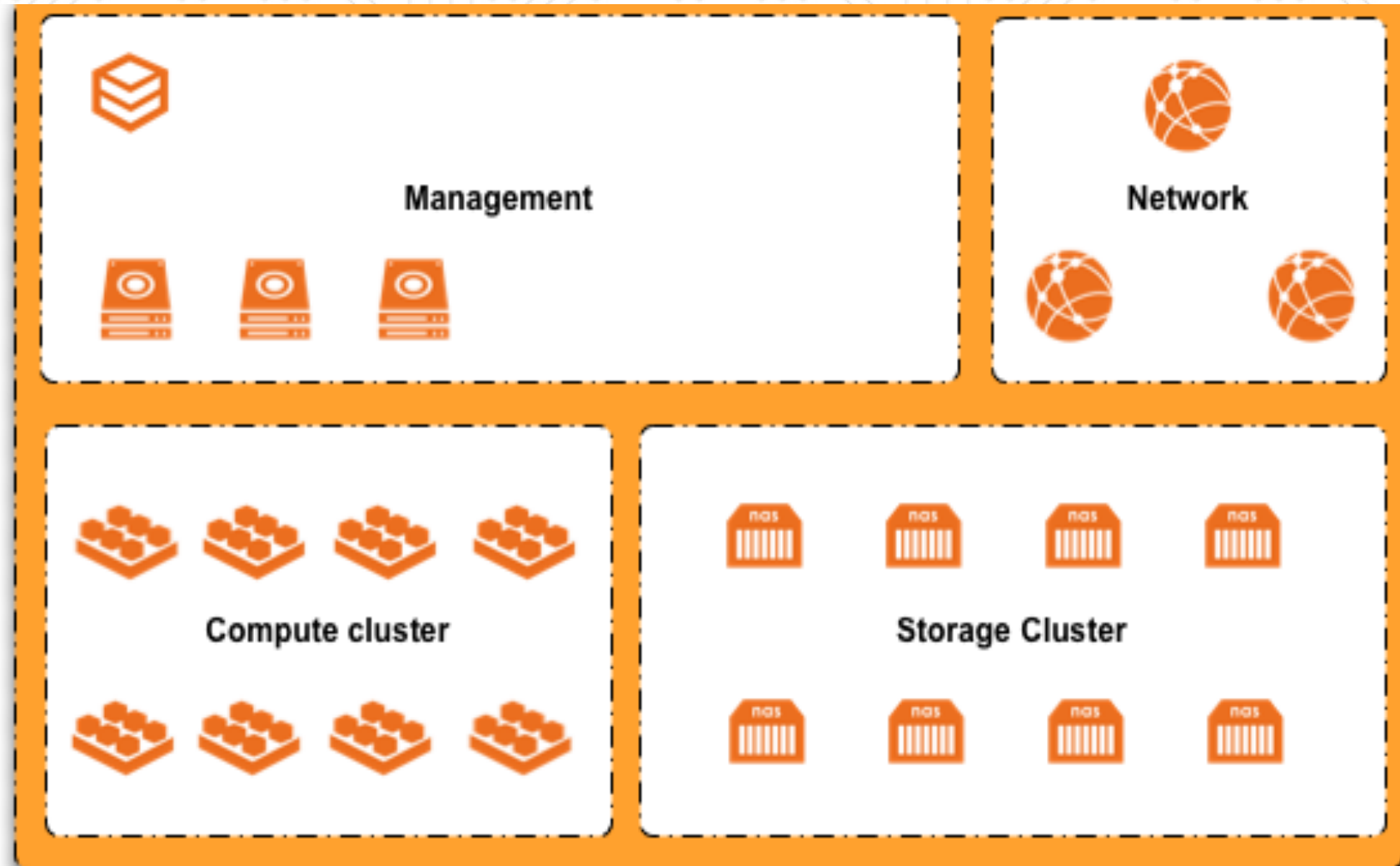
1984 cores

~4.3 TB RAM

PoliCloud choices

- Hypervisor: Linux QEMU/KVM
- Cloud management: OpenStack
- High Availability Configuration (to-be)
- Low-cost, distributed storage: Ceph
- Entirely built on commodity hardware

High-level architecture



Server distribution

