Case study: Migrating 1,000 VMs from VMware to RHEV

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Case headlines

- Increase virtualization capacity 4X
  - Saving $1M in software licenses
  - Using 60 less hypervisors
- In 4 months with just 4 internal resources

Canarias Goverment Telco Platform

- Manages internal IT for all public statements in Canarias
- 150 employees in IT
- 1600 physical servers across two datacenters
- Attending 22K incidents/month from 57K public employees
- ISO 9001:2008, ITIL

Customer workloads

17 OS VERSIONS

Microsoft Windows 7 (32/64 bit)
Microsoft Windows Server 2003
Enterprise / Standard Edition (32/64 bits)
Microsoft Windows Server 2008
R2 (32/64 bits)
Microsoft Windows XP Professional (32 bits)
Microsoft Windows Vista (32bits)
Red Hat Enterprise Linux 4 y 5 (32/64 bits)
Red Hat Enterprise Linux 6 (64 bits)
Otros Linux (Ubuntu)

20 TB OF DATA FC STORAGE

+40 DIFFERENT SW TECHNOLOGIES

- WEB SERVERS
- APPLICATION SERVERS
- REMOTE APPLI. SERVERS
- PROXY'S
- CORPORATE ANTIVIRUS
- DIRECTORY SERVICES
- EMAIL
- MOBILITY SOLUTIONS
- DASHBOARD
- TELEPHONY SERVICES
- VOIP SERVICES
- VIDEOCONF SERVICES
- MONITORING SERVICES
- E- ADMINISTRATION
- HR APPLICATIONS
- FILE SERVERS
- PRINT SERVERS
- DATABASES
- INCIDENT MANAGEMENT SW
- SALARY & PAYROLL SW
- E-TRAINING

Background

2007 Started adopting virtualization

- Looking after consolidation & continuity
- General purpose servers as hypervisors:
  Blades with 2 CPUs and 16Gb RAM
- 40 hosts

2011 Virtualization infrastructure now requires:

- 160 hosts – 1,000 VMs
- 4X organic grow

Additionally:
VMware 3.5 EOL = no new hardware
needs new licenses

How to evolve: time to make decisions

2012

Predicted capacity increase: **2X**
Predicted budget needs: **$1.3M**

Strategic decisions:

- Call Red Hat in
- Vertical hardware grow:
  - Increase VM density
  - Decrease number of servers
- Ensure virtualization costs predictability
- Migrate to RHEV

Project timings & resources

redhat

SENIOR SOLUTION ARCHITECT
SENIOR CONSULTANT
SUPPORT RELASHIONSHIP MANAGER

QWERTY

CONSULTANT

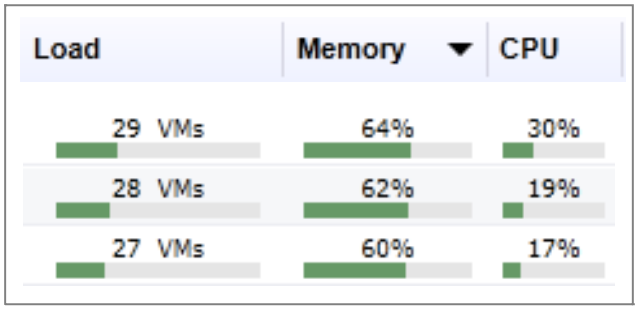
CiberCentro

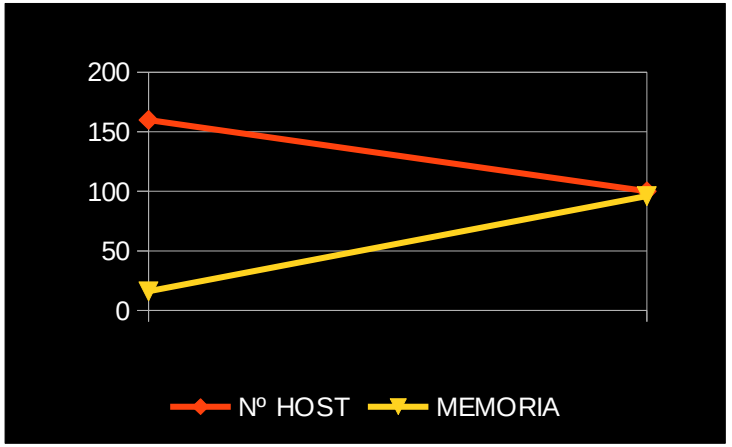
ITIL

PMO
SYSTEMS DEPT.
OPERATIONS DEPT.

Benefits I: Simplified infrastructure

- 6 management consoles -> 2 prod, 1 test
- Clusters split by production phase and service type
- HW adapted for higher density:
  - 2 x 6 core CPUs servers
  - 16Gb RAM = 7 VMs / server
  - 96Gb RAM = 30 VMs / server
  - SPECVirt 2 CPUs record:
    512Gb RAM = 150 VMs / server

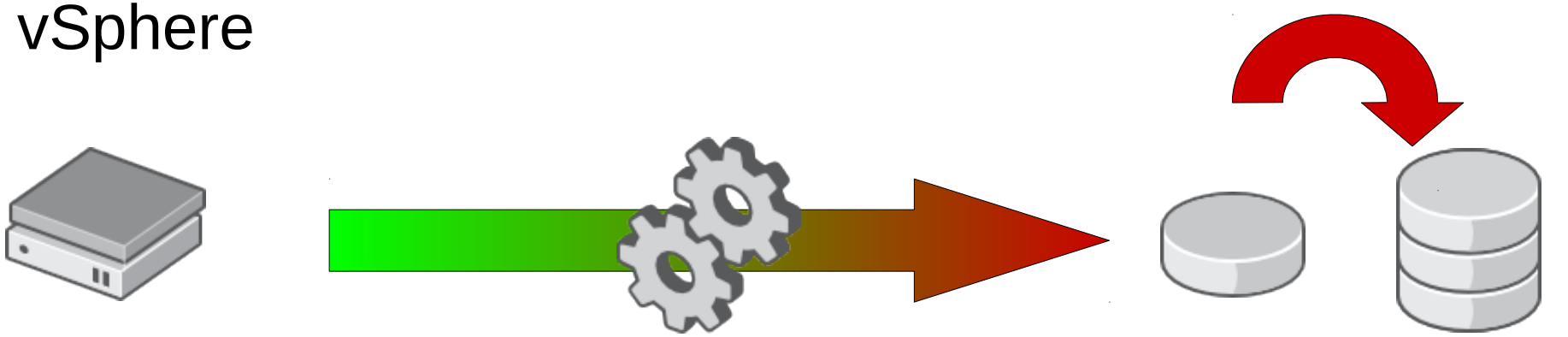




Benefits II: Easy migration process

VMware
vSphere

RHEV



ESXi

RHEL virt-v2v

Import Storage

Production Storage

1

- Stop VM

2

- Launch V2V tool to:
  - On-the-fly copy VM
  - Convert VM disks
  - Install virtio drivers
  - Network mappings

3

- Import VM from RHEV-M web interface or API
- Start VM

Benefits II: Easy migration process (cont.)

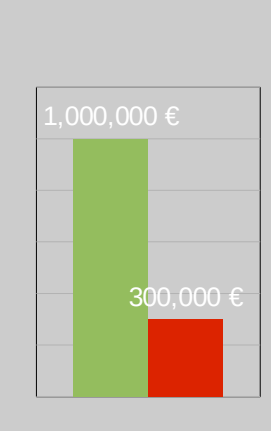
- Procedural process mostly automated
- 95% of the migration done by level 2 operators
- Virtual to virtual:
  - Migration rate: 36 VMs per day
  - 720 VMs migrated in 45 days
- Physical to virtual:
  - Migration rate: as they identify candidates
  - 150 physical servers migrated in a couple of months

Bonus

- Less servers = less power costs:
  - 2 CPU blade has a power of around 350 watts
  - Power costs ~$0.10 KwH
  - Cooling costs are similar to power costs
  - So: power + cooling of a single blade costs ~$600/year
  - $600 x 210 servers x 3 years = **-$300K spent in power**

Benefits III: Economic sustainability

- Cost of doing nothing, just acquire new virt version:
  - **VMware** licenses + support for 160 servers ~= **$1.3M**
- Cost of a well planned evolution:
  - **RHEV** subscriptions for 100 servers: **$280K**
  - Red Hat + Partner services: $100K



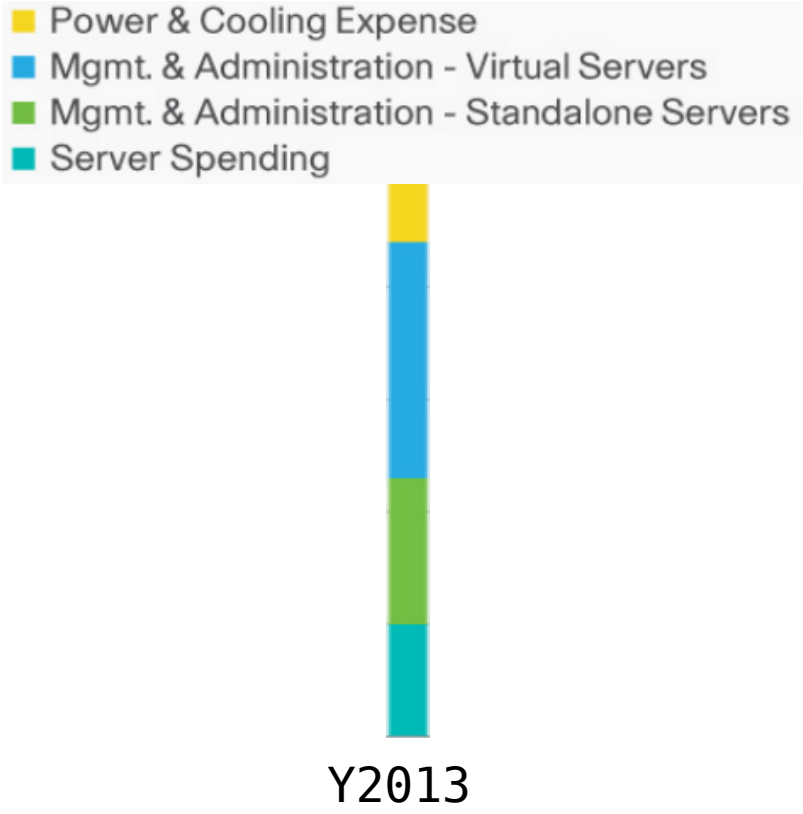
* 3 year prices

Benefits IV: Reallocate virt budget to cloud apps

- Cloud guest OS: RHEL
  - 20 units of RHEL unlimited guests = 600 VMs
  - 30 VMs/server = $60 per RHEL instance
- Your cloud application: JBoss
  - Lightweight application server
  - Easy to automate
  - Super fast start up times
  - HA at application level

Future: Reallocate virt budget to cloud mgmt

- Add cloud management functionality: CloudForms
  - Multi-hypervisor management
  - Executive dashboards
  - Chargeback
  - Capacity planning
  - End-to-end IT processes automation
  - Service catalogs & self-service portal
- Add a PaaS: Openshift
  - Developer agility
  - Increased density
  - Private and public options



** Source: IDC IT WW Spending*

Customer conclusions

- Economic sustainability
- Technological sustainability
- Easy migration process
- Without loosing any significant functionality

Final advices

- Plan for increased VM density on every HW/SW refresh
- Enable cloud features to get the maximum value out of the virtualization
- Prepare apps to the new cloud paradigm = run them anywhere
- Work in collaboration with your trusted vendor

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Related resources

- Download public case in PDF:
  - http://red.ht/109bi89
- Reference Architecture:
  - Migrating from VMware ESXi 5 to RHEV 3 http://red.ht/13mKgXC
- RHEV tech user forums:
  - https://access.redhat.com -> Groups -> RHEV
- Download RHEV Trial with 60 days support:
  - http://www.redhat.com/promo/rhev3/

06/13 Sessions

Time	Title
10:40 AM – 11:40 AM	KVM Hypervisor Roadmap & Technology Update
2:30 PM - 3:30 PM	Migrating 1,000 VMs from VMware to Red Hat Enterprise Virtualization: A Case Study – Room 313
3:40 PM - 4:40 PM	War Stories from the Cloud: Lessons from US Defense Agencies - Room 309
4:50 PM - 5:50 PM	Red Hat Virtualization Deep Dive - Room 311
4:50 PM - 5:50 PM	Red Hat Enterprise Virtualization Performance - Room 304
4:50 PM - 5:50 PM	Real world perspectives: Gaining Competitive Advantages with Red Hat Solutions

All day long: **RHEV User Experience booth – 2nd floor near GSS area**

06/14 Sessions

Time	Title
11:00 AM - 12:00 PM	Network Virtualization & Software-defined Networking
9:45 AM - 10:45 PM	Hypervisor Technology Comparison & Migration


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June 11-14, 2013
Boston, MA
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