

XEN VIRTUALIZACIJA

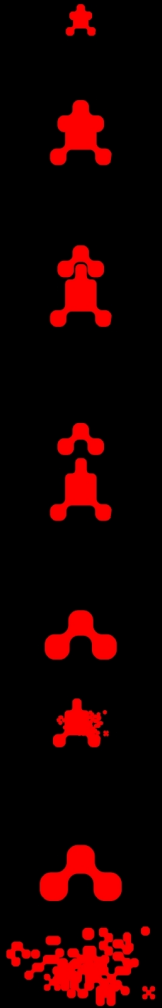
UPRAVLJANJE STREŽNIŠKIH ZMOGLJIVOSTI

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Pregled

- kaj je XEN
- pregled funkcionalnosti
- XEN vs VMWare
- naša zgodba o uspehu
- komercialni konkurenti



XEN virtualizacija

- Cambridge
- Podpora velikih ponudnikov programske in strojne opreme (RedHat, Novell, Intel, AMD,...)
- velika opdrtokodna skupnost



Pregled funkcionalnosti

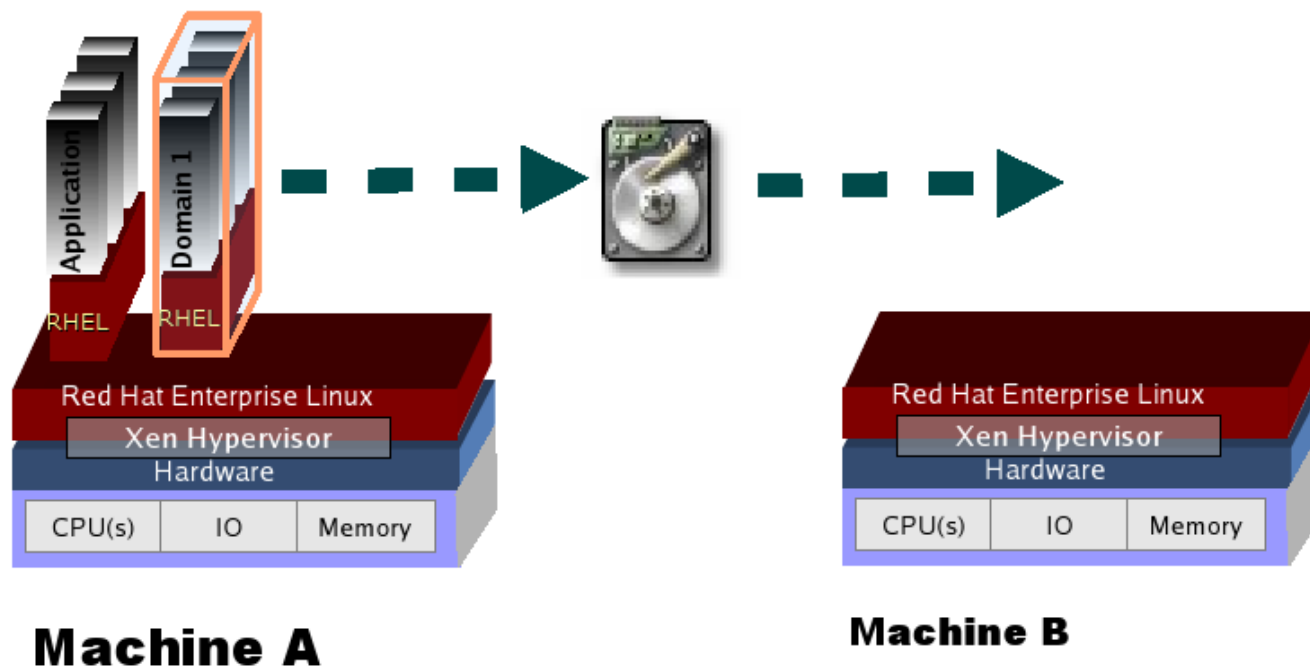
- strojno podprta virtualizacija (Intel VMX; AMD SVM)
- polna virtualizacija
- delna virtualizacija
- upravljanje virtualnih strežnikov
- orodja za prenos fizičnih strežnikov v virtualno okolje
- prenos v živo (live migration)



Live migration – korak 1

Live Migration

Korak 1:
Mirror block device (disk)
on machine B



Machine A

Machine B

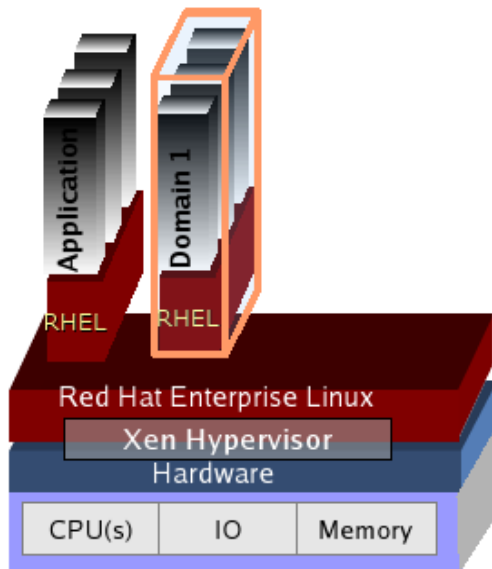


Live migration – korak 3

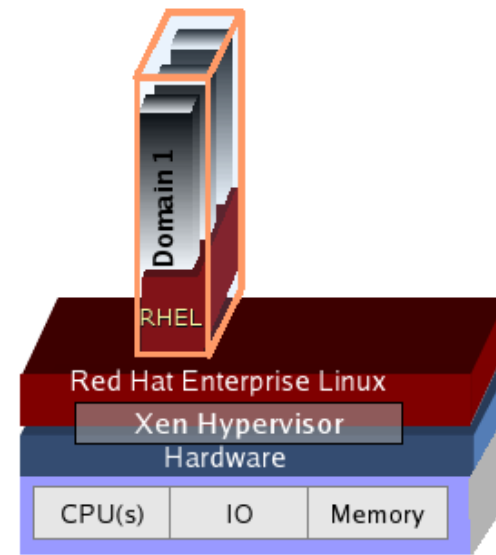
Live Migration

Korak 3:

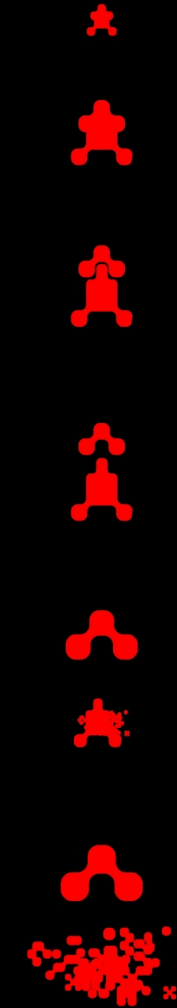
Machine A commits ~10% of resources to migration. Start shadow paging



Machine A



Machine B



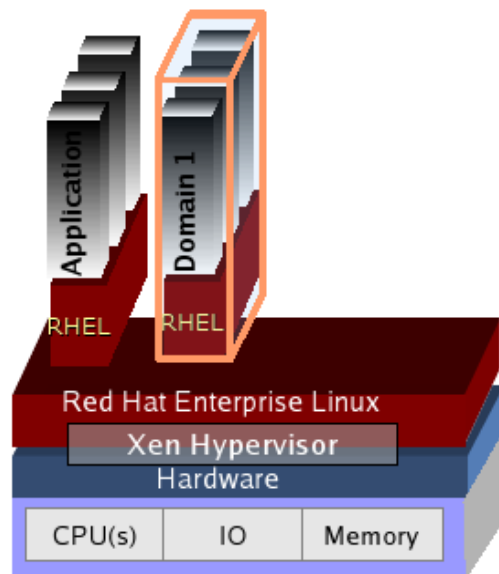
Live migration – korak 4

Live Migration

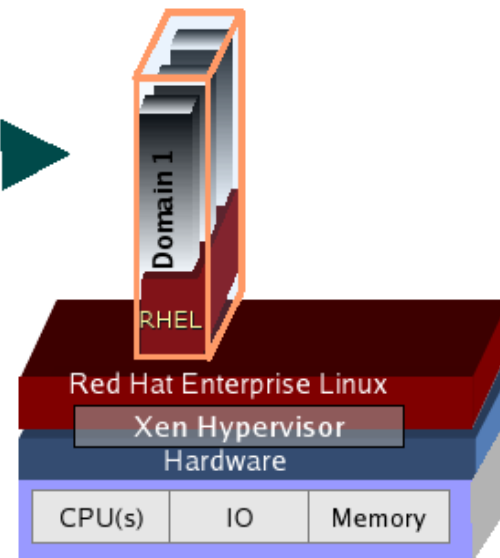
Korak 4:

Start copying memory image from machine A to machine B.

Changed memory pages are made as „dirty“



Machine A



Machine B



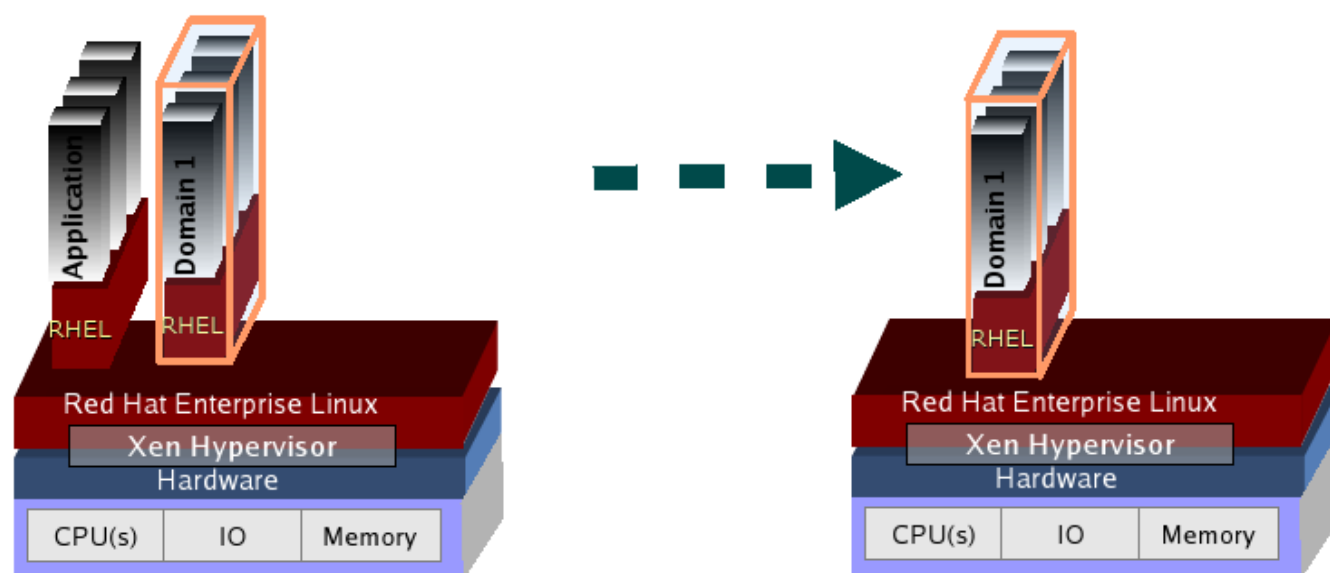
Live migration – korak 5

Live Migration

Korak 5:

Copy „dirty” pages.

Step completed multiple times until number of „dirty” pages does not decrease



Machine A

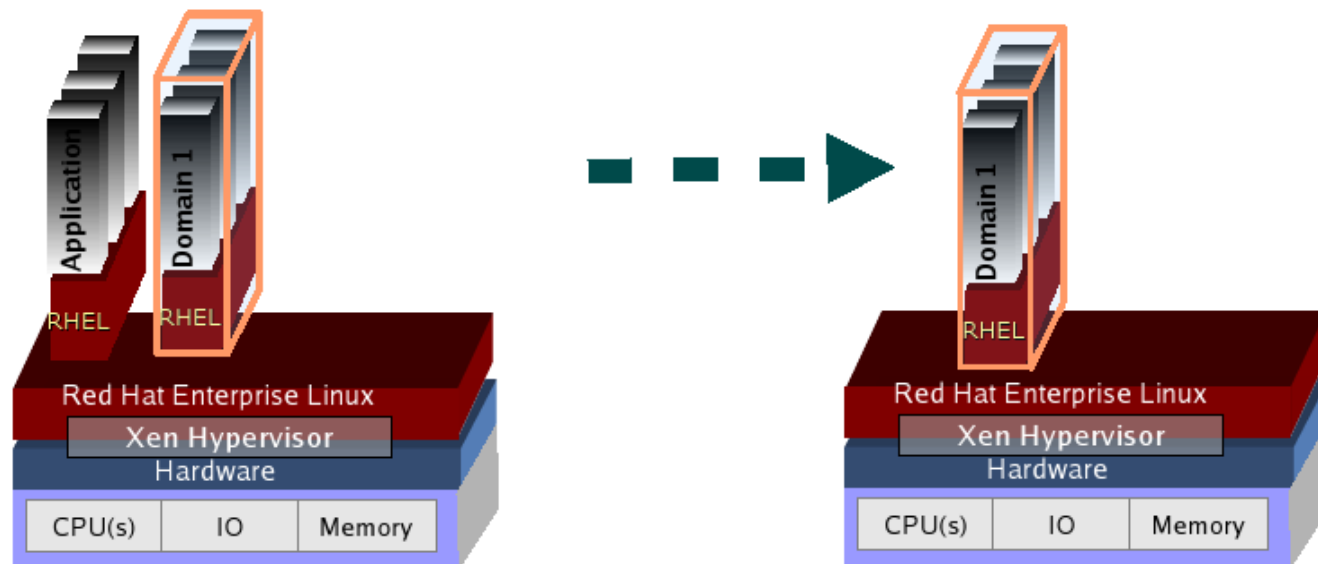
Machine B

Live migration - korak 6

Live Migration

Korak 6:

Domain 1 is suspended on machine A.
Remaining „dirty“ pages are copied



Machine A

Machine B



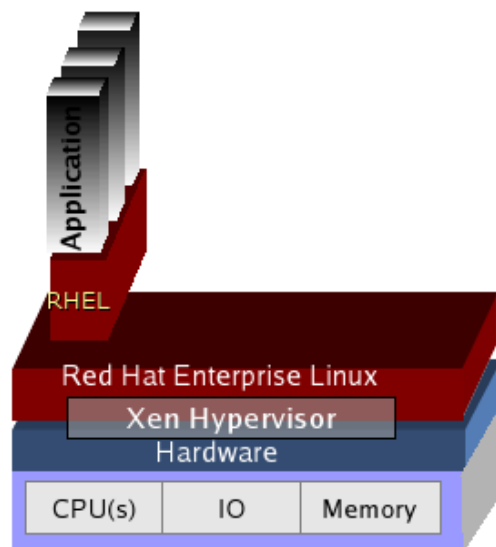
Live migration – korak 7

Live Migration

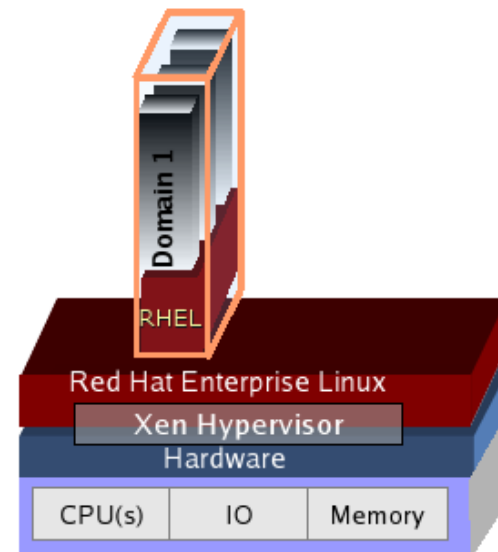
Korak 7:

ARP redirect is used to point network traffic to machine B.

Domain 1 is started on machine B



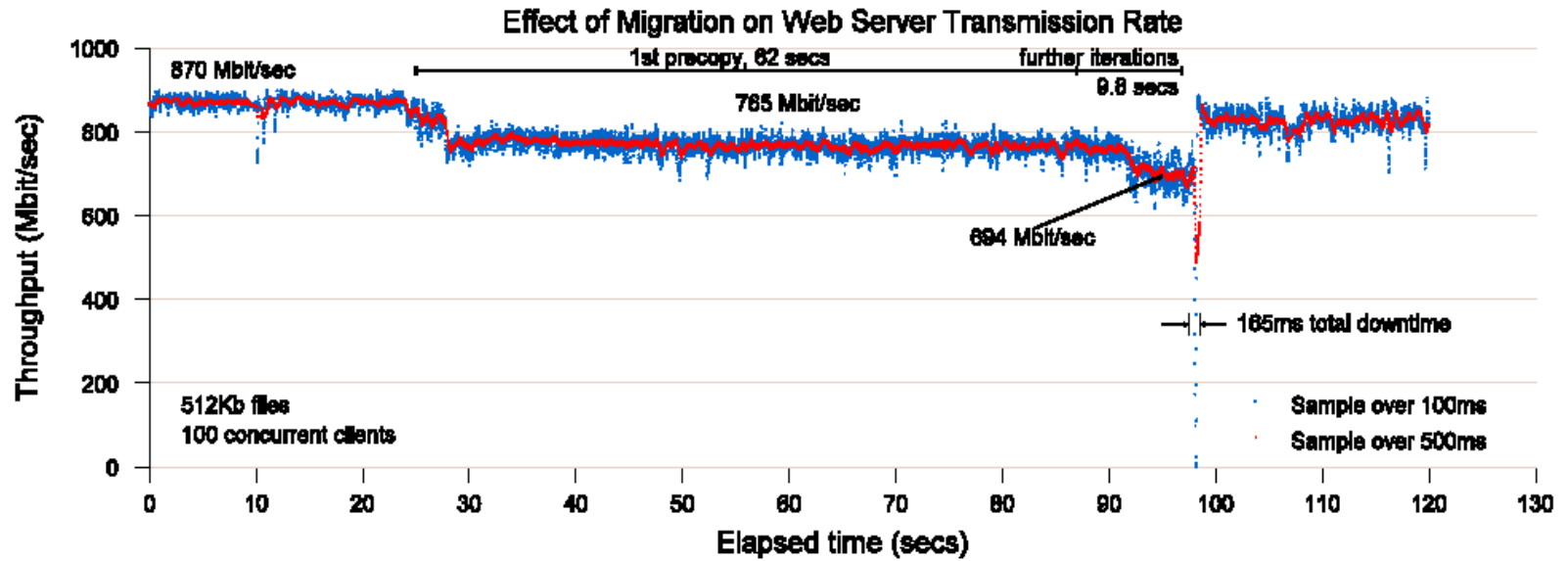
Machine A



Machine B



Live migration



vir: XenSource



Pregled funkcionalnosti

- upravljanje pomnilnika
- upravljanje procesorske moči
- varnost
- cilji

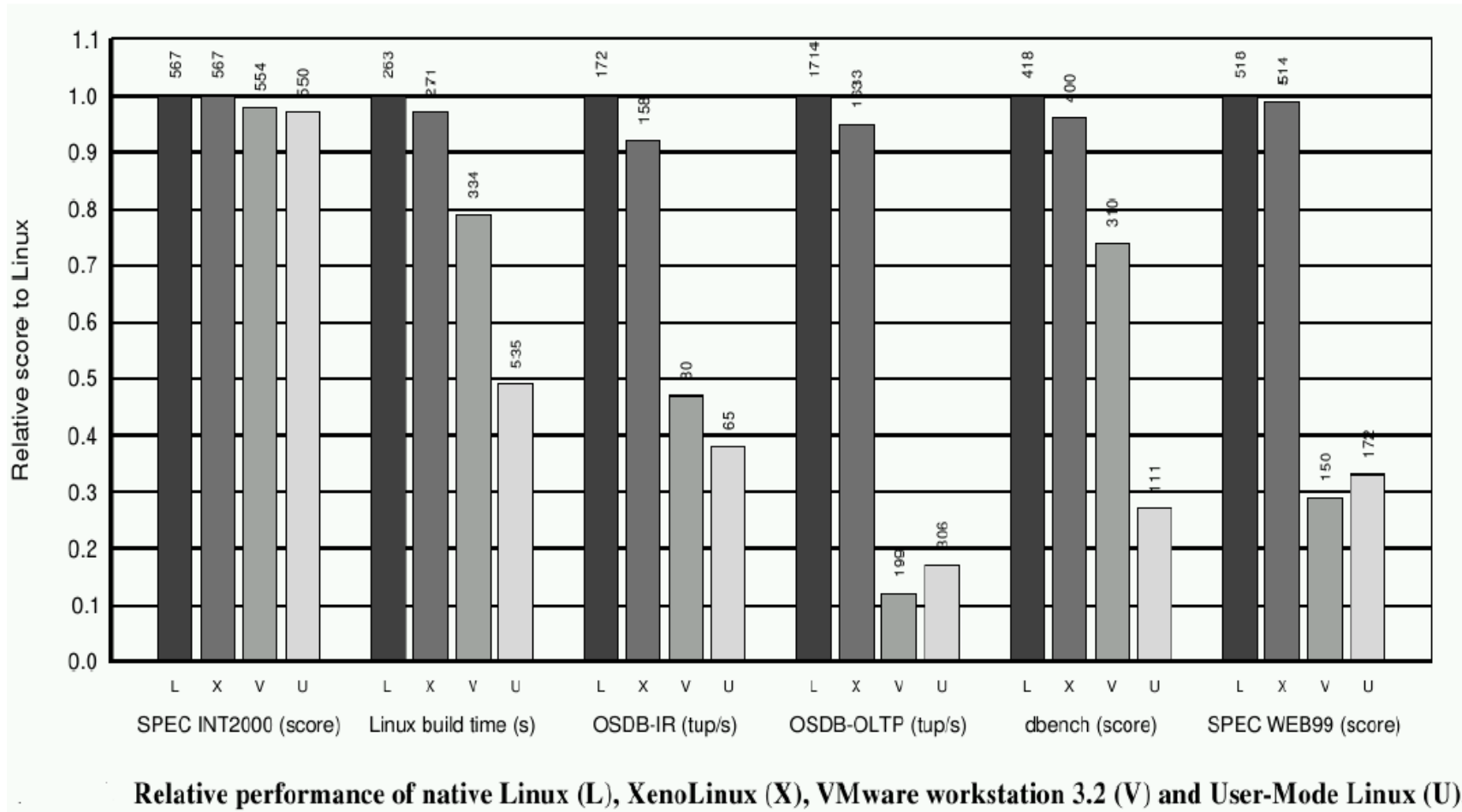


XEN vs VMWare

- bistveno cenejši od konkurence
- podpira delno virtualizacijo
- odprtokodni
- možnost uporabe gonilnikov iz linux okolja



Virtualization: Performance



Upravljanje virtualnih strežnikov

The screenshot shows the Virtual Machine Manager (Xen) interface for localhost.localdomain. The window title is "Virtual Machine Manager (Xen: localhost.localdomain)". The menu bar includes File, Edit, View, and Help. A "View:" dropdown menu is set to "All virtual machines".

| ID | Name | Status | CPU usage | Memory usage |
|----|------------|---------|-----------|--------------------|
| 0 | Domain-0 | Running | 8.88 % | 491.24 MB (48.07%) |
| 5 | labServer1 | Running | 0.09 % | 255.76 MB (25.03%) |
| 7 | labServer2 | Running | 0.09 % | 255.84 MB (25.03%) |

At the bottom of the window, there are four buttons: "Zbriši" (Delete), "Novo" (New), "Details", and "Odpri" (Open).

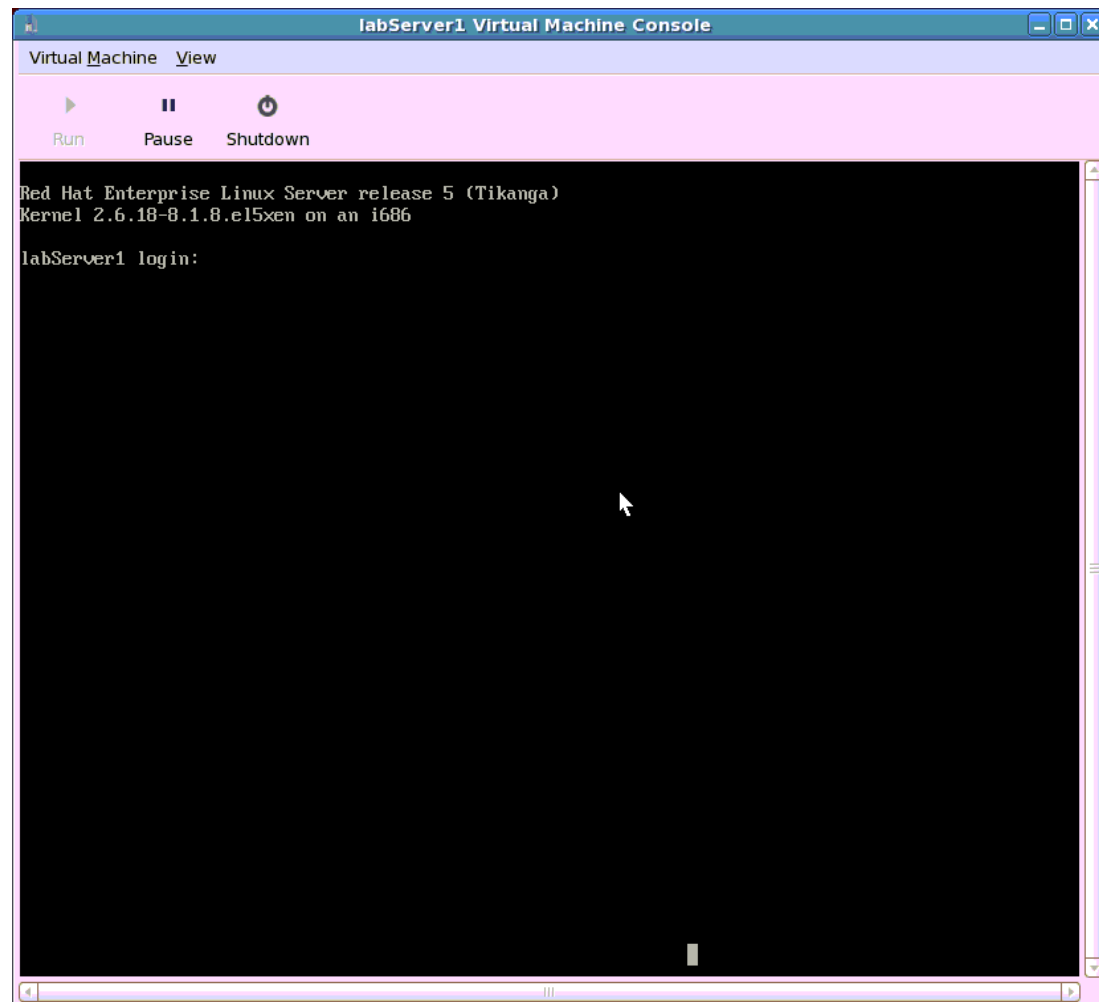


Upravljanje virtualnih strežnikov

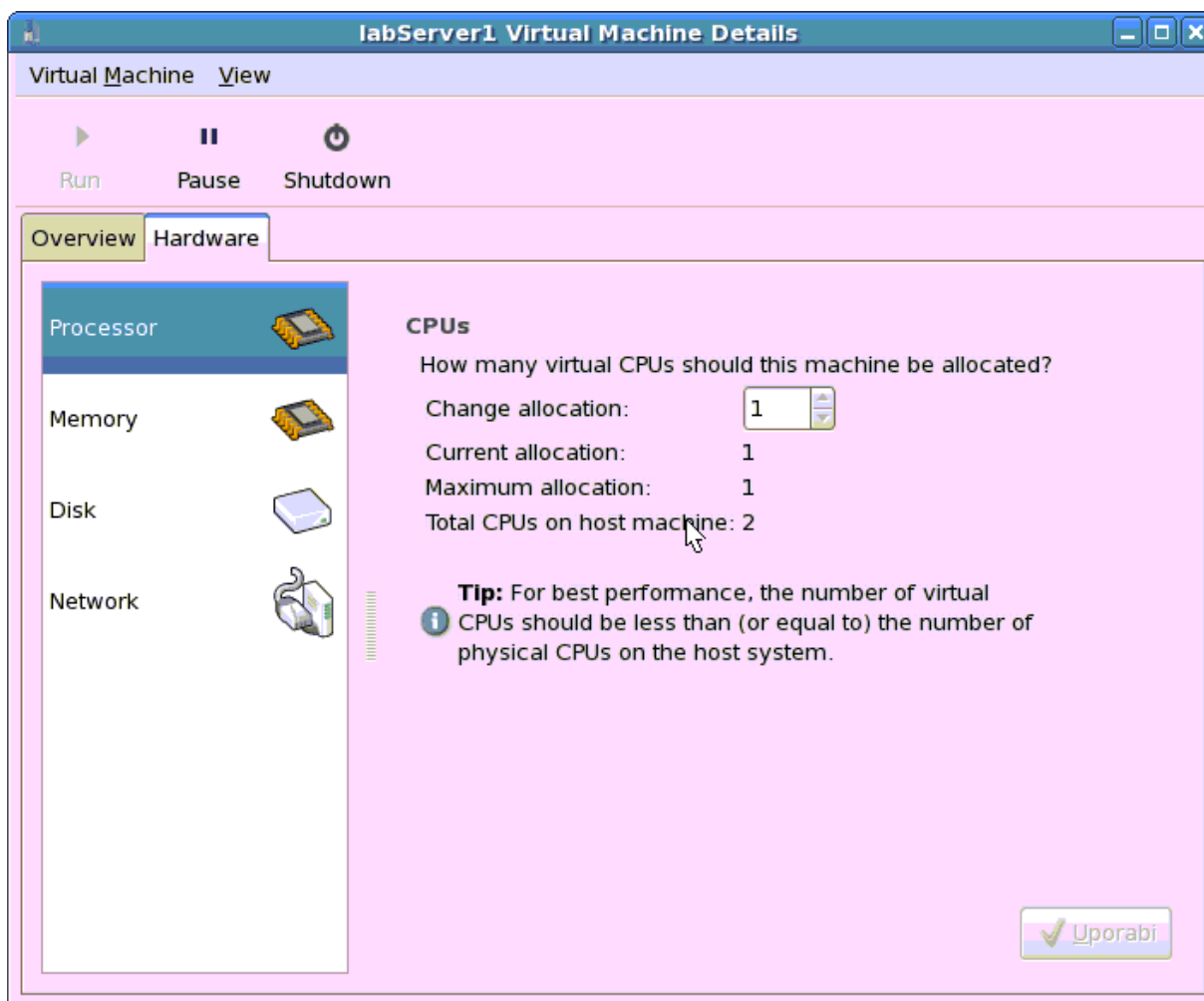
The screenshot shows the 'labServer1 Virtual Machine Details' window. At the top, there are control buttons for 'Run', 'Pause', and 'Shutdown'. Below these are tabs for 'Overview' and 'Hardware', with 'Overview' selected. The 'Basic details' section shows the VM name as 'labServer1', its UUID as 'aaf22cdd-a1b3-45cc-4c5d-1c86ac7fb8ba', and its status as 'Running'. The 'Performance' section contains two graphs: 'CPU usage' showing 0% and 'Memory usage' showing 255 MB of 1022 MB.

| Category | Value |
|--------------|--------------------------------------|
| Name | labServer1 |
| UUID | aaf22cdd-a1b3-45cc-4c5d-1c86ac7fb8ba |
| Status | Running |
| CPU usage | 0 % |
| Memory usage | 255 MB of 1022 MB |

Upravljanje virtualnih strežnikov

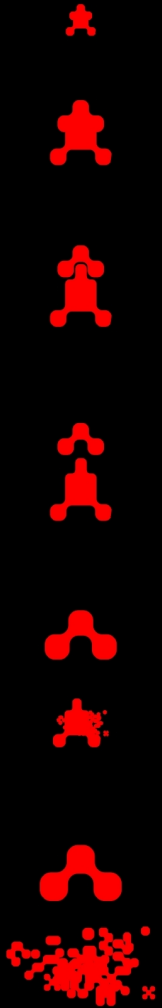


Upravljanje virtualnih strežnikov



Naša zgodba o uspehu

- 2x XEN strežnik v produkciji
- skupaj več kot 15 virtualnih strežnikov



Komercialni konkurenti

- VMWare
- VirtualPC
- QEMU

