

A taste of Xen in 18 minutes

George Dunlap
george.dunlap@eu.citrix.com

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- ▶ What's the best way to use Xen?
- ▶ How could I get involved?



What is the Cloud?



What is the Cloud?
Separate managing physical hardware from managing data

Clouds, Private and Public



Private cloud

Clouds, Private and Public



Public cloud

Xen and the Cloud



- ▶ Late 1990's: Xenoservers Project

Xen and the Cloud



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Envisaged a world where:

- ▶ Any member of the public can submit code for execution
- ▶ The person who submits it pays for the resources used

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- ▶ August 2006: Amazon announces public cloud
- ▶ 2008: Rackspace and others

Xen and the Cloud



*Xen was designed for the cloud,
and instrumental for bringing it about.*

Xen as a project



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(AWS, AMD, Citrix, GridCentric, Fujitsu, Huawei, iWeb, Intel, NSA, Oracle, Samsung, Suse)

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- ▶ GPLv2 only license

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How do people make money from Xen?



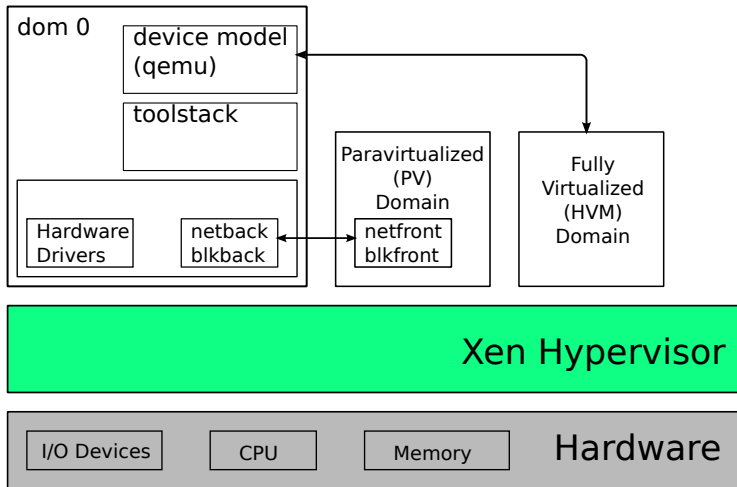
- ▶ Citrix, SuSE, Oracle, GridCentric: Sell software
- ▶ Intel, AMD, HP, Samsung: Sell hardware that needs software
- ▶ Amazon, Huawei, Fujitsu, NSA, SuSE: Use Xen themselves

How do people make money from Xen?



Xen is a classic corporate-driven open-source project

Xen Architecture



Xen advantages



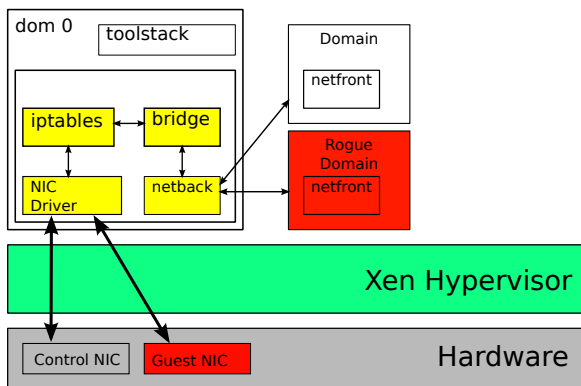
- ▶ Scalability, security, reliability, performance

Xen advantages



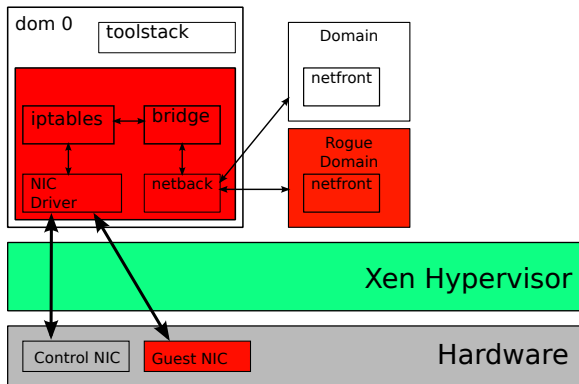
- ▶ Scalability, security, reliability, performance
- ▶ Disaggregation

Attack surface: Network path



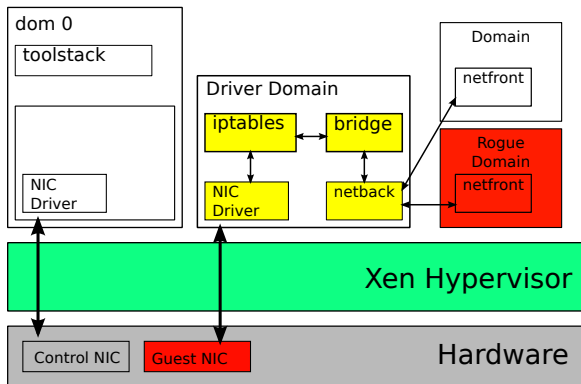
- ▶ How to break in?
 - ▶ Bugs in hardware driver
 - ▶ Bugs in bridging / filtering
 - ▶ Bugs in netback via the ring protocol

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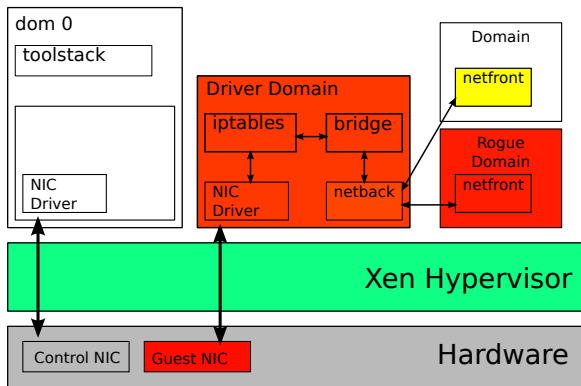
- ▶ What does it buy you?
 - ▶ Control of domain 0 kernel
 - ▶ Pretty much control of the whole system

Security feature: Driver Domains



- ▶ What is it?
 - ▶ Unprivileged VM which drives hardware, provides access to guests

Security feature: Driver Domains



- ▶ Now an exploit buys you:
 - ▶ Control of a PV VM (PV hypercall interface)
 - ▶ Guest network traffic
 - ▶ Control of NIC
 - ▶ Opportunity to attack netfront of other guests

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- ▶ libvirt: generic hypervisor library
- ▶ xapi: high-level server virtualization functionality

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Debian, Ubuntu, Fedora, CentOS, Omanix (probably)

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- ▶ Xen Cloud Platform (XCP)
Heavily customized spin of CentOS to make a virtualization appliance

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- ▶ Google Summer of Code

Conclusion



Feedback?

`george.dunlap@eu.citrix.com`

Website: `http://xen.org`

Blog: `http://blog.xen.org/`

Twitter (generic Xen, not me) : @xen_com_mgr

Look for us in the Google Summer of Code (hopefully)!