Open Source and the Virtualization Revolution

George Dunlap, PhD
Citrix Systems UK, LTD

Intro: Virtualiztion

- Virtualization is changing the computing landscape

- 30-year old technology just making it big

- For technology-oriented entrepreneurs:
  - Interesting case-study
  - New opportunities

- For business people
  - Solving your problems

Outline

- What is Virtualization?

- Applications, Obvious and Not

- Citrix, virtualization, and open-source

Who am I? (Why listen to me?)

- Senior software engineer at Citrix
  - PhD in CS from University of Michigan
  - Worked with virtual machines for over 10 years
- Technical expert, business amateur
- First-hand experience with Opern-source virtualization economics

Entrepreneurship

- Connecting problems with solutions in a way that makes money

- People with problems don't know there can be a solution

- People with the solutions don't know that there's a problem

Virtualiztion

- Software ("Hypervisor") that makes one physical computer into several virtual computers

- Virtual cpus, memory, hard disk network card

- Separate operating system

Problem: Multiple OSes

- The Situation
  - You own a Mac
  - A program you need only runs on Windows
- Solution
  - Create a Virtual Machine on your Mac
  - Install Windows
  - Mac Primary, Windows available

Business consideration

- Definite value proposition

- Market?

  – People who need to straddle OSes

- Opportunity for capturing value?

  – Customer already paying for software

Problem: Server proliferation

- Businesses have many servers
    - E-mail, web, file, database
- Best practice: One machine per server
- Most servers are idle most of the time
    - Taking up space
    - Burning electricy
    - Generating heat

Solution: Server consolidation

- Buy one slightly larger computer

- Make several virtual computers from it
    - Each VM can have a different OS
    - Each VM can reboot / crash without affecting the others

But wait, there's more

- Flexibility in creating new servers

- Live migration
  - Moving a running VM from one server to another
  - Use: Hardware downtime
  - Use: Temporary spikes

- Complete hardware agnosticism
  - Cloud Computing

A growing market

- Estated 12% of servers virtualized in 2008

- Estimated 60% of servers virtualized by 2013

- Citrix XenServer / Xen Cloud Platform ecosystem

Desktop virtualization

- Desktops run in a corproate cloud
- Flexibility, management

Problem: Corporate laptops

- IT departments: Control
  - Ease of use
  - More importantly: Security

- Laptop users: Freedom
  - Games, skype, DVDs, &c

- Options
  - Carry two laptops?
  - Accept security risk

Solution: XenClient

- Personal VM

  - User installs whatever he wants

  - Direct access to video hardware

- Corporate VM

  - Locked down by IT

- Other advantages

  - Personal VM isolated f/ corporate network

  - Corporate VM automatically backed up

  - Migrating a XenDesktop VM
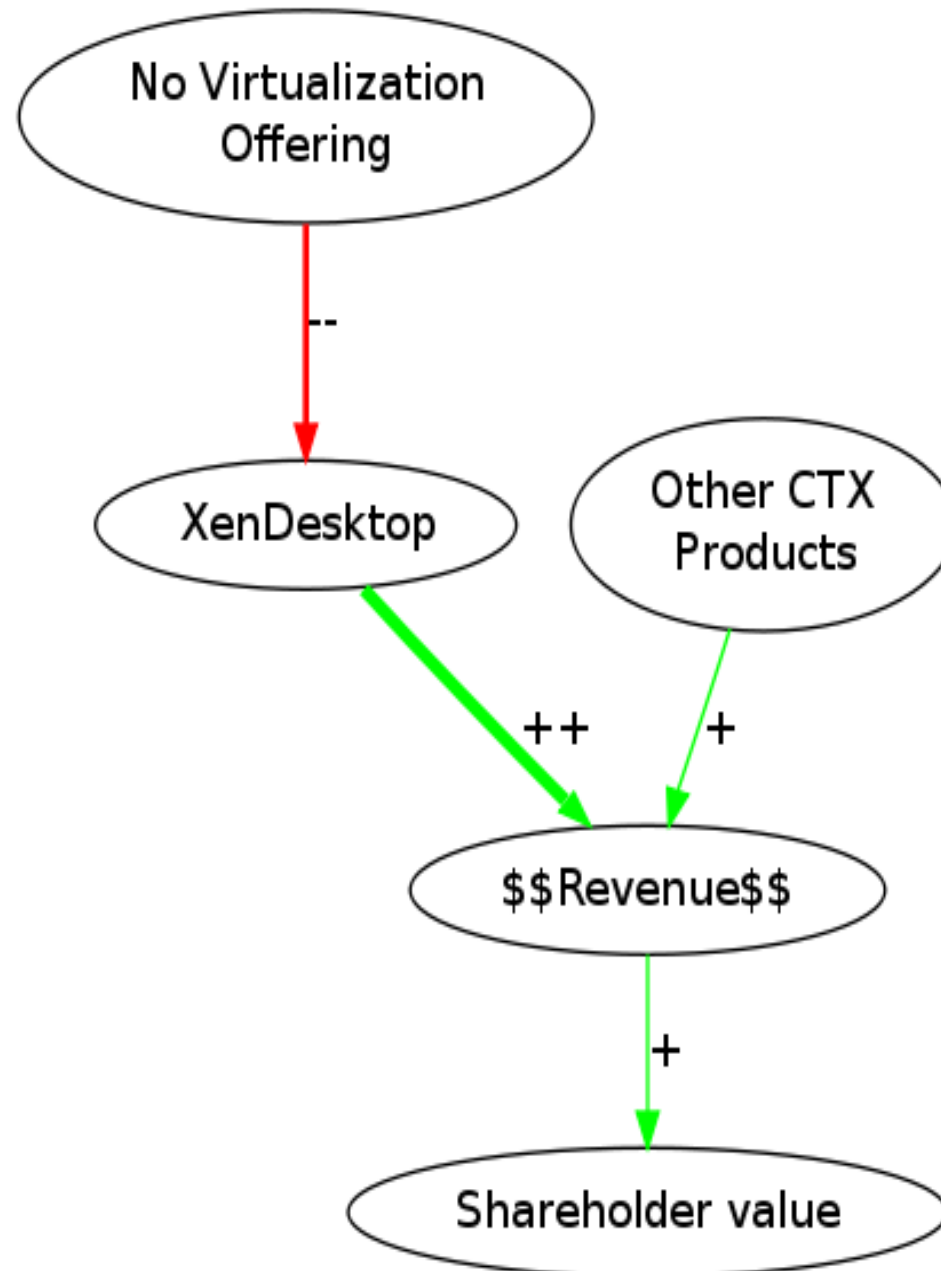
Citrix: Strategic Principles

- Began with one product: XenApp
    - Remote application execution
- Barriers to growth: other applications
- Strategic principles
    - Acquire a portfolio of software which is mutually supportive, so that you can give a customer a complete solution.
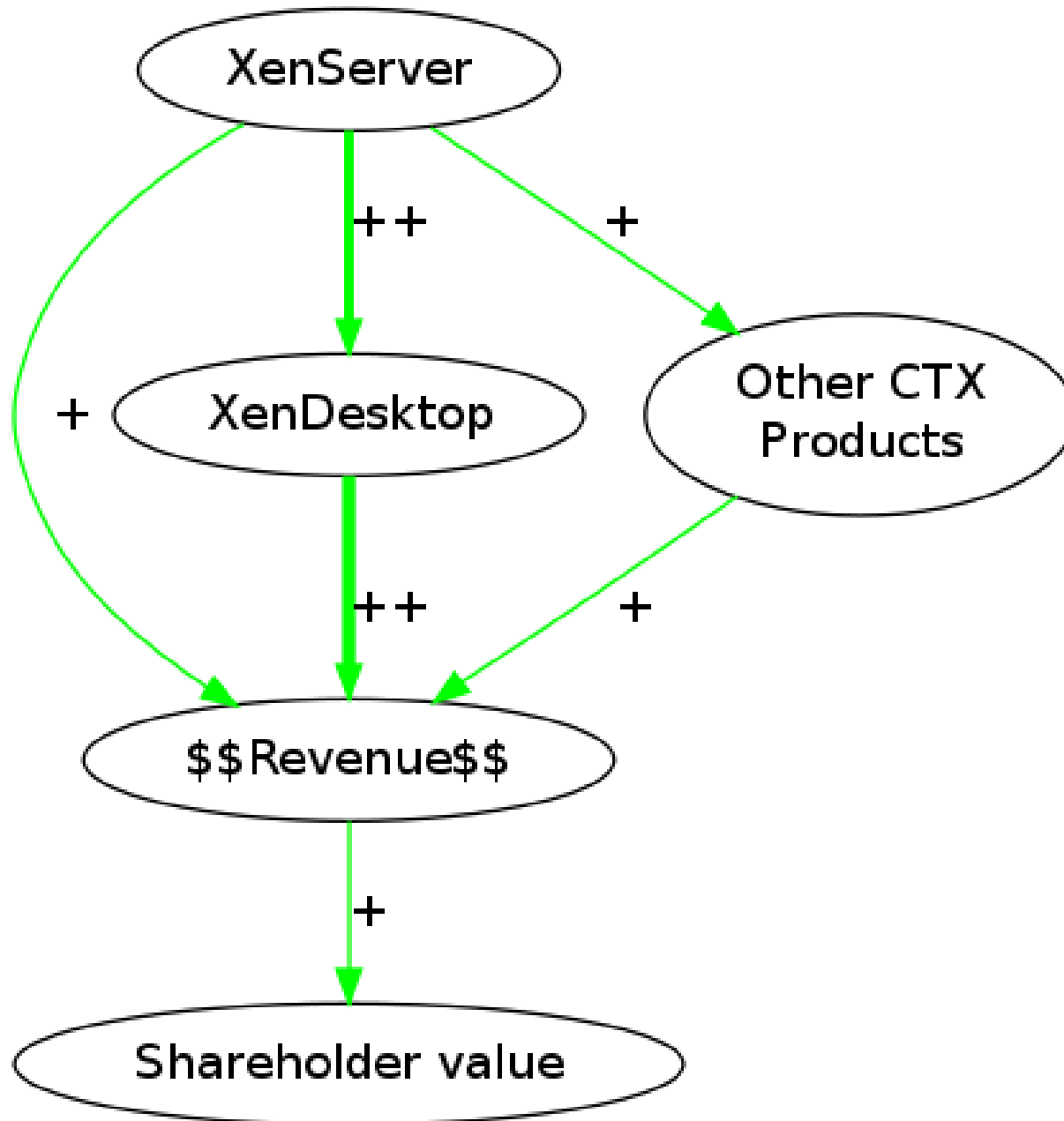   - Keep marketing each component separately
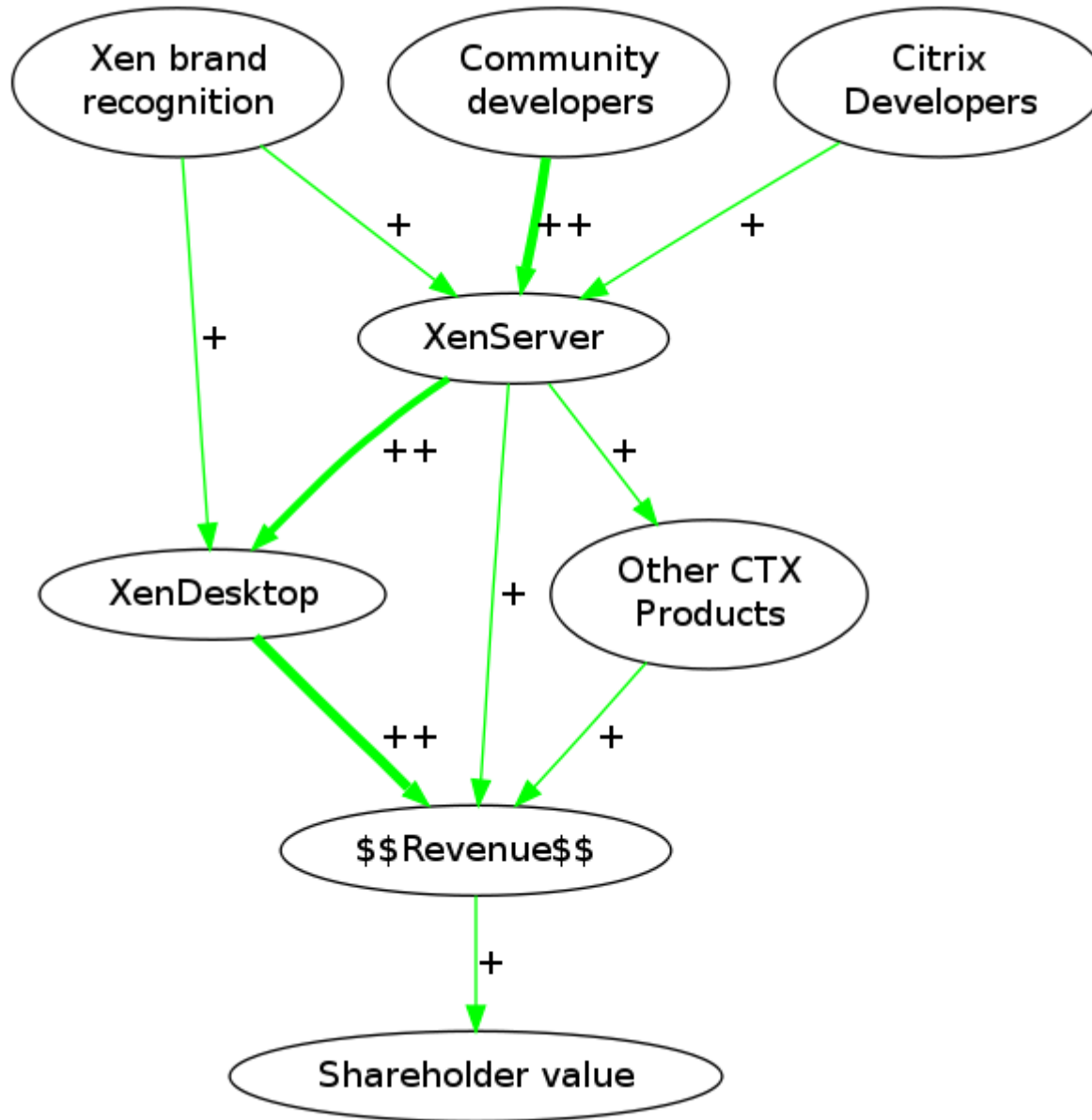
Example: NetScaler

- XenApp over the internet
  - Traffic shaping
  - Load balancing

- Netscaler
  - Removes a barrier to growth
  - Still an excellent product on its own

Citrix and Xen

- Server virtualization alone?
    - Large, established competitor
    - Microsoft
        - Don't want to compete directly
- Virtual Desktop
    - New, wide-open market
    - Citrix core competencies
        - Remote display, computer image management, traffic shaping, user management
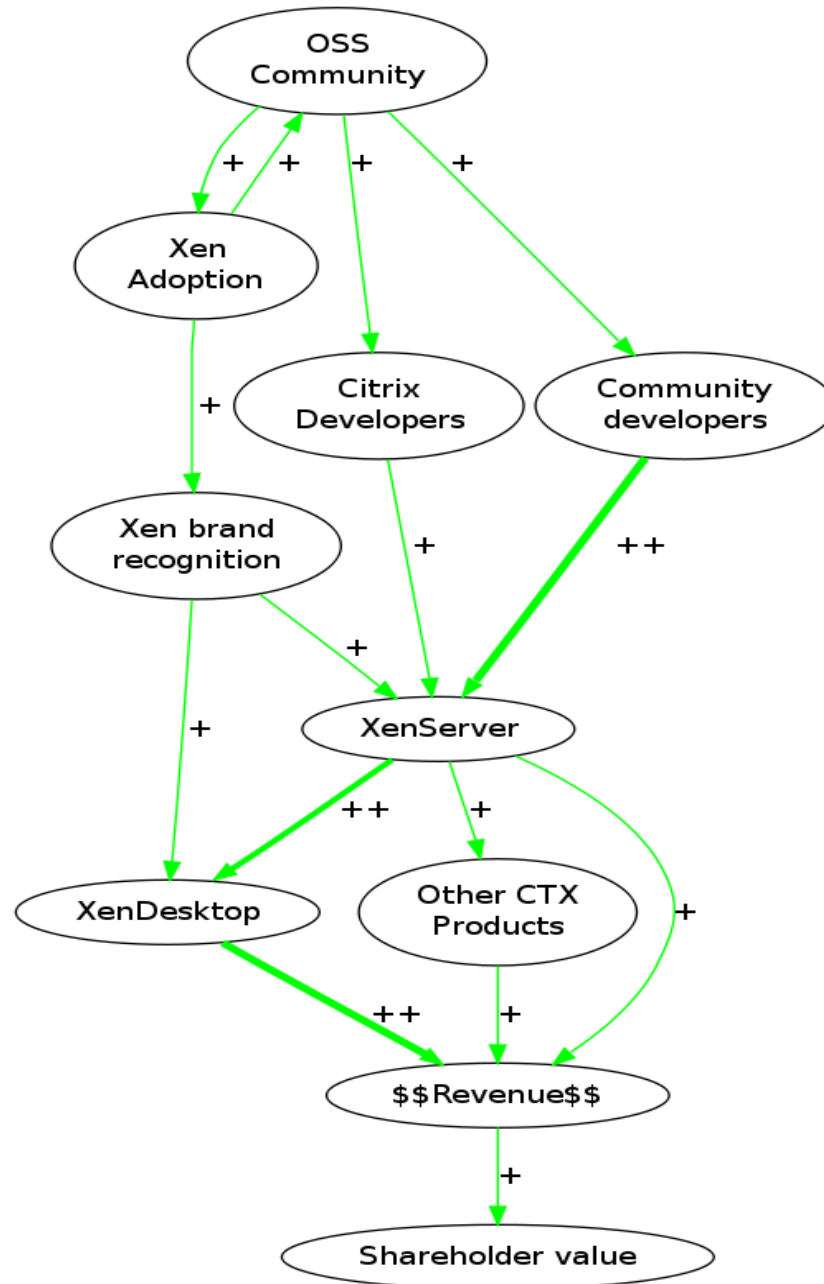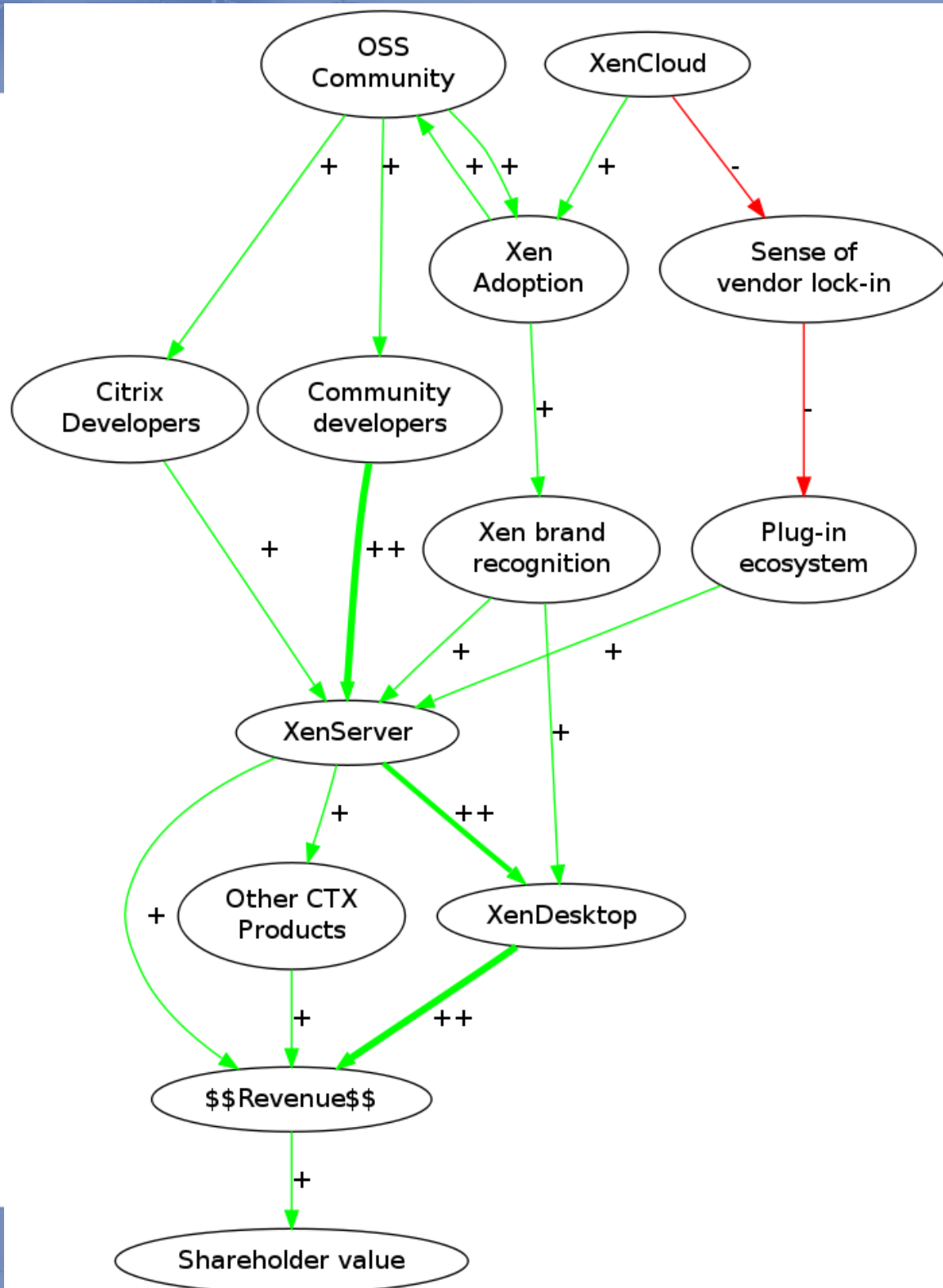   - No hypervisor!

Community development

- Intel, AMD: Software using new hardware

- HP: A reason to buy top-tier hardware

- Fujitsu, Samsung, &c: Users

- Novell: Their own Xen offering

- Oracle: Ensuring performance of OracleDB

- Control your own desitny

Summary: Citrix and Xen

- XenDesktop
  - Key strategy for future growth
  - Citrix has lots of competencies
  - Needs a Citrix-branded hypervisor
- Other products benefit from Xen as well
  - Netscaler, PVS, &c
- Xen supports Citrix's strategic long-term goals

The Virtualization Revolution

- Opportunities for entrepreneurs
- Value for business people
- Xen open-source virtualization benefits everyone

Questions

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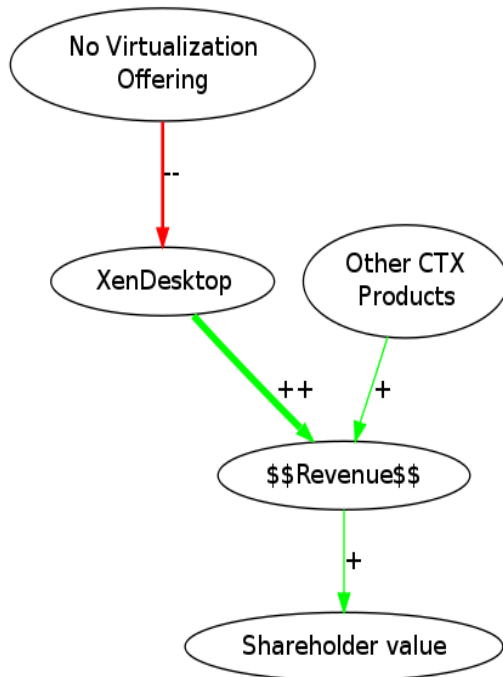
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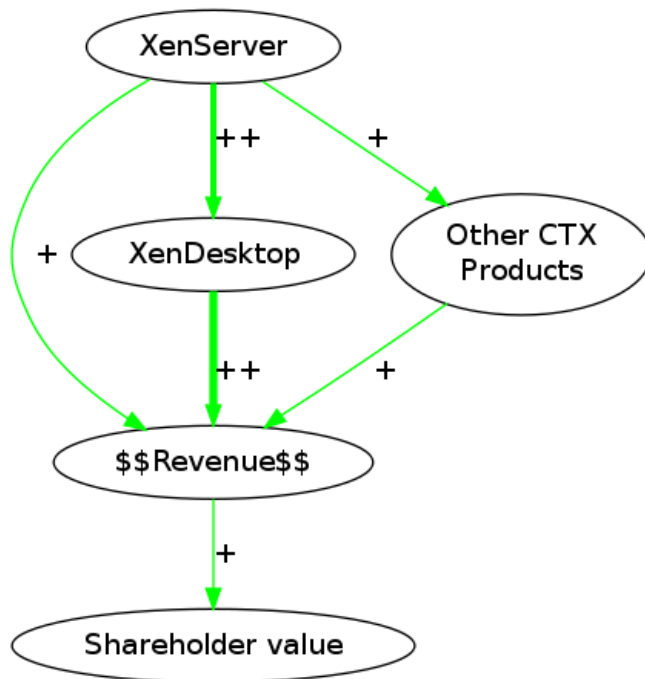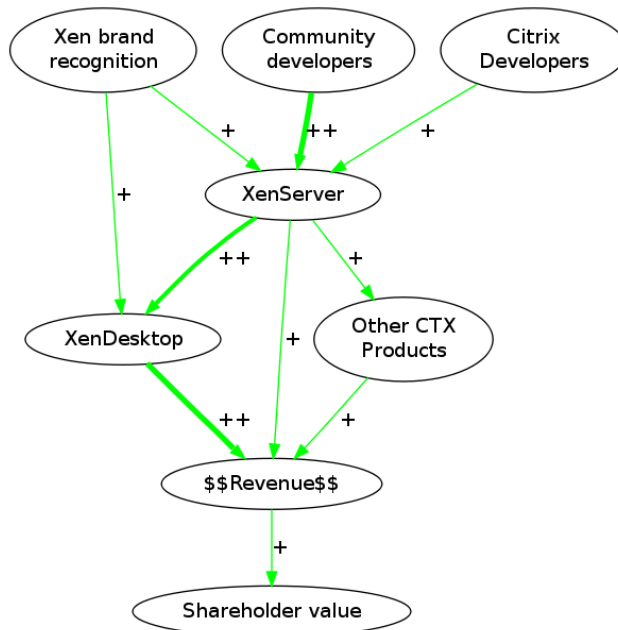
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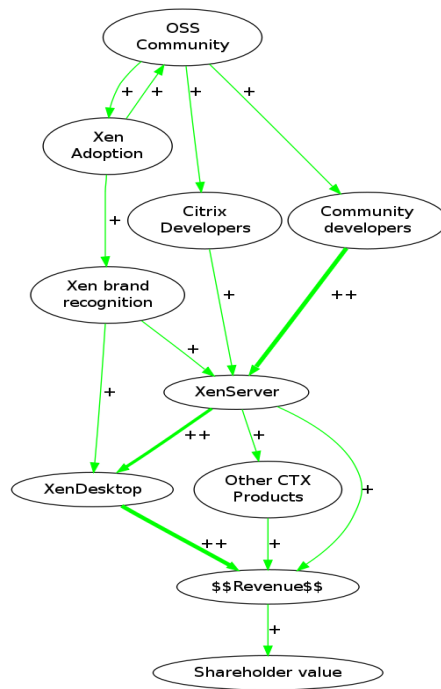   - No hypervisor!

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- Click to add an outline

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