

Ghost.cc
CLOUD COMPUTING



Up and down in the cloud –
A retrospective on Ghost.cc
Zvi Schreiber, Jerusalem





2006

Vision:

Virtual Computer

(VC)

A computer in a

Web Page

Getting started

- Sell my previous startup to IBM in May 2006 (second exit)
- **Wykit** founded
- Changed name to **Ghost** – **Global hosted operating system**
- URL G.ho.st (Thanks to San Tome)
- Choose to develop in OpenLaszlo
- Target users with multiple devices, Internet-Café users in developing countries

Ghosts go through walls!

- Unique Palestinian-Israeli cooperation
- Helping to create a high tech industry in a poor and troubled area
- Work as 1 team via Skype videoconf
- Later others including Cisco, HP, Intel would start R&D in Palestinian West Bank





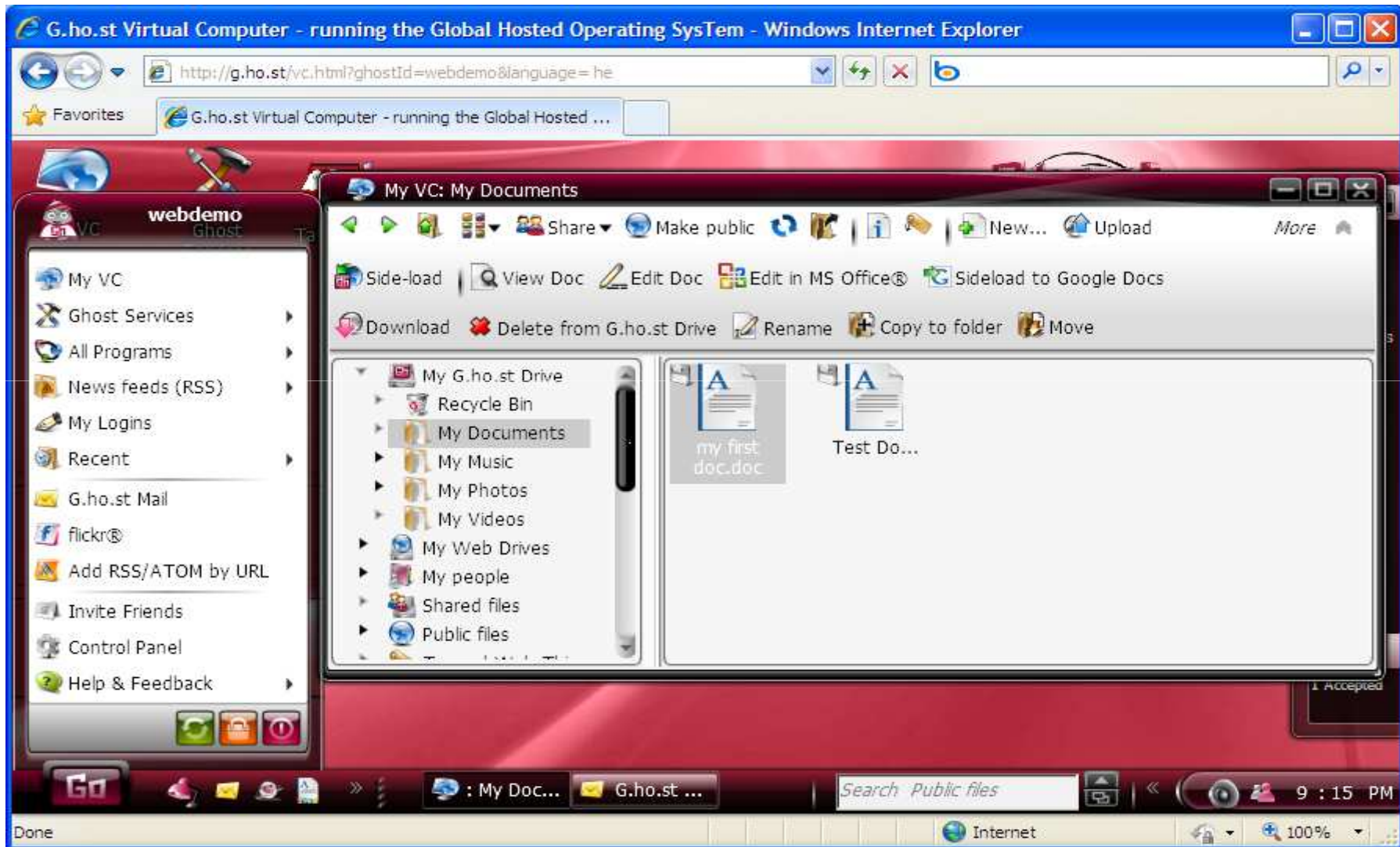
2007

After dozens of meetings attract a top tier
venture capital investor

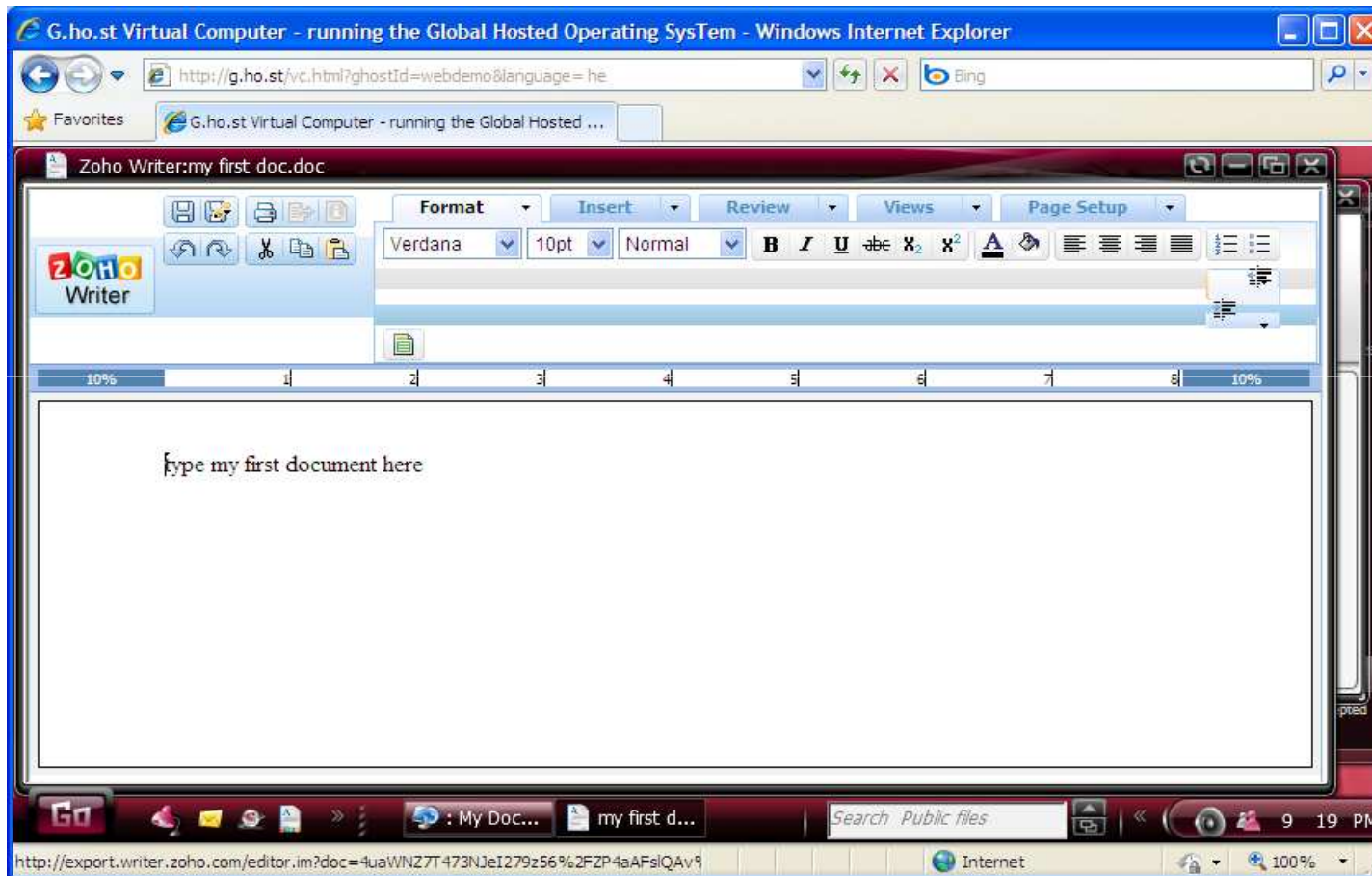
BENCHMARK

C A P I T A L

'alpha' Virtual Computer (VC) launched



Open integration to Zoho office suite and many other web apps



Early adopters of cloud – Amazon Web Services

- Rent servers by the hour \$0.10/server/hr
- Architecture of stateless servers allows adding/removing servers at will
- Beta customers of Amazon SimpleDB...



Revelation - awards/selections pile up



"I feel that I have just discovered the meaning of life when I found Ghost"
User gambit0



2008

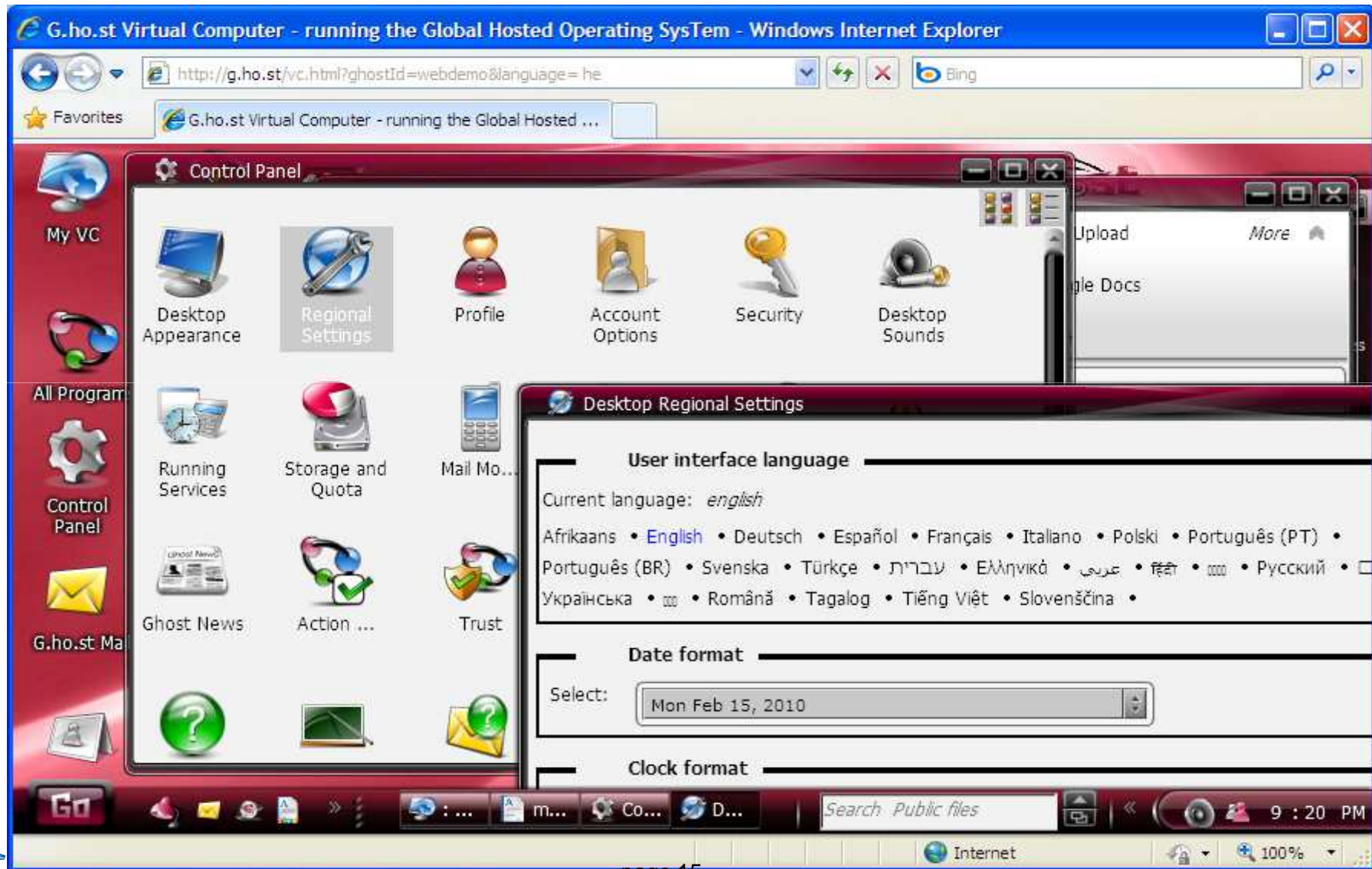
Trends are in our favor

- Web apps blossoming
- Multiple devices per person – netbooks, smartphones
- Younger users trust their data to their cloud like older users trust money to a bank
- We realize performance is a huge issue – users will not wait seconds – top R&D priority

Trends attracting many competitors...

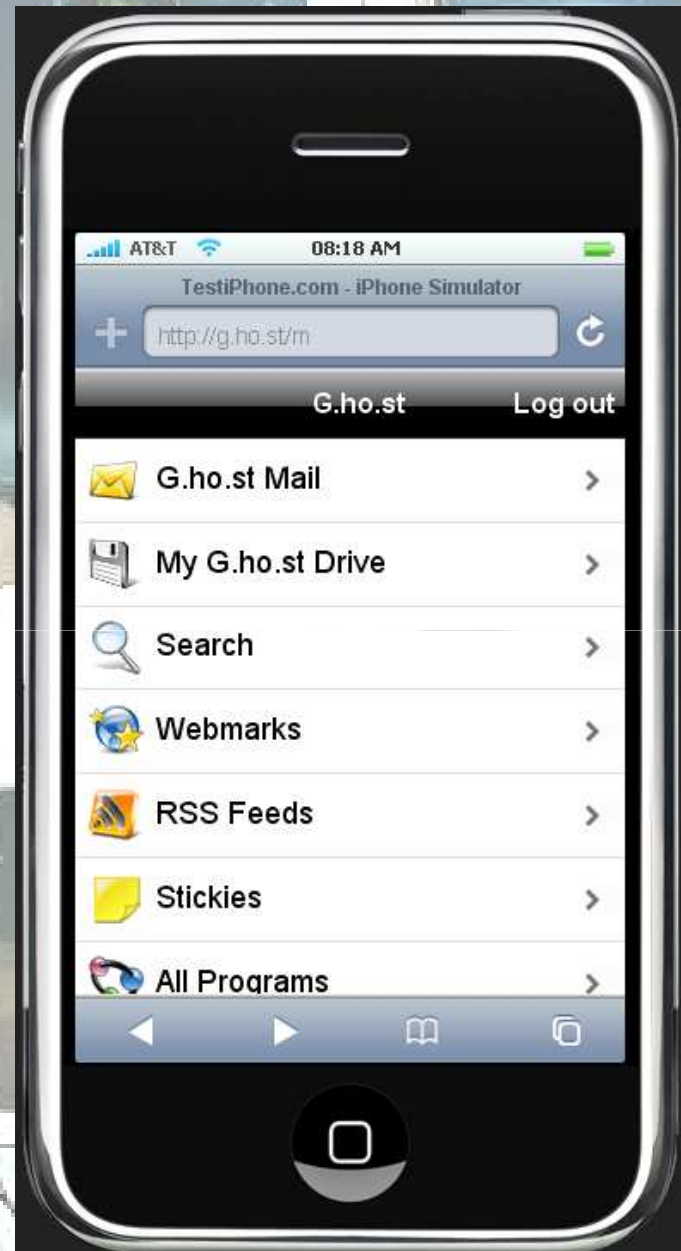
- Goowy, Cloudo, Xcerion CloudOS, DesktopTwo, YouOS, EyeOS, GlideOS...
- Some overlap with NetVibes, PageFlakes...
- ...but we maintain a leading position in terms of **open architecture** and **traffic**

Full personalization and internationalization



Mobile version follows

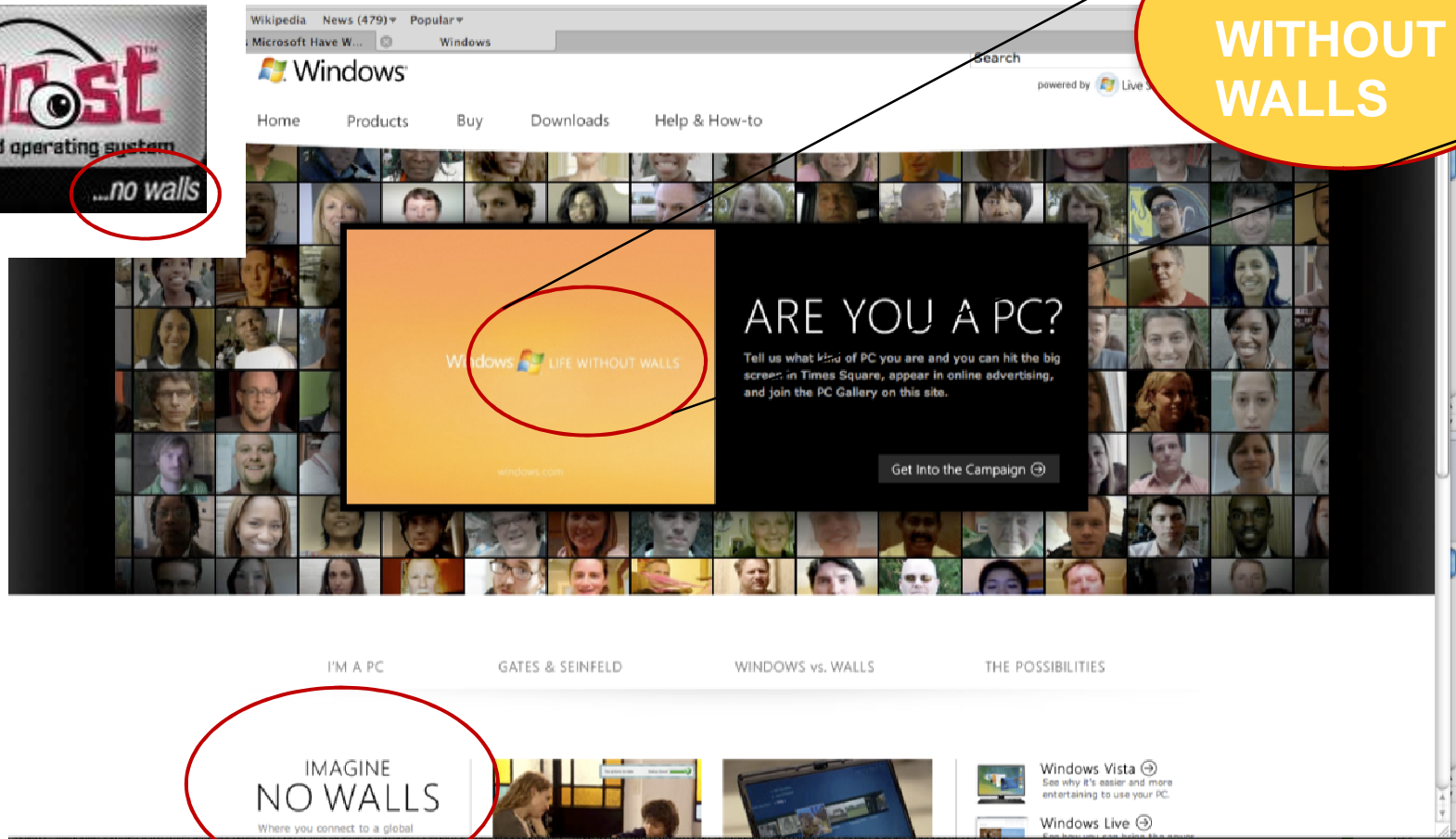
- Have to use plain HTML (WAP) as only way to support all handsets




Microsoft take our tag line trademark “No Walls”/Life Without Walls



LIFE WITHOUT WALLS



■ But too expensive to sue

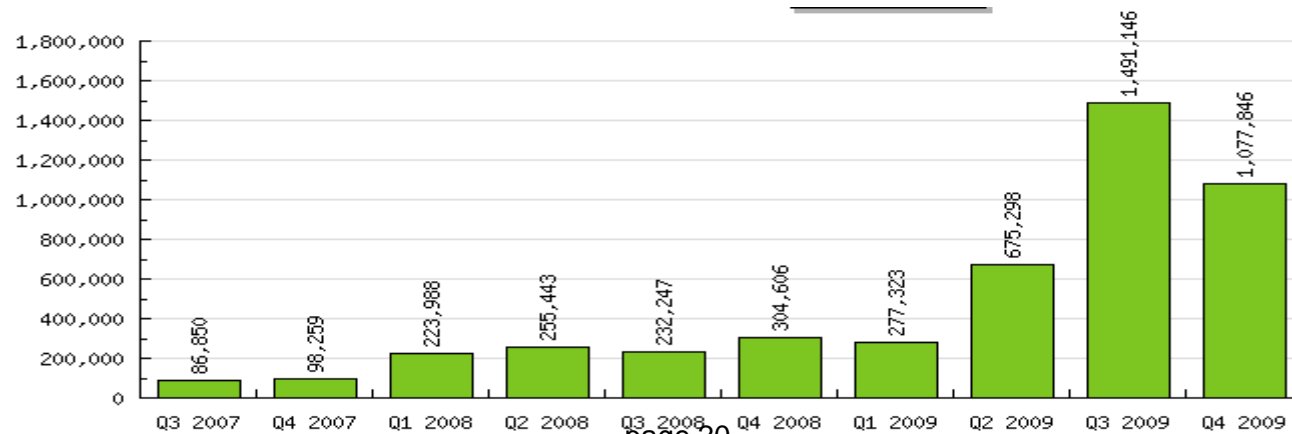
- 
- Recession forces downsizing...
 - Employees first hear from our Benchmark investor's blog!
 - Launch delayed waiting for high performance version and social features



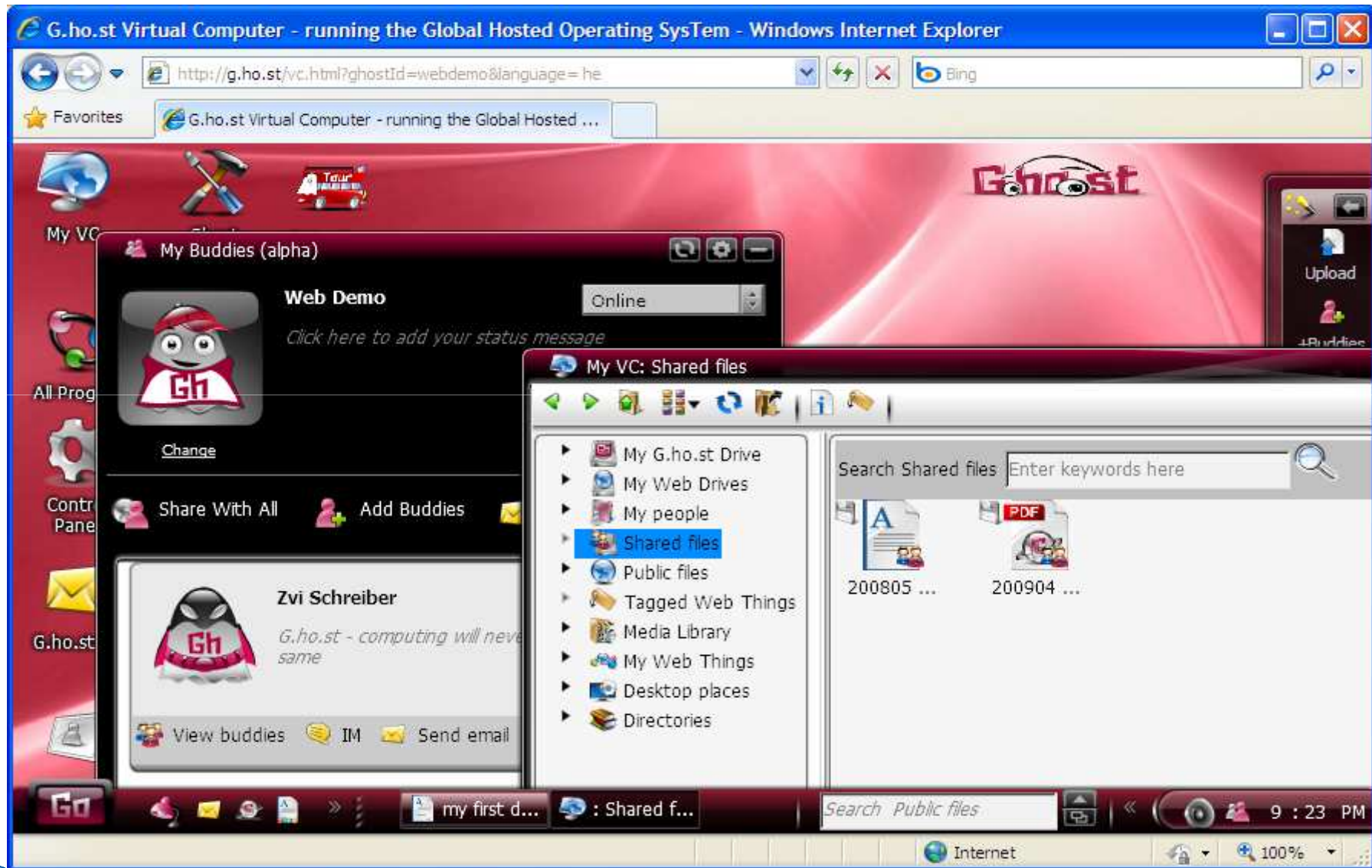
2009

Virality, performance, updated strategy

- We add a lot of **social features** like file sharing, integration with social networks
- Track **virality coefficient**
- But much-faster Web desktop not fast enough, too complex
- Users no longer want Windows-style desktop – work on light and fast “portal” style alternative
- Recession deepens
- Free to consumer not tenable – work on paid version



File sharing, buddies, IM, social networks



Technology stack grows

Web Desktop
OpenLaszlo/Flash

Portal & widgets
GWT

Mobile client
JSP/WAP

Offline: Sync
Java

Client
Server

Cloud file system
Webdav, ftp

Virtual file system

User management

Buddies, sharing, public

Social network integration

Web app integration and open directory

Virtual Web Database

Upload/download tools

User preferences & internationalization

Webmail integration

IM integration



Early adopters

Advantages and disadvantages

- Some 20 open source projects give us critical R&D shortcuts – never buy software
- No data center operations of our own
- **Amazon Amazon SimpleDB** roadmap changed – no promised scalability improvements
- OpenLaszlo a great shortcut to developing Flash/AJAX but **OpenLaszlo Flash 9** project a year late delaying our higher-speed launch
- Still grateful to these companies

Virtual Desktop Infrastructure (VDI) becomes a hot concept on the corporate side



*Hosted virtual desktop market
to surpass **\$65 Billion** in 2013!*

Gartner

Launch at separation wall with Tony Blair

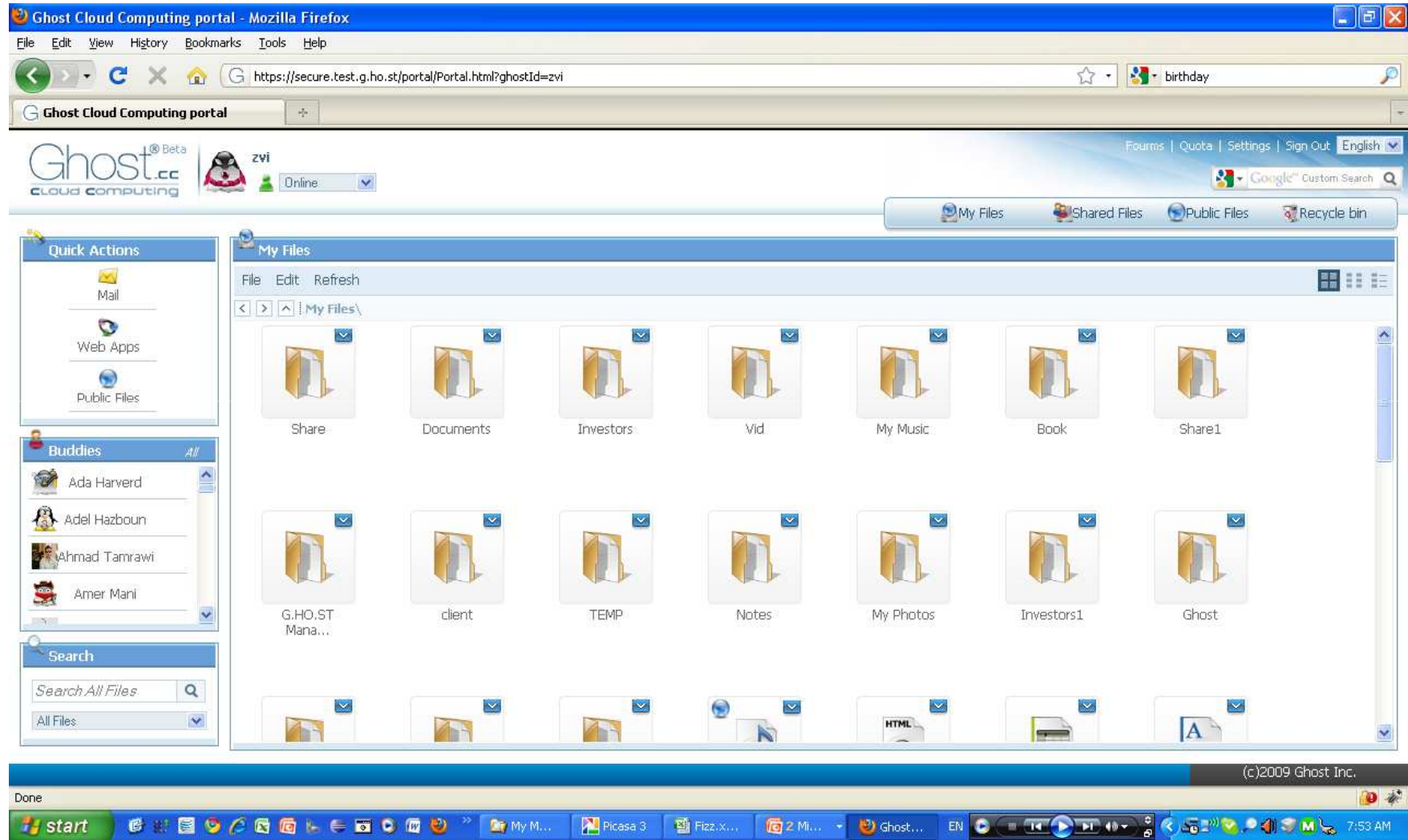
Publicity to promote Palestinian IT





2010

Launch fast light weight “portal” virtual computer



February 2010

- Launch our portal... ready with a business version, billing
- Start to market through telcos/ISPs
- Within days of launching our “portal” Google finally launch general file storage
- Price of \$0.025/GB/Month – we pay AWS \$0.15!!
- Many features such as Sync missing but... we can't compete with Google
- Ghost service closed yesterday

Google docs



Summary

- About a man-century of work
- \$6m
- One million lines of code
- Nine patent applications...
- 400k+ registered users in 20 languages
- Enjoyed every minute!



The future

- Ghost sells business to a bigger company competing in consumer or VDI?
- Consolidation continues around Google, Facebook – tough to be a startup
- Even the big successes struggle
Yahoo!, MySpace?,....
- Apple and HTML5 kill Flash?
- Google Apps & Chrome OS kill Windows?
 - Device independence; eliminate admin
 - I'm in!



Thanks