A Problem,
An Opportunity &
An Idea

Bryan Cantrill & MIke Shapiro
bmc@eng.sun.com
mws@eng.sun.com

Note

This presentation was originally prepared for Greg Papadopolous on December 6, 2005 as the pitch for the team that became Fishworks. Fishworks started on February 15, 2006 and the first Fishworks-based products – the Sun Storage 7110, 7210 and 7410 – shipped on November 10, 2008. This document is provided only for historical context, and may or may not relate to shipping Sun products.

Some parts of this presentation remain Sun Confidential and have been redacted.

The Problem

- Sun makes best-of-breed system *building blocks*, but we're not good at building integrated, turn-key systems
- "Appliance vendors" have come to dominate spaces that *we invented*
  - > e.g. ▮▮▮, ▮▮▮▮ (RIP), ▮▮▮▮, etc.
  - > In the $1.5B NAS market we have **0.3%** share!
- More generally, because of the IT expertise we require, we do *very poorly* in small-/medium-sized businesses

The Opportunity

- Appliance vendors are vulnerable:
  - > Not at all adapted for CMP
  - > Not positioned to exploit economics of 10 GigE
  - > Limited by smaller technology portfolios
- With Solaris 10, our best-of-breed building blocks just got a *lot* better:
  - > DTrace, ZFS, Predictive self-healing, Zones, etc.
- Our cost is only cost of integration; an appliance can be of such low cost as to:
  - > Disrupt the appliance vendors in enterprise space
  - > Open up higher growth, volume in SMB space

The Idea

- Form a group dedicated to using the technologies in Solaris 10 to build fully integrated, special-purpose systems
- Advantages over the competition:
  - > Order of magnitude better price/performance
  - > Order of magnitude better management: allow *many* appliances to be managed *easily* and *coherently* – <u>a turn-key distributed system</u>
  - > ...all with *unparalleled* reliability
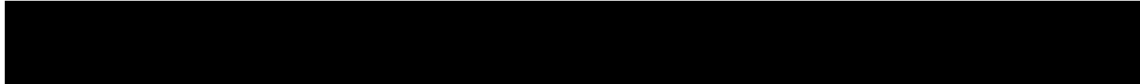- Not just *one* product or product line – a foundation for a *suite* of product lines

The Initial Product

- NAS is one obvious initial target market
- Market leader ███████ is vulnerable:
  > They don't scale – with either CPUs/cores *or* networking bandwidth – and scaling will require a complete rewrite of their stack
  > Managing N ██████ requires N times the effort
  > ████████ is incredibly expensive
  > ████████ has never been disrupted
- With ZFS + ███████████████████ + 10 GigE + ██████████ + iSCSI + DTrace + Solaris 10 + special sauce, *we can crush* ████████

The Possibilities

- Much of the effort to build a single appliance will be entirely reusable
- Possibilities beyond NAS include:
  - > IPsec VPN appliance
  - > SunRay server appliance
  - > Identity appliance
  - > SQL appliance
- Common infrastructure will allow Sun appliances to be integrated seamlessly, managed coherently – plug 'n go!

The Details

- Novel domain requires novel structure:
  - > ████████████████████████████
  - > Must be done *quietly*, *intensely* and *remotely* – we will need our own (anonymous) space
  - > Small, elite team is most effective: we need five top generalists (us plus three others)
  - > Emphasis will be on quickly generating customer-ready prototypes – we have a long track record of delivering high quality software on-time

- Jaw-dropping prototype in nine months, world-beating product in eighteen

The Ethos

- No special-purpose hardware – we will develop only software
  - > Zero additional cost of manufacturing
  - > Retain maximum flexibility to pick best hardware for a given task at a given time and price-point
- Balance software component *reuse*, *acquisition*, and *development*
- Always design for *N*, not for *one*
- *Self*-configuring, *self*-tuning, *self*-healing
- Design for *people*, not for *nerds*

A Problem, An Opportunity & An Idea

Bryan Cantrill & MIke Shapiro
bmc@eng.sun.com
mws@eng.sun.com