Cray Product Line - OS Update

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Product Line - OS Overview Preview

- **Legacy support status**
- **Cray UNICOS/mp heritage**
- **Cray SV2 hardware summary**
- **UNICOS/mp status & features**
- **UNICOS/mp expectations**
- **OS futures**

UNICOS 10.0.1.1
Legacy PVPs (May 10, 2002)

- **Cray SV1ex fixes**
- **Support for UNICOS under UNICOS on Cray SV1ex**
- **Support for network I/O including raw HIPPI on GigaRings with SSD accessibility.**
- **Support for 224GB SSD on Cray SV1ex**
- **Enhanced HIPPI protocol**
  - **TCP/IP rates with new protocol:**
    - **Single-Stream - 600 Mb/s   (75 MB/s)**
    - **Multi-Stream   - 720-760 Mb/s   (90-95 MB/s)**

UNICOS/mk 2.0.6
Cray T3E (Feb. 26, 2002)

- Mini-launch on Restart (improves system throughput)
- /etc/swapper command (displays system-wide swap activity)
- NFS Performance Improvements
- DD-331 Disk Support
- STK 9940 Escon and SCSI Tape Support
- STK 9840 Fibre Channel Tape Support via Crossroads 8000 Router
- Last planned major release

Veridian's PBS Pro

- **Preferred batch system.**
- **James Patton Jones is here from Veridian**
- **Considering Migration Pricing for NQE Customers**
- **PBS Pro 5.2 shipping with Cray CIT packages in July for Cray SV1, Cray T3E, Cray T90 systems**
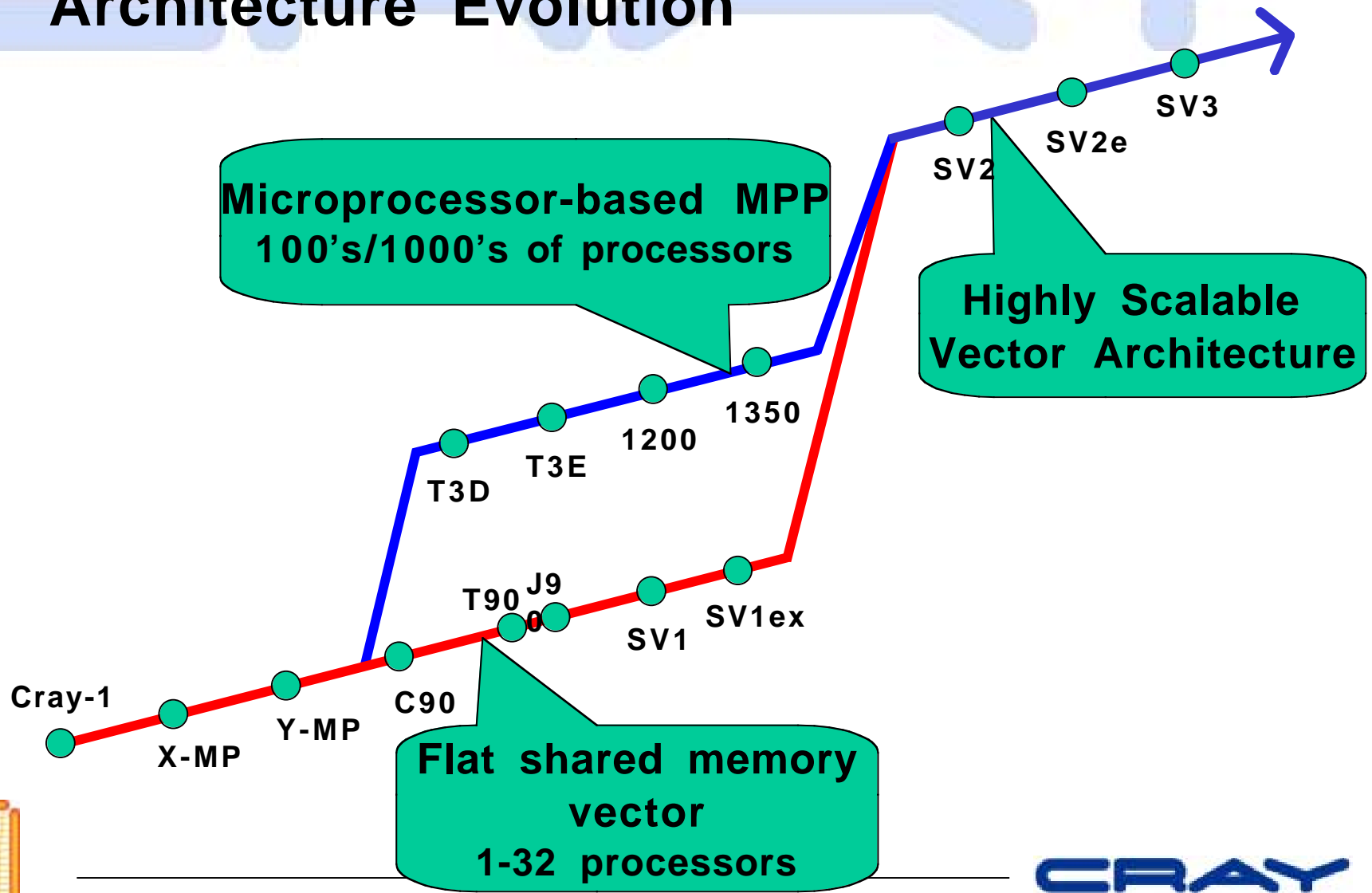- **Cray J90 & Cray C90 thru Professional Services.**
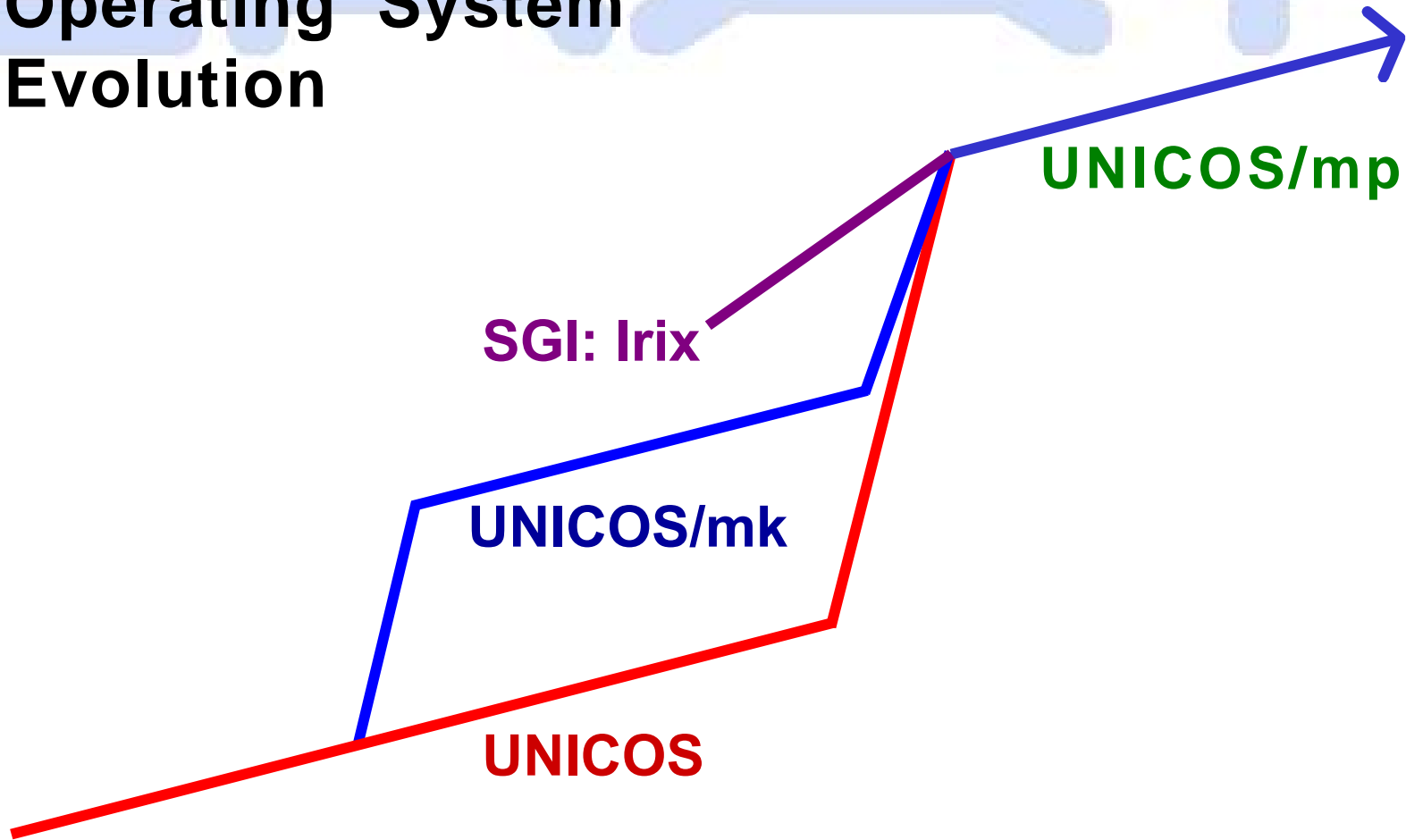
Cray Open Source (COS)

- **COS 3.0 (April 17, 2002)**
  - New OpenSSH (3.0.2)
  - diffutils, findutils, sh-utils, make, tar, gawk, less
  - automake, cvs, gnuplot, patch, vim

- **Support levels now categorized**
  - Fully supported by Cray
  - Partially supported (accept SPRs, address some)
  - Unsupported (accept SPRs, probably don't answer)

- **Source - Binary packages available to reduce build time at sites (Cray J90, Cray SV1, Cray T90, Cray T3E and Cray SV2 systems)**
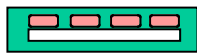
Cray Supercomputer Architecture Evolution

Microprocessor-based MPP
100's/1000's of processors

SV2

SV2e

SV3

Highly Scalable
Vector Architecture

1350

1200

T3E

T3D

T90

J90

SV1

SV1ex

Cray-1

X-MP

Y-MP

C90

Flat shared memory
vector
1-32 processors

CRAY

Cray Supercomputer Operating System Evolution

UNICOS/mp

SGI: Irix

UNICOS/mk

UNICOS

Cray SV2 Hardware Summary

UNICOS/mk-like
distributed OS:

**Application
nodes**

**System
nodes**

256 MSP SV2
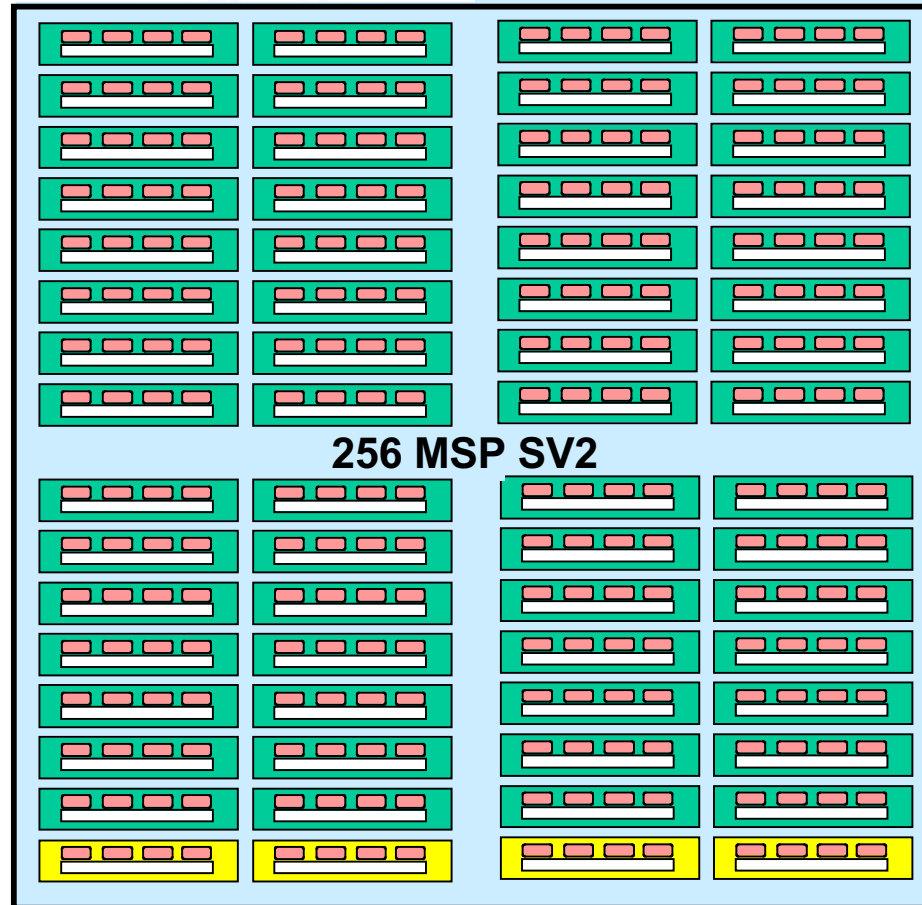
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Cray UNICOS/mp Status

- **16 MSP system running batch daily**
- **Delivering 5 Early Production Systems in 3rd Quarter**
- **Delivering Pilot System end-of-year**
- **Generally available 2003**

UNICOS/mp Features

- **XFS Local File System from SGI**

- **NFSv3 Support**

- **POSIX Commands & Utilities**

- **Batch Subsystem (PBS Pro)**

- **Checkpoint/Restart (initiated by user command, operator command or signal)**

UNICOS/mp Features (cont.)

- **TCP/IP Support, including OpenSSH**
- **Administrative Support**
  - **NIS, DNS, Kerberos (AHPCC), sar**
  - **System dump and analysis utilities**
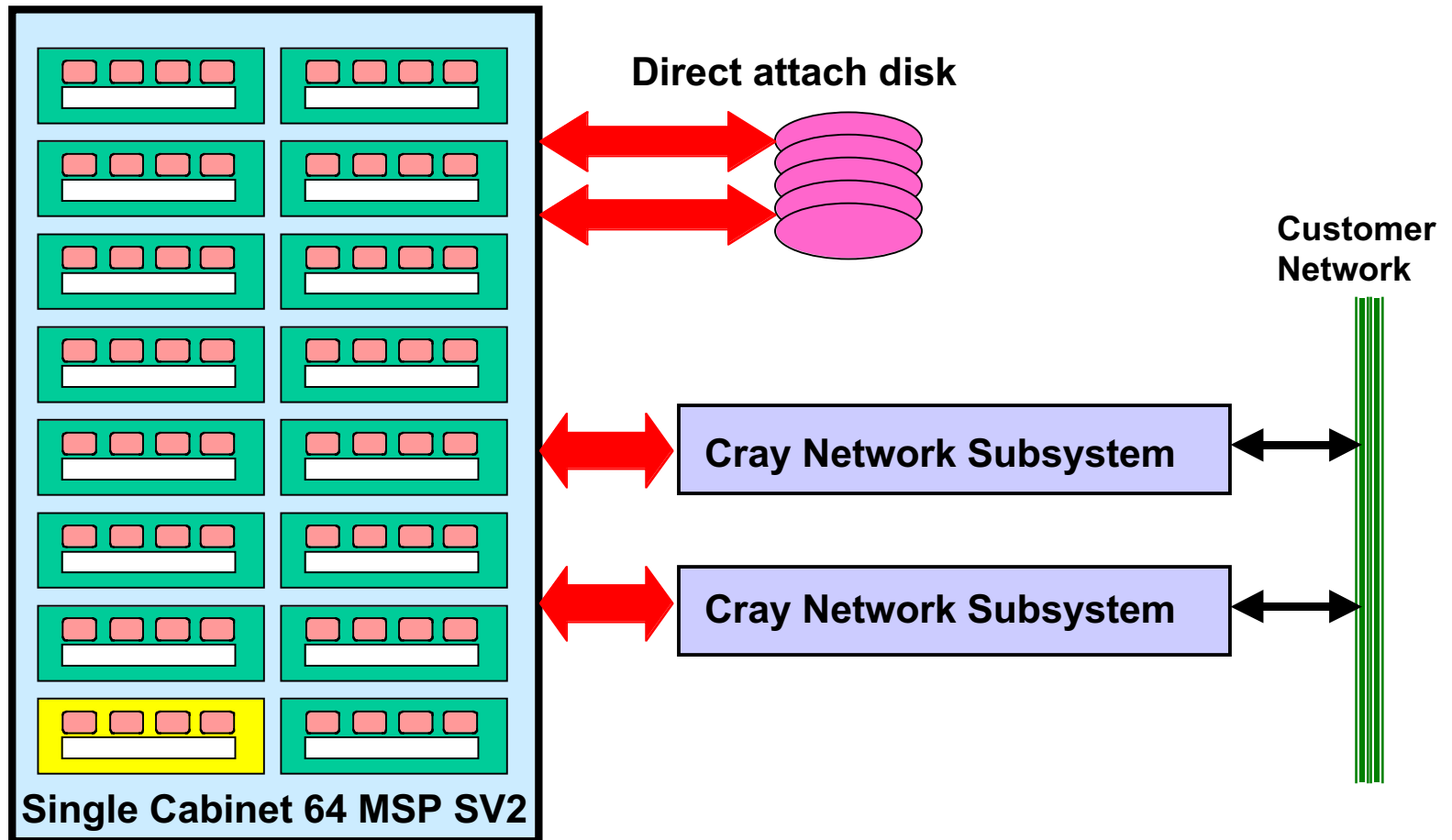- **Process limits**
- **Accounting**

UNICOS/mp Features (cont.)

- **Process scheduling**
  - **4th Generation of scheduler**
  - **Stephan Gipp presentation**
    - **Today, following this presentation**
    - **This room**

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Cray SV2 I/O Summary

Direct attach disk

Customer Network

Cray Network Subsystem

Cray Network Subsystem

Single Cabinet 64 MSP SV2

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Cray I/O

- **Cray SV2 I/O strategy and status**
  - **Paul Krueger**
  - **Friday, 11:00   Room 6A (this room)**

- **Communication and Mass Storage Futures**
  - **Paul Krueger & Steve Johnson**
  - **Friday, 10:30   Room 6A (this room)**
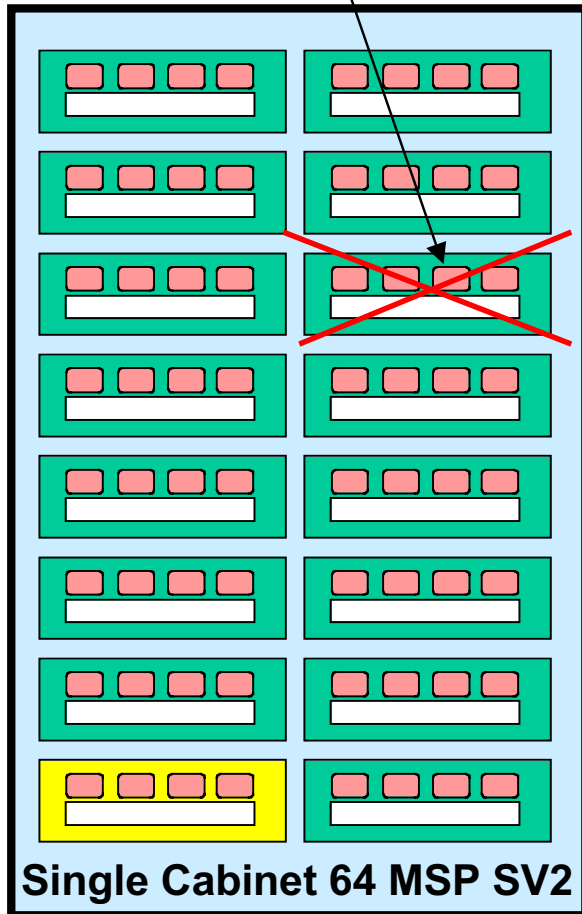
Cray UNICOS/mp
Future Expectations

- **Reliability**
- **Resiliency**
  - **Tolerate IO failures**
  - **Tolerate Node failures**
  - **Scaling to 1000's of nodes**
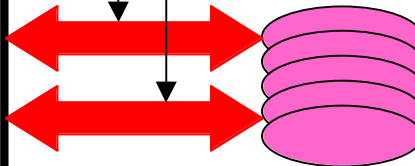- **Performance**
- **Compatibility**
  - **UNICOS**
  - **Open source**

Cray SV2 Resiliency

Tolerate Single Application Node Failure

Alternate Path Support

Direct attach disk

Customer Network

Cray Network Subsystem

Cray Network Subsystem

Tolerate CNS Failures

Single Cabinet 64 MSP SV2

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Product Line - OS Futures

- **Leveraging open source**
- **Partnering**
  - Some struggles
  - Some take a large business case to justify
- **Internal development**
  - Performance
  - Reliability

- **Software Survey: Janet Lebens**
  - Today: 4:45 Room 4B

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