

4725 Denevi Drive,
San Jose, CA 9513

MURALI VILAYANNUR

<https://www.linkedin.com/in/murali-vilayannur-8792472>
<https://github.com/mnv104>

(C):(630) 814-9052
(H):(630) 748-0057

EMPLOYMENT

Senior Technical Director **PernixData, Inc.** **Mar 2012 - Current**

- Founding engineer and lead architect at this start-up that delivers a distributed scale out software storage tier to complement a capacity tier of storage.
- Designed, architected and implemented large portions of the FVP software stack to accelerate virtual machine I/O performance using RAM and direct-attached flash resources on ESXi hypervisor.
- Immense contribution to the company's IP portfolio and filed several patents and a paper at a reputed storage conference.

Senior Staff Engineer **VMware, Inc.** **Oct 2006 – Feb 2012**

- Senior Technical Lead of the hypervisor storage team with a consistent track record of delivering key technical solutions and features like VMFS5 file system & space efficient desktop virtual disk format across multiple ESX releases.
- Designed, proposed and implemented several innovations that led to patents and publications at prestigious academic conferences.
- Mentored several interns on advanced development projects that also contributed to the company's IP portfolio.

Postdoctoral Staff **Argonne National Laboratory** **Jun 2005 – Sep 2006**

- Co-designed, implemented and developed two generations of a popularly used open-source parallel file-system for Linux clusters (PVFS versions 1 and 2).

EDUCATION

The Pennsylvania State University **State College, PA** **Aug 1999 – May 2005**

- Ph.D. in Computer Science & Engg.

IIT-Varanasi **Varanasi** **Jul 1995 – May 1999**

- B.Tech in Computer Science & Engg.

SELECTED PATENTS

- Computer Storage Deduplication with Jinyuan Li, Irfan Ahmad and Austin Clements
- Consistent unmapping of application data in presence of concurrent unquiesced writers and readers with Fraz Shaikh, Satyam Vaghani and Kiran Joshi
- Hybrid Locking Using Network and On-Disk Based Schemes with Jinyuan Li, Mayank Rawat, and Dan Scales
- File system introspection and Defragmentable Virtual Disk format for space efficiency with Satyam Vaghani, Krishna Yadappanavar, Manjunath Rajasekar, and Faraz Shaikh
- In-place snapshots of a virtual disk configured with sparse extents with Krishna Yadappanavar and Faraz Shaikh
- Avoiding physical fragmentation in a virtualized storage environment with Faraz Shaikh
- Configuration-Less Network Locking Infrastructure for Shared File Systems with Jinyuan Li and Mayank Rawat
- Improvements to a System Automatically Optimizing capacity between clusters of hosts with Irfan Ahmad, Jinyuan Li, Austin Clements and Carl Waldspurger
- Optimistic Input/Output operations for clustered file-systems with Satyam Vaghani
- Performing online, in-place upgrade of cluster file system with Jinyuan Li, Mayank Rawat and Satyam Vaghani
- Method and System for ensuring cache coherence of meta-data in clustered file system with Satyam Vaghani and Jinyuan Li

- Distributed Data Movement with Mayank Rawat, Jinyuan Li, and Chris Frost
- Enforced Correct Ordering of Unmap and write commands at disk level for safe reclamation with Faraz Shaikh, Satyam Vaghani and Kiran Joshi
- AWO: Modular Analysis Layer for Storage Workloads with Ali Mashtizadeh and Ricardo Koller

Selected Publications

- Deepavali Bhagwat, Mahesh Patil, Michal Ostrowski, Murali Vilayannur, Woon Jung, Chethan Kumar. A practical implementation of clustered fault tolerant write acceleration in a virtualized environment, 13th USENIX Conference on File and Storage Technologies (**FAST 15**).
- Philip Carns, Sam Lang, Robert Ross, Murali Vilayannur, Julian Kunkel, Thomas Ludwig. Small File Access in Parallel File Systems, IEEE International Parallel and Distributed Processing Symposium, (**IPDPS'09**).
- Austin Clements, Irfan Ahmad, Murali Vilayannur, Jinyuan Li. Decentralized Deduplication in SAN Cluster File Systems, Proceedings of the 2009 Annual USENIX Technical Conference, (**USENIX ATC'09**).
- Murali Vilayannur, Partho Nath, Anand Sivasubramaniam. Providing Tunable Consistency for a Parallel File Store, Proceedings of the Fourth USENIX Conference on File and Storage Technologies, (**FAST'05**).

Languages and Technologies

- C/C++: Expert/proficient
- Python/Java: Basic familiarity
- Other tools: MPI, Matlab, bash, sed, VMware suite of tools