LA-UR-15-25102
Approved for public release; distribution is unlimited.

Title: HPC National Leadership and Collaborative Roles

Author(s): Rheinheimer, Randal E.

Intended for: Advertising

Issued: 2015-07-08

HPC National Leadership and Collaborative Roles

Los Alamos NATIONAL LABORATORY EST. 1943

Current National Leadership

Co-lead for DOE Exascale Data Management Nexus

•Authoring DOE National Exascale Computing Initiative plan

•Coordination of Exascale related activities in the area Data Management, Storage, and I/O including DOE Fast Forward technology creation projects in industry.

Membership in the Exascale OS Research council

Membership in the Exascale Resilient computing council

Past National Leadership

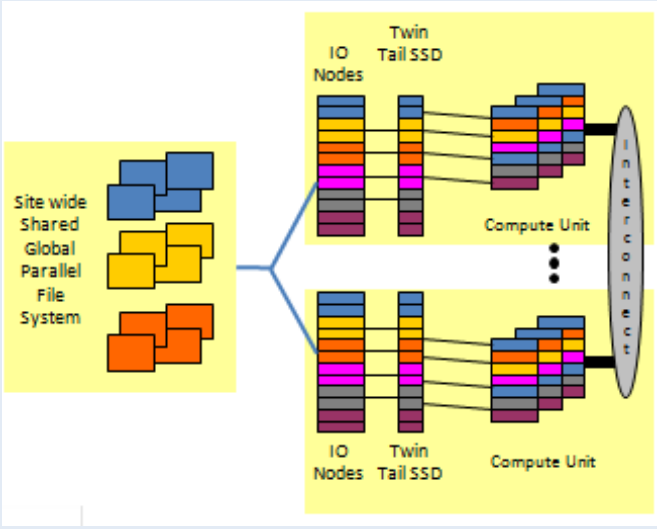
•National Leadership of the US Govt High End Computing Inter-Agency Working Group on File Systems and IO (HECIWG/HECFSIO), coordinating govt investments in research in HECFSIO area from DOE, DOD, and NSF

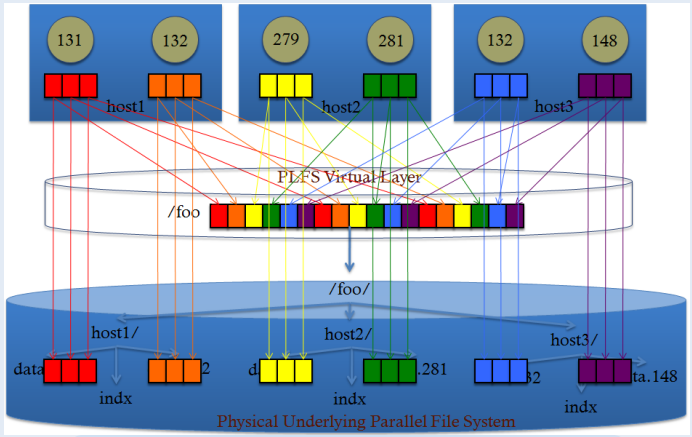
•DOE NNSA National Data Storage leadership since 1997

Industry Accomplishments

•EMC CRADA to enhance Parallel Log Structured File System (PLFS), Burst Buffer technology, and Multi-Dimensional Hierarchical Index Middleware (MDHIM) resulting in technology use in EMC products and DOE Exascale Storage Fast Forward Project

Burst Buffer and PLFS





Point of Contact: *(Gary Grider, HPC, ggrider@lanl.gov)*

University Accomplishments

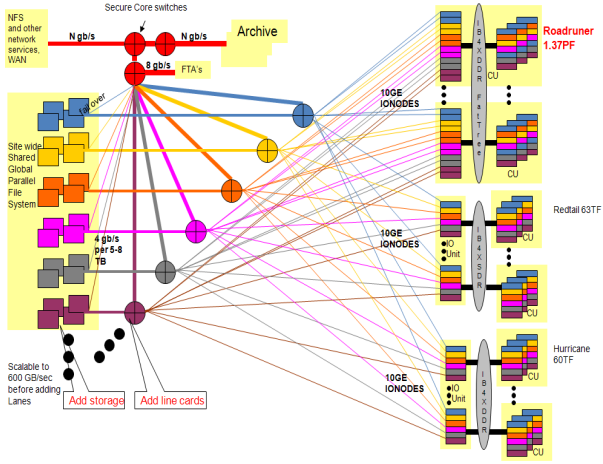
•UCSC: Initial project which eventually became what is now CEPH, owned by RedHat as a cloudscale object storage system

•U Michigan: Initial project to add many features to NFSv4 including inventing parallel NFS pNFS offered by many data storage related companies.

•CMU: Collaborator on Parallel Log Structured File System, a technology being used in EMC products and part of the DOE Exascale Storage Fast Forward technology development effort

Parallel Scalable Back Bone

•First to design and deploy Parallel Scalable Back Bone (PaScalBB) network for global sharing of parallel file system to many large supercomputing clusters



HPC National Leadership and Collaborative Roles

Los Alamos NATIONAL LABORATORY EST. 1943

CONTACT INFORMATION

Please list the following contacts for the penta chart.

PI: Gary Grider

Co PI(s):

Responsible Group: HPC-DO

Division POC: Gary Grider

Derivative Classifier: DUSA

Note: The recommended Division POC will be listed as the POC on the penta chart.

DISTRIBUTION RESTRICTIONS

Please select any known unclassified sensitive information that may be contained in your penta chart. If there are no sensitivities select "None" and recommend your penta chart receive an LAUR number.

Official Use Only (OUO) – Statutory

___ Export Controlled (ECI)

___ ECI – International Traffic and Arms Regulations (ITAR)

___ CRADA Protected Information

___ Company Proprietary

Official Use Only (OUO) - Discretionary

___ Program/Sponsor Sensitive

LANS Proprietary Information (LPI)

___ Patent Sensitive

___ Competition/Proposal Sensitive

Procurement/Technology Transfer

None X

Penta chart does not contain any sensitive unclassified information and should be released for public distribution (LAUR)

Note: If your penta chart contains unclassified sensitive information please make sure it is marked appropriately.

If your penta chart contains OUO information, please use the appropriate OUO template (including cover sheet).

*Penta charts **cannot contain UCNI or classified information***

SPONSOR INFORMATION

Current Sponsor(s):
Please select current sponsors that are funding development of the technology/capability described in your penta chart.

___ ARPA-E	___ DTRA
___ CDC	___ EPA
___ DARPA	___ Industry
___ DHS	___ LDRD
___ DOD	___ NASA
___ DOE/EERE	___ NIH
___ DOE/EPSCoR	___ NSF
___ DOE/FE	___ ONR
___ DOE/NE	___ University
___ DOE/OSC	___ USDA
_X_ DOE – Other	___ Other
___ DoS	

Previous Sponsor(s):
Please select previous sponsors that have funded development of the technology/capability described in your penta chart.

___ ARPA-E	___ DTRA
___ CDC	___ EPA
___ DARPA	___ Industry
___ DHS	___ LDRD
___ DOD	___ NASA
___ DOE/EERE	___ NIH
___ DOE/EPSCoR	___ NSF
___ DOE/FE	___ ONR
___ DOE/NE	___ University
___ DOE/OSC	___ USDA
___ DOE – Other	___ Other
___ DoS	

Do NOT specify a specific sponsor if doing so will make this slide deck classified.

LDRD FUNDING

Please specify if the technology/capability described in your penta chart was the result of LDRD funding.

Resulted from LDRD Funded: Yes / No NO

LDRD innovation for our nation

If "Yes", under which LDRD project(s) was the technology/ capability developed?

LDRD Project Number:

LDRD Project Name:

If "No" please delete the LDRD logo before submitting your penta chart

HPC National Leadership and Collaborative Roles

Los Alamos NATIONAL LABORATORY EST. 1943

CAPABILITY AREAS

Please select the most relevant LANL capability area(s) for the technology/capability described in your penta chart. *(Select a maximum of 4)*

- ___ Accelerators and Electrodynamics
- ___ Astrophysics and Cosmology
- ___ Biosciences
- ___ Chemical Science
- ___ Computational Physics and Applied Math
- _X_ Computer and Computational Sciences
- ___ Earth and Space Sciences
- ___ Engineering
- ___ High-Energy Density Plasmas and Fluids
- ___ Information Science and Technology
- ___ Materials
- ___ Nuclear and Particle Physics
- ___ Nuclear Engineering and Technology
- ___ Science of Signatures - In Situ Measurements
- ___ Science of Signatures - Remote and Standoff Sensing

APPLICATION SPACE

Please select the most relevant application space(s) for the technology/capability described in your penta chart. *(Select a maximum of 4)*

- ___ Advanced Manufacturing
- ___ Aerospace
- ___ Automotive & Transportation
- ___ Bio/Medical
- ___ Climate & Meteorology
- ___ Communications
- ___ Energy – Non Nuclear
- ___ Energy – Nuclear
- ___ Engineering, Electronics & Instrumentation
- ___ Explosives & Explosives Detection
- ___ Forensics
- _X_ Information Technology
- ___ Infrastructure & Infrastructure Systems
- _X_ Large Data to Decision
- ___ National Security (DoD, DHS, etc.)
- ___ Persistent Surveillance
- ___ Sensors & Sensor Technology
- ___ Space & Astronomy
- ___ Warfighter Support
- ___ Other

LANL PROGRAM OFFICE(S)

Primary LANL Program Office:
Please select the (one) most appropriate LANL Program Office for representing the technology/capability described in your penta chart.

Global Security (GS):

- ___ Emerging Threats (GS-ET)
- _X_ Feynman Center for Innovation (FCI) – Industry/Non-Federal
- ___ FCI – Other Federal Government (DHHS, NIH, Commerce)
- ___ Intelligence Defense & Counterterrorism (GS-IDC)
- ___ Nuclear Nonproliferation and Security (GS-NNS)

Science, Technology & Engineering:

- ___ Advanced Computing Solutions Program Office (ACS-PO)
- ___ National Security Education Center (NSEC)

Science & Energy Program Office (SPO):

- ___ Applied Energy (SPO-AE)
- ___ Civilian Nuclear Program (SPO-CNP)
- ___ Office of Science (SPO-SC)

Other Programs:

- _X_ Advanced Simulation & Computing Program (ASC)
- ___ Joint Munitions Program (JMP)
- ___ Other

Affiliate LANL Program Office(s):
Please select other appropriate LANL Program Offices for representing the technology/capability described in your penta chart. *(Select a maximum of 3)*

Global Security (GS):

- ___ Emerging Threats (GS-ET)
- ___ Feynman Center for Innovation (FCI) – Industry/Non-Federal
- ___ FCI – Other Federal Government (DHHS, NIH, Commerce)
- _X_ Intelligence Defense & Counterterrorism (GS-IDC)
- ___ Nuclear Nonproliferation and Security (GS-NNS)

Science, Technology & Engineering:

- ___ Advanced Computing Solutions Program Office (ACS-PO)
- ___ National Security Education Center (NSEC)

Science & Energy Program Office (SPO):

- ___ Applied Energy (SPO-AE)
- ___ Civilian Nuclear Program (SPO-CNP)
- ___ Office of Science (SPO-SC)

Other Programs:

- _X_ Advanced Simulation & Computing Program (ASC)
- ___ Joint Munitions Program (JMP)
- ___ Other

HPC National Leadership and Collaborative Roles

Los Alamos NATIONAL LABORATORY EST. 1943

KEY WORDS

Please list keywords that will help people search for your penta chart.

Key Words: LANL Computer Science Data Storage Network Research Capabilities

RELEVANT LANL SCIENCE PILLARS

Please identify if the technology/capability described in your penta chart is relevant to any of the LANL Science Pillars.

___ Materials for the Future

_X_ Information Science & Technology for Prediction

___ Nuclear and Particle Futures

___ Science of Signatures

NOTES

Please provide notes for any additional guidance LANL staff should know prior to distributing or presenting this penta chart. Include notes regarding previous interactions with sponsors and feedback previous sponsors have provided.

Notes/Distribution Guidance: