HPSS Deployment & Support

HUF 2017

Deployment & Support Team

Project Managers

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Deployment & Support Reps

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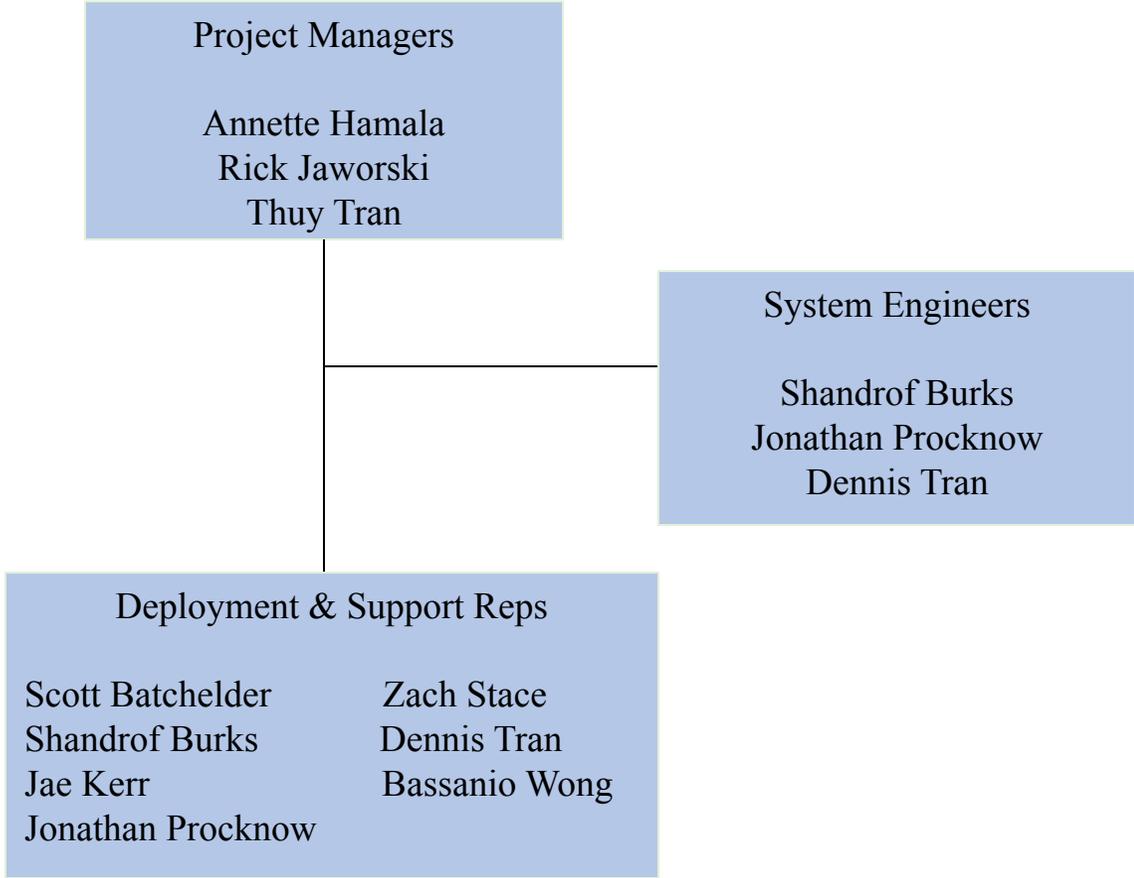
Roles and Responsibilities

Role	Responsibilities
Project Manager	Overall responsibility of solution, customer satisfaction, schedule, budgets for life of contract.
System Engineer	"Cradle to Grave" ownership of the technical solution. Starts with work products from the proposal. Oversight of solution (hardware, software, networks) through Production Readiness Review (PRR).
Deployment	Responsible for requirements analysis, installation, configuration, and testing of HPSS Software through Production Readiness Review.
Support	Post-Production Readiness Review L1 and L2 technical support of HPSS SW. Main customer focal point and post-deployment customer satisfaction.

New Deployments in 2017

- Shared Services Canada
  - Deployed HPSS across 2 data halls
  - First HPSS system on IBM POWER8 S822L
  - Disk cache on IBM DCS3860
  - Metadata on IBM V3700
  - RHEL 7 operating system
  - HPSS 7.5.1p1 with E2EDI solution using File Hash and LBP on every file
  - VFS interface with checksum on some of the mount points
  - Quaid tool used to stage data to HPSS disk cache
  - HADR implementation with a Core server in each data hall
  - Mover failover for disk mover pairs
  - Dual copy data split across the data halls
  - Full operations in August after completing a 30-day solution acceptance period
  - 50PB data migration from StorNext to HPSS is in progress

New Deployments in 2017

- LaRC ASDC
  - 1 HPSS system; 1 GHI instance
  - HPSS Core on Dell 580
  - Movers, VFS, and GHI IOMs/Session Nodes are a combination of HP DL580 and DL360
  - Disk cache and Metadata disk on EMC VMXE 1600
  - VFS interface to Bacula (backup and recovery tool)
  - Oracle 8500 tape libraries, a mix of LTO-4 and LTO-6
  - HPSS 7.4.3p2 and GHI 2.5p2
  - HPSS and GHI testing completed in May
  - Production date set by ASDC as early November

New Deployments in 2017

- MaxPlanck
  - GHI #6 (GHI 2.5p1)
  - GHI #7 (GHI 2.5p1)

- ANL
  - GHI #2 – testing with GHI 3.0.0, plan to be in production October/November

Upgrades with Hardware Refresh

- Undisclosed Customer
    - Replaced Lenovo x3755 M3 Core server with HP DL380
    - Replaced Lenovo x3650 M3 Movers with HP DL380
    - Replaced IBM DS3512 disk cache with IBM V5030 and doubled the size of disk cache
    - Replaced IBM DS3524 Metadata storage with IBM V5030
    - Upgraded TS1140 drives to TS1150 and added more TS1150 drives
    - Upgraded to RHEL 6.8
    - Implemented manual failover for Core, Movers, and Remote PVR
    - Upgraded from HPSS 7.4.3p2 to 7.5.1p1 utilizing TOR and Quaid (to batch stages)
    - Production in June

Upgrades with Hardware Refresh

- SciNet – in progress
  - o Replaced Lenovo x3850 X5 Core server with Dell PowerEdge R730xd
  - o Replaced Lenovo x3650 M3 Movers with Dell PowerEdge R730xd
  - o Replaced Lenovo x3850 VFS with Dell PowerEdge R730xd; DSI/HSI/SME gateways are also Dell PowerEdge machines
  - o Replaced IBM DS5300 disk cache with Dell MD3460; also increased capacity from ~165TB to ~745TB
  - o Replaced IBM DS3524 Metadata storage with Dell NVMe storage within the Core server
  - o Replaced single 10 gigabit network with a bonded 40 gigabit network
  - o Upgraded from HPSS 7.4.3p3 to 7.5.1
  - o Planned production after the HUF

Upgrades (software only) in 2017

- NCAR from HPSS 7.3.3p9a to 7.4.3p2e2

- IN2P3 from HPSS 4.2.1p1 to 7.4.3p2e2

- LaRC from HPSS 7.3.3p2 to 7.3.3p9

- MaxPlanck from GHI 2.5p1 to GHI 2.5p2 for GHI #1 system

- ANL from GHI 2.4p1 to GHI 3.0 for GHI #1 system, production planned for Nov/Dec

- Purdue implemented HADR

HPSS & GHI Versions in the Field

- Current HPSS production instances (37), not including DOE labs

	HPSS 7.5.1	HPSS 7.4.3	HPSS 7.4.2	HPSS 7.4.1	HPSS 7.3.3
Number of Instances	2	25	5	0	5

- Current GHI production instances (11), not including DOE labs

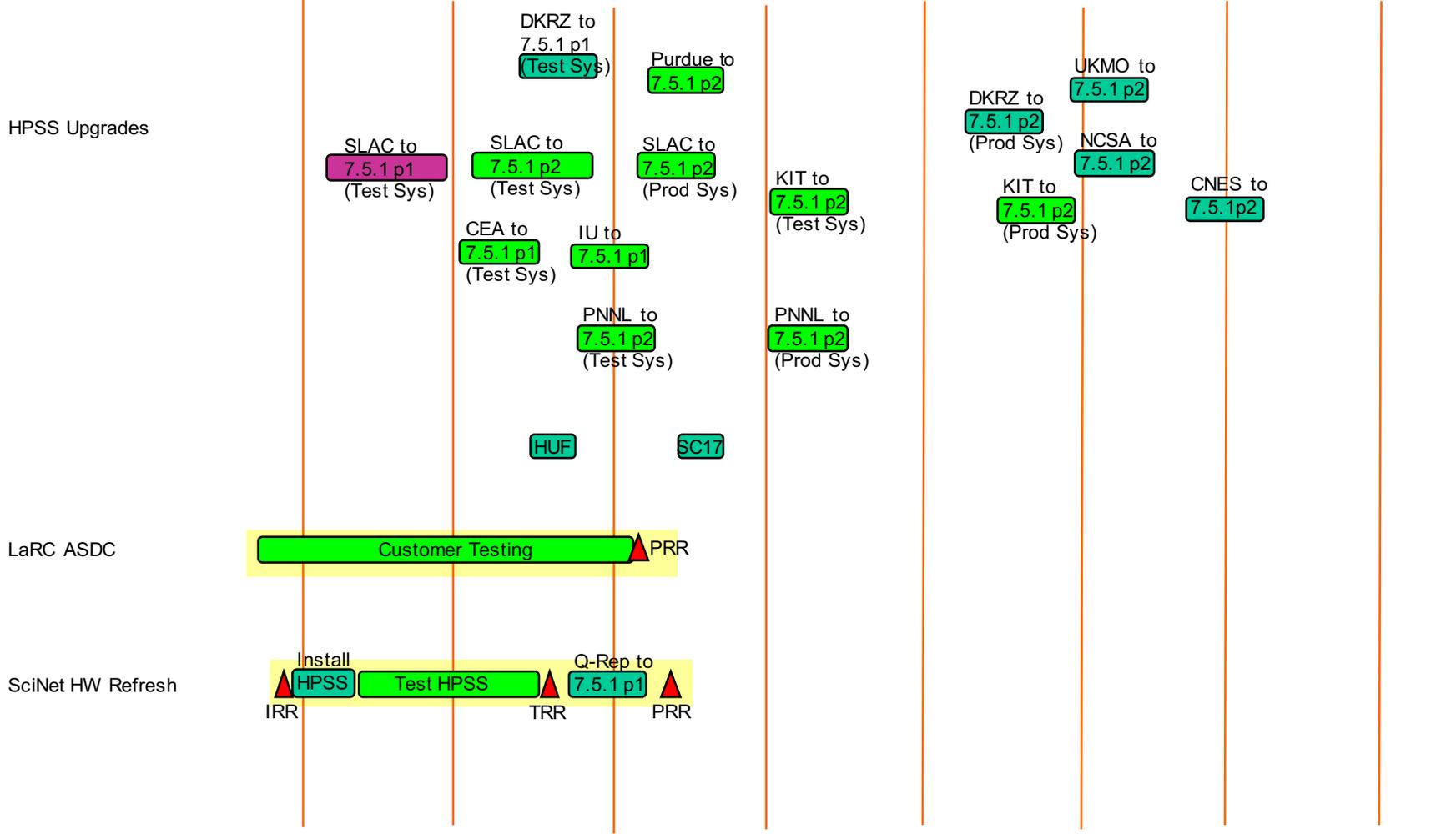|	GHI 2.4	GHI 2.5
Number of Instances	2	9

HPSS 7.5.1 Planned Upgrades (subject to change)

- 4Q2017
  - IU – currently testing the upgrade
  - SLAC – currently testing the upgrade
  - PNNL – start testing in October
  - PURDUE – plan to start testing as time allows

- 1Q2018
  - CNES – plan to start testing
  - DKRZ – start testing in late October
  - KIT – plan to start testing in late 4Q17 as time allows
  - NCSA – plan to start testing
  - UKMO – plan to start testing

Deployment & Upgrade Schedule

HPSS Published Sites Worldwide
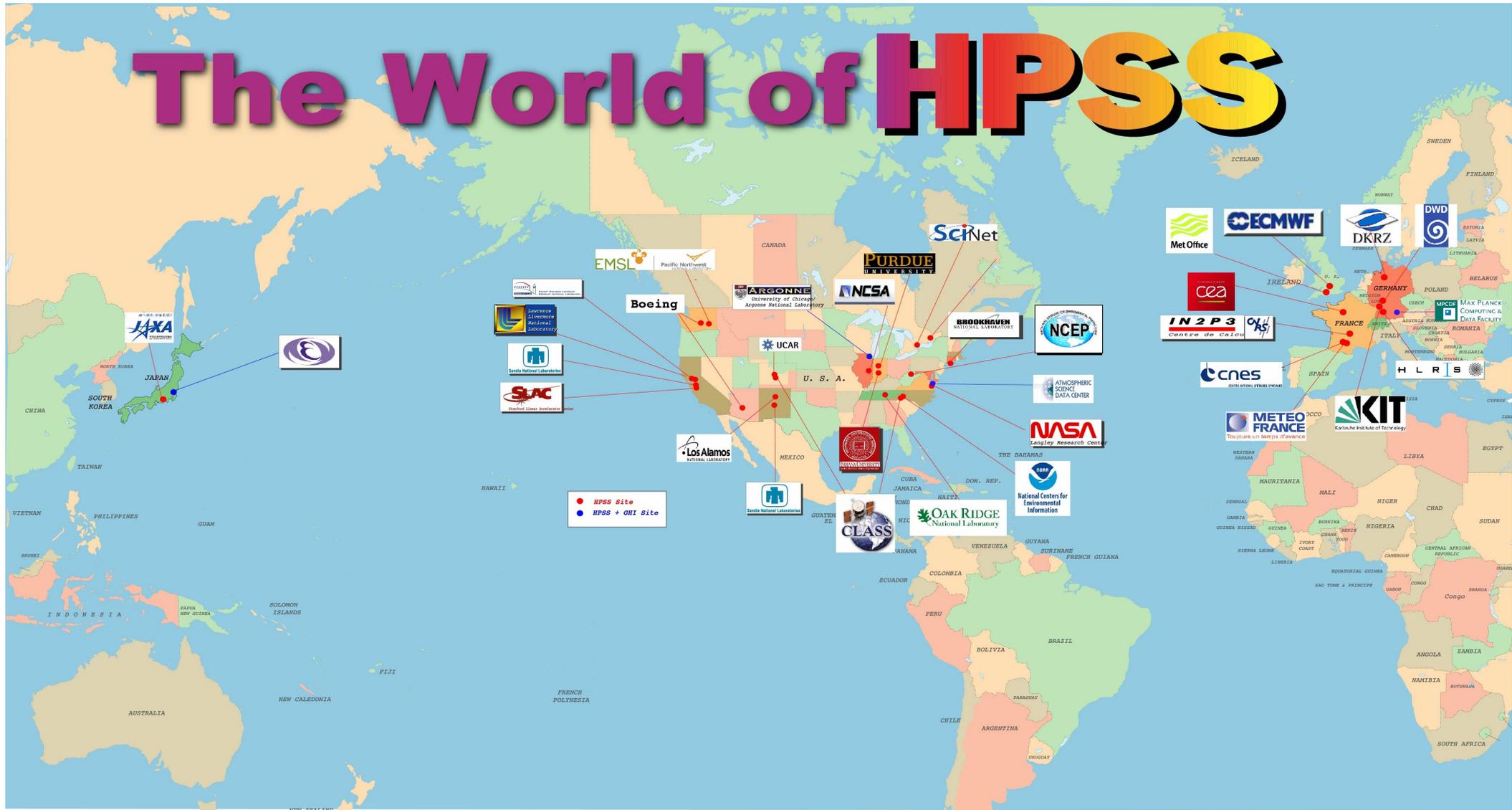
Some HPSS Site Statistics 3Q2017

Published Summary

HPSS Published Statistics

Site	Managed Storage (Disk + Tape) in Bytes	PBs	Disk/Tape Percentage	Files	Millions of Files	Non-file Namespace Percentage	Statistics Updated	HPSS in production since
ECMWF	335,878,755,008,621,000	335.88	0.35%	317,219,062	317.2	9.62%	10/03/2017	Nov 2002
UKMO	199,559,198,222,001,000	199.56	2.88%	195,720,329	195.7	0.75%	09/19/2017	Jun 2009
NOAA-RD	120,895,045,847,033,000	120.90	2.84%	89,241,243	89.2	8.56%	10/04/2017	Nov 2002
BNL	119,455,858,996,912,000	119.46	0.28%	134,445,929	134.5	1.59%	09/29/2017	Sep 1998
LBNL-User	113,013,671,922,991,000	113.01	1.42%	220,409,899	220.4	4.03%	09/25/2017	Mar 1998
Meteo-France	92,846,654,883,109,800	92.85	9.78%	355,734,321	355.7	7.74%	09/21/2017	Feb 2015
CEA TERA	83,539,629,246,804,800	83.54	4.24%	17,793,578	17.8	14.72%	09/25/2017	Jul 1999
NCAR	83,048,184,722,766,100	83.05	0.93%	272,849,922	272.9	2.48%	10/01/2017	Apr 2011
MPCDF	78,127,066,340,646,000	78.13	0.52%	168,420,729	168.4	0.50%	10/04/2017	Nov 2011
ORNL	74,662,859,118,843,800	74.66	14.76%	77,965,233	78.0	3.07%	09/18/2017	Nov 1997
LANL-Secure	73,546,499,684,333,800	73.55	1.74%	716,061,885	716.1	4.40%	10/03/2017	Nov 1997
LLNL-Secure	69,404,916,079,982,700	69.40	11.47%	913,448,282	913.5	1.49%	09/28/2017	Jul 1998
DKRZ	63,688,513,389,795,200	63.69	3.72%	18,769,403	18.8	7.98%	09/26/2017	Jul 2009
IN2P3	52,557,509,363,302,200	52.56	1.28%	69,933,612	69.9	3.66%	09/18/2017	Jul 1999
ANL	47,816,836,088,011,500	47.82	1.18%	379,175,632	379.2	3.67%	09/26/2017	Sep 2008
NCSA	45,602,841,322,720,300	45.60	2.74%	272,872,629	272.9	1.85%	09/30/2017	Nov 2012
DWD	45,168,744,871,205,400	45.17	3.76%	49,711,637	49.7	0.40%	09/18/2017	Jul 2011
LLNL-Open	40,768,116,527,723,900	40.77	12.46%	1,026,247,376	1,026.3	4.42%	09/28/2017	Jan 1997
HLRS	38,685,567,370,892,300	38.69	0.87%	11,504,144	11.5	1.52%	09/27/2017	Sep 2008
SLAC	38,190,330,920,172,700	38.19	0.22%	10,719,037	10.7	10.83%	09/15/2017	Jul 1999
CEA TGCC	35,414,521,747,128,800	35.41	0.72%	17,104,725	17.1	9.38%	09/25/2017	Nov 2010
IU	35,208,586,012,524,200	35.21	2.79%	247,275,615	247.3	13.06%	09/19/2017	Jun 1999
JAXA	24,981,791,707,049,600	24.98	0.92%	62,384,671	62.4	4.10%	10/03/2017	Jan 2009
LBNL-Backup	23,863,250,066,508,300	23.86	1.14%	19,782,567	19.8	4.24%	09/25/2017	Jun 1997
Purdue	20,028,143,404,906,400	20.03	2.16%	83,405,165	83.4	4.44%	09/18/2017	Oct 2011
SSC	16,379,089,924,663,500	16.38	10.74%	3,602,956	3.6	4.33%	09/28/2017	Jun 2017
KEK	12,539,220,016,048,200	12.54	2.89%	51,286,813	51.3	0.67%	09/18/2017	Jan 2001
LaRC	11,744,513,761,532,600	11.74	0.59%	49,919,009	49.9	8.02%	09/21/2017	Dec 1998
PNNL	11,175,393,810,966,200	11.18	10.18%	108,991,538	109.0	12.85%	09/18/2017	Apr 2010
SciNet	10,346,797,825,796,000	10.35	0.39%	36,544,109	36.5	5.77%	09/18/2017	Jun 2011
NOAA-C Boulder	9,875,856,100,817,410	9.88	5.23%	246,117,486	246.1	0.00%	09/18/2017	Oct 2014
NOAA-C Asheville	9,872,930,478,566,420	9.87	5.19%	246,161,880	246.2	0.00%	09/18/2017	Oct 2014
CNES	9,740,582,118,968,410	9.74	19.88%	3,771,860	3.8	1.73%	09/28/2017	Apr 2015
LANL-Open	6,246,438,965,365,600	6.25	0.00%	93,442,800	93.4	4.32%	10/03/2017	Oct 1997
KIT	5,338,102,287,178,880	5.34	2.49%	29,996,962	30.0	6.71%	10/04/2017	Jul 2015
NCEI	3,720,163,692,086,670	3.72	2.00%	90,773,427	90.8	1.15%	09/26/2017	Jan 1998
SNL-Open	2,854,937,058,565,700	2.85	4.09%	18,688,542	18.7	3.85%	09/07/2017	Jan 1970
SNL-Secure	2,146,211,784,373,710	2.15	7.70%	10,139,307	10.1	0.35%	09/07/2017	Jan 1970
Total	**2,067,933,330,690,920,000**	**2067.93**	NA	**6,737,633,314**	**6737.63**	NA	NA	"-"

HPSS Training

- Is there a demand and interest for training? We know of 1 request from Boeing...

Next HPSS User Forum

- 2018 - UKMO executive approved to host the 2018 HUF on site at the Met Office in Exeter UK... exact dates are to be determined

- 2019 - Contact Ramin Nosrat (ramin@us.ibm.com)