HPSS Development Update and Roadmap 2017

User Focused, Forward Looking

Disclaimer

- Forward looking information including schedules and future software reflect current planning that may change and should not be taken as commitments by IBM or the other members of the HPSS collaboration.

HPSS Release Strategy

- 7.5.1 Patches
  - 7.5.1p3 in 2018
  - 7.5.1p3 is the last planned 7.5.1 patch

- Patch Update Process
  - Addressing defects beyond planned patches
  - Simplification of our local mod process

- Make 7.5.2 Generally Available
  - Feature release
  - Patches out to 2019

- Beginning 7.5.3
  - Feature release with an 18 month release cycle
  - Focus on burning issues and high impact features

HPSS 7.5.1 Patch Development

- Patches are less feature driven than 7.4.3 patches

- Avoiding conversions or major change

- Contents are in general:
  - Site and test driven
  - High priority fixes
  - Minor system administration enhancements

- Patch 1 (1Q 2017)
  - 58 bug fixes
  - 25 severity 1 or 2

- Patch 2 (3Q 2017)
  - 58 bug fixes plus CRC32C support
  - 16 severity 1 or2

HPSS 7.5.2 Development

- Tracking to 1Q 2018

- More than 250 bug fixes and enhancements
  - Defect fixes, design fixes, scalability issues, information reporting, etc.

- Metadata conversion will be more modest than 7.5.1
  - Same QREP process

- 7.5.2 patches will be similar in scope to 7.5.1 patches
  - Stay away from metadata changes
  - Stay away from API changes
  - Mostly fixes from the field

HPSS 7.5.3 Development

- 7.5.3 is currently being planned
  - Another 18 month release cycle

- Planning Areas of Focus:
  - Migration efficiency, control, and policy
  - Tape recall performance, aggregation, E2EDI
  - Manageability of the system – example: reduced need to restart servers
  - Implement steps to further scale-out metadata transaction capabilities

- Metadata conversion in line with 7.5.2
  - Same QREP process for conversion

HPSS Release Roadmap for 7.5

HPSS Release	Release Target	Core	Mover	Client	Key Features
7.5.1p2	4Q2017	RHEL 6.8, 7.3 DB2 10.5 FP8 DB2 11FP1	RHEL 6.8, 7.3	RHEL 6.8, 7.3 AIX 7.1, 7.2 Solaris 11.x	TS1155 Support lbp_verify to resolve pathnames
7.5.2	1Q2018	RHEL 7.3, 7.4 DB2 11FP1	RHEL 6.9, 7.4	RHEL 6.9, 7.4 AIX 7.1, 7.2 Solaris 11.x	Off-Node DB2 I/O Abort Full Aggregate Recall Ordered Migration Syslog-based Logging SCSI PVR Performance Tape Recall Quotas More…
7.5.1p3	3Q2018	RHEL 7.4 DB2 11FP2	RHEL 6.9, 7.4	RHEL 6.9, 7.4 AIX 7.1, 7.2 Solaris 11.x	

HPSS Release Roadmap for 7.5

HPSS Release	Release Target	Core	Mover	Client	Key Features
7.5.2p1	3Q2018	RHEL 7.5 DB2 11FP3	RHEL 6.10, 7.5	RHEL 6.10, 7.5 AIX 7.1, 7.2 Solaris 11.x	
7.5.2p2	1Q2019	RHEL 7.5 DB2 11 FP3	RHEL 6.10, 7.5	RHEL 6.10, 7.5 AIX 7.1, 7.2 Solaris 11.x	
7.5.3	3Q2019	RHEL 7.5, 7.6* DB2 11 FP4	RHEL 7.5, 7.6*	RHEL 7.5, 7.6* SUSE 12 SP3 Ubuntu 17.10	TBD
7.5.2p3	4Q2019	RHEL 7.6 DB2 11 FP4	RHEL 6.10, 7.6	RHEL 6.10, 7.6 AIX 7.1, 7.2 Solaris 11.x	Last release with AIX and Solaris support
7.5.3p1	1Q2020	RHEL 7.6* DB2 11 FP5	RHEL 7.6*	RHEL 7.6* SUSE 12 SP3 Ubuntu 17.10	

* - See RHEL Variant Best Effort Support Announcement for more information

HPSS RHEL Variant "Best Effort Support"

- Sites have expressed interest and some are currently running HPSS on RHEL variants, such as CentOS and Scientific Linux

- For HPSS 7.5.3, we intend to have CentOS and Scientific Linux systems available for testing internally and will perform automated regression testing on both platforms

- We will provide "Best Effort" support for CentOS and Scientific Linux in order to provide more clarity for the user community

HPSS RHEL Variant "Best Effort Support"

- IBM cannot claim the same level of "support" for platforms that do not themselves have a support agreement model
  - We have no mechanism to drive support in the case of any OS issues
  - Liability issues

- What is "Best Effort" Support?
  - HPSS Support will accept calls for HPSS client software on CentOS and Scientific Linux
  - HPSS Support will not require that the issue be reproduced on a supported platform (e.g. RHEL) before beginning problem determination
  - HPSS Support will be unable to address the call report if it becomes apparent that the issue is due to a defect in the underlying distribution. Problem resolution should then be pursued by the customer within the open source community or distribution provider.

HPSS FUSE Development

- **Kernel VFS was sunset in 2015**

- Becoming a mature interface
  - Not a lot of enhancement requests or issues

- 2.0.3 is under development
  - UID/GID Mapping
  - Allow a mount option for stage callback interface
  - Taking advantage of some 7.5.1 and 7.5.2 features
    - Add disk PVs to xattrs
    - Runtime debug level changes
    - Print HPSS error codes to syslog

- 2.0.4 is in planning
  - Support for fuse3
  - TBD

HPSS FUSE Release Roadmap for 2.0

HPSSFS Release	Release Target	Linux / FUSE	HPSS	Key Features
2.0.2	4Q2016	RHEL 6.4, 6.5, 6.7, 7.1 FUSE 2.8.3	7.4.3, 7.5.1	
2.0.2p1	3Q2017	RHEL 6.4, 6.5, 6.7, 7.1 FUSE 2.8.3	7.4.3, 7.5.1	
2.0.3	1Q2018	RHEL 6.7, 6.8, 6.9, 7.4 FUSE 2.8.3	7.5.1, 7.5.2	UID/GID Mapping Stage Interface Disk PV Name
2.0.3p1	3Q2018	RHEL 6.7, 6.8, 6.9, 7.4 FUSE 2.8.3	7.5.1, 7.5.2	Last release with NFS-3
2.0.4	3Q2019	RHEL 6.9, 7.4 SUSE 12 SP3 Ubuntu 17.10 FUSE 2.8.3 / FUSE3	7.5.2, 7.5.3	Dropping NFS-3 FUSE3

GHI Development

- Focus Areas
  - Software quality and maintainability
  - Improving stability of existing features

- 2.5.0p2 Development
  - Fixes for memory issues causing connection issues, crashes
  - Stability and field issues; improved handling of certain GPFS error scenarios

- 3.0.0 Development
  - Support for 7.5 via run-time conversion
  - Allow for long-lived snapshots

- 3.0.0p1 Development
  - Bug fixes and TBD

GHI Release Roadmap

GHI Release	Release Target	Linux / Other	HPSS	Spectrum Scale	Key Features
2.5.0.1	3Q2016	RHEL 6.7, 7.1	7.4.3.p2	4.2.0 PTF 2	
2.5.0.2	3Q2017	RHEL 6.7, 7.1	7.4.3p2	4.2.0 PTF 4	
3.0.0	4Q2017*	RHEL 6.8, 7.2	7.4.3p2, 7.5.1*	4.2.2.3	HPSS 7.5 Support Long-lived Snapshots
3.0.0p1	3Q2018	RHEL 6.8, 7.2	7.4.3p2, 7.5.1, 7.5.2	4.2.5	
3.0.1	2Q2019	RHEL 6.8, 7.2, 7.4	7.4.3p2, 7.5.1, 7.5.2	Latest	TBD

* Support for 7.5.1 to be announced 1Q2018

HPSS Treefrog

- Treefrog is a solution for
  - Containerization and aggregation of data files and objects into datasets.
  - Managing the datasets across HPSS and heterogeneous storage systems.
  - Maintaining the datasets across the life of your mission's projects, procurements, infrastructure, deployment, user access and staffing cycles.

- Ready to start design and development

- Plan to demonstrate dataset creation/recall with fragmentation and parity generation at SC 2017

- Field testing of basic functionality is targeted for 3rd quarter of 2018

Swift On HPSS Development

- Being developed in collaboration with DKRZ

- Apache license

- 2.5.0.0 Release
  - Initial beta release is available now on github (https://github.com/openstack/swiftonhpss)
  - Try it out!

- 2.7.0.0 Development
  - Major Release
  - Customer driven

Swift On HPSS Release Roadmap

SOH Release	Release Target	Linux / Other	HPSS	Swift	Key Features
2.5.0.0 (Liberty)	3Q2016	RHEL 7	7.4.3, 7.5.1	2.5.0	Initial Beta Release
2.7.0.0 (Newton)	TBD	RHEL 7	7.5.1, 7.5.2	2.7.0	HPSS API Backend Keystone UID Map Offline File Handling Large File Handling

IBM HPSS DSI

- The HPSS Collaboration is working with Globus on a multi-year path forward

- We are working to get our E2EDI enhancements incorporated into the Globus HPSS DSI

- IBM will no longer offer support for the IBM HPSS DSI
  - May be provided without support upon request

- IBM will continue to work with our clients for a solution to their HPSS DSI needs

Patch Update Process

- Embracing a rolling update process
  - High priority fixes for the field will be bundled together into an update release going forward
  - Fixes will automatically go forward, but not backward

- Key Benefits
  - Known code baselines
  - Allows us to do more thorough testing of fixes going to the field
  - Allows sites to benefit from fixes we've already made
    - Very few problems are really "local" or site-specific

- Exceptional Situations
  - Diagnostics and One-off deployments

- ~~Local mods~~
  - Well, mostly.

Versioning and Local Mods

- Planned Releases
    - Base Release: X.Y.Z   (hpss.7.4.3, ghi.2.5.0)
        - New features, enhancements, metadata changes, large collection of bug fixes, platforms
    - Patches: p[1-N]   (hpss.7.4.3p1)
        - Collection of fully tested fixes on a periodic basis, minor enhancements
        - Potentially minor metadata changes

Versioning and Local Mods

- Unplanned Release Fix Tracks
  - Efixes: e[1-N] (HPSS 7.4.3e1, HPSS 7.5.1p1e1)
    - Appended to Base or Patch release, a critical fix that cannot wait for next Patch to apply in field
  - Rolling Updates: u[1-N] (HPSS 7.4.3p2u1)
    - Largely meant to replace our local mod process
    - Includes all official changes released in field that are not site or diagnostic specific. Limited testing. Fixes will be included in next Patch cycle.
    - Contents can be queried with "-qip <package>"
    - Efixes are always included as just another update (never an 'e' appended to a 'u' track)

- RPM Notation
  - Include efix or update number and the date
  - Base Notation: hpss-core-7.5.1.1-20171002.0.el6
  - Efix Notation: hpss-core-7.5.1.1-20171002.e1.el6
  - Update Notation: hpss-core-7.5.1.1-20171002.u1.el6