



# Overview of Berkeley Storage Manager (BeStMan)

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# BeStMan

- **SRM v2.2 implementation**
  - Works on existing disk storages with posix compliant file systems
    - E.g. NFS, GPFS, GFS, PNFS, HFS+, PVFS2, Lustre, XrootdFS, Hadoop, Ibrix
  - Supports multiple partitions
  - Adaptable to other file systems and storages
    - Supports GridFTP access to underlying system such as REDDnet
    - Supports customized plug-in for MSS to stage/archive such as HPSS
  - Easy adaptability and integration to special project environments
  - Supports two deployment modes: full mode and gateway mode
- **Supports multiple transfer protocols**
  - Supports load balancing for multiple transfer servers
  - Supports customized plug-in for transfer server selection with custom policy
- **Works with grid-mapfile or GUMS server**
- **Simple installation and easy maintenance**
  - Pacman installation from VDT
  - Or, installation from a downloadable tar file

# Main differences between Full mode and Gateway mode

- Full implementation of SRM v2.2
- Support for dynamic space reservation
- Support for request queue management and space management
- Plug-in support for backend mass storage systems

- Support for essential subset of SRM v2.2
- Support for pre-defined and pre-allocated space tokens
- Faster performance without queue and space management
- Scalable multiple deployments

# Who is BeStMan for?

- Sites that need SRM interface to their local storage resources
- Sites with POSIX compliant file systems
- Sites that need performance
- Sites with limited resources

- Community support
  - CMS, ATLAS, STAR, ESG, …

# A few hints on what BeStMan can do

- BeStMan can restrict all user access to certain directory paths through configuration
- BeStMan can be configured to restrict user access to files by owners/creators only
- A site can customize the load-balancing mechanism for transfer servers through plug-in
- A site can customize the file system i/o mechanism for special file system or storage system through plug-in
- A site can extend the plug-in for external archival storage systems
- Dynamic deployment and personal SRM
  - If the target host does not have an SRM, BeStMan can be downloaded, installed, configured, and started with a few commands (or a script) by the end-user for his/her own BeStMan.
- Works with other SRM v2.2 server and client implementations

# Summary

- **BeStMan is an implementation of SRM v2.2.**
  - Works with posix compliant file systems
    - Scalable performance with Gateway mode on some file systems and storage
  - Can be extended to support custom file system i/o and external archival storage
  - Some policies can be customized
- **Install/maintain through VDT or tar file**

- **Works with other SRM v2.2 implementations**
  - Servers: CASTOR, dCache, DPM, StoRM, SRM/SRB
  - Clients: PhEDEx, FTS, glite-url-copy, lcg-cp, srm-copy, srmcp, …
  - In OSG, WLCG/EGEE, ESG, …

# Documents and Support

- OSG Storage documentation
  - https://twiki.grid.iu.edu/twiki/bin/view/Storage/WebHome
- BeStMan
  - http://sdm.lbl.gov/bestman
  - http://hep-t3.physics.umd.edu/HowToForAdmins.html#osgBestman
  - http://wt2.slac.stanford.edu/xrootdfs/bestman-gateway.html
  - http://osg-test2.unl.edu/documentation/hadoop/bestman-hdfs
  - https://www.usatlas.bnl.gov/twiki/bin/view/Admins/BestMan
  - https://twiki.grid.iu.edu/bin/view/ReleaseDocumentation/Bestman
  - https://twiki.grid.iu.edu/bin/view/ReleaseDocumentation/BestmanGateway
  - https://twiki.grid.iu.edu/bin/view/ReleaseDocumentation/BestmanOnCE
  - https://twiki.grid.iu.edu/bin/view/ReleaseDocumentation/BestmanGatewayXrootd
- SRM Collaboration and SRM Specifications
  - http://sdm.lbl.gov/srm-wg
- Contact and support
  - osg-storage@opensciencegrid.org
  - srm@lbl.gov