

SPDRM
WORKFLOW MANAGER

Questions & Answers

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Q&A on SPDRM

1. What does the name SPDRM stand for?

SPDRM stands for Simulation Process, Data, and Resources Management.

2. What is this software for?

SPDRM is a simulation data management software, with high-end process management capabilities and distinct resource management features.

Data management-wise, it provides a structured way for the storage of the data handled by CAE teams, so that data are easily searchable, well annotated, effortlessly traceable and AI/ML-ready.

Process management-wise, it provides a simple and intuitive way to capture, deploy, and manage CAE process workflows by integrating the resources, the tools, and the data associated with these.

For Resources management, it offers tools for the registration and management of human/non-human resources, internal or external to the enterprise.

3. Who should use SPDRM? Is it only for CAE applications?

SPDRM should be used in teams and organizations in need of:

- an SDM system, for the management of simulation data, and/or
- workflow standardization and automation, and
- data traceability, i.e. the ability to track data through all states of their processing.

The usage of SPDRM is not limited to CAE applications. It can be used successfully for administrative tasks, document management, or any other applications where process capturing in combination with management of the related data is needed.

4. How SPDRM works?

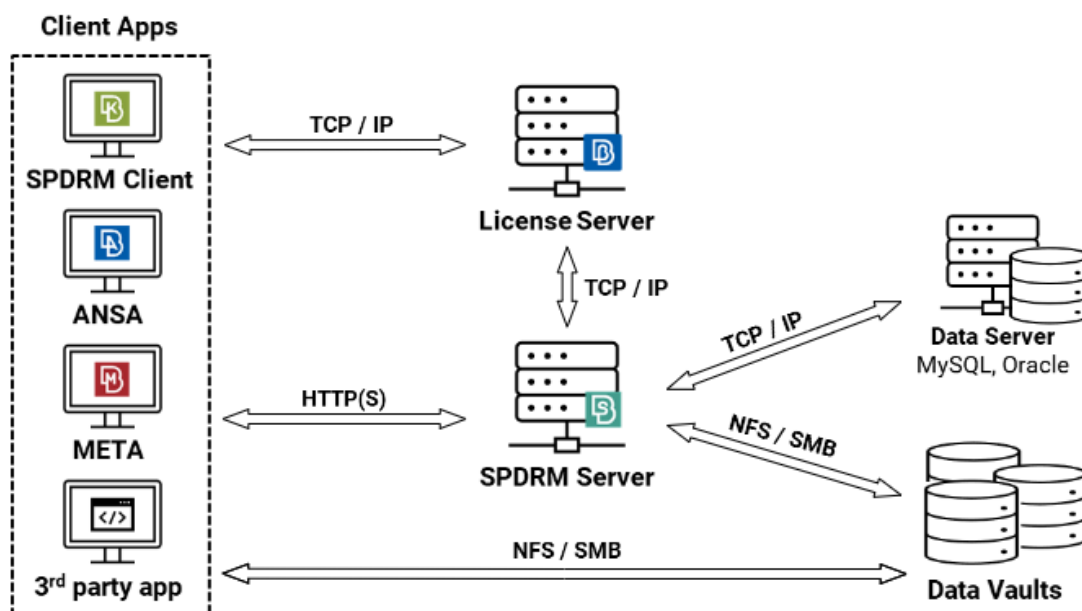
The SPDRM software is a server-client application.

All business logic is kept in the SPDRM server, which is the core of SPDRM. The client is the software through which users interact with SPDRM.

The standalone, desktop application, that serves as client of SPDRM, is called KOMVOS and it is part of the BETA Suite of applications. KOMVOS offers the interface for the all of SPDRM's data and process management functionality.

The SPDRM server, which is the “back end” of SPDRM, responds to requests made by the clients by creating, querying and modifying database records and reading and writing files in the file vaults.

The following image presents the SPDRM architecture.



Being an Enterprise solution, the server and the clients are installed on different workstations that communicate over a computer network. The data managed by SPDRM are both the physical files and their associated metadata. The metadata is handled in the Data Server (RDBMS database) whereas the physical files are stored in the Data Vaults.

The execution of processes (e.g. execution of scripts, launching of applications) can either take place locally, on the executing user's workstation, or to remote resources, pre-configured as BETA Apps Launchers by the SPDRM Administrator.

5. Isn't there a web-based client available for SPDRM?

There is! BETA CAE Systems' ANSERS is a web application, offering a front-end web dashboard interface for accessing and combining engineering simulation and physical test data, granting an overall perspective, to accelerate effectively the engineering design evolution decision making.

ANSERS can use SPDRM as a backend for data and process management and therefore, it can serve perfectly for a web-based client for SPDRM.

6. What is the difference of SPDRM to other SDM systems?

First, it is its high-end Process Management features, that enable the standardization and automation of all CAE business workflows.

Second, is SPDRM's capabilities for interfacing with other systems. SPDRM comes with built-in interfaces to PDM/PLM and CAD systems, that facilitate the import of product structures and their further manipulation before pre-processing. Additionally, it includes pre-configured interfaces to the most established workload management systems (LSF, SLURM, etc.), facilitating the set-up of job submission to the HPC.

Finally, a distinctive feature of SPDRM is its tight integration with ANSA and META, that enable the most advanced pre- and post-processor to make use of its data and process management capabilities through their standard tools and their Python API. Through this integration, model build and simulation engineers can browse through SPDRM data straight from within their ANSA and META sessions, download models to work on and save back as newer versions, submit simulations to the HPC, compare their models and results with other users' data and get informed decisions without leaving their main workspace.

7. Can SPDRM store training data for AI/ML applications?

Yes. SPDRM stores such data as Optimization Studies. Each Optimization Study accommodates various simulation runs and their results (DOEs). Machine Learning models can then be trained based on these data and can later be used for the prediction of results.

Optimization Studies are created in SPDRM either with direct save through ANSA's Optimization Tool, or by importing existing datasets through KOMVOS.

8. Does SPDRM offer any solutions for AI/ML?

Right now, there are three primary applications of AI and ML in SPDRM:

- Training of Machine Learning models based on DOE data used for the prediction of results, as described under the previous question.
- Training of Machine Learning models for geometric feature recognition used by ANSA's meshing tools.
- Data Analysis tools for the exploration of data insights.

Machine Learning capabilities are added to KOMVOS with the aid of the ML Toolkit, which is an add-on (separate license feature, built-in integration with KOMVOS and all other products of the BETA Suite).

It is possible for simulation engineers and data analysts to make use of the ML Toolkit or even couple their own ML engine with the data structure in SPDRM.

9. What do you mean that SPDRM is scalable?

SPDRM is scalable as it offers different configurations that make it suitable for use from team and division to multi-site and enterprise level. The SPDRM server can be scaled both vertically and horizontally, to cover high demands of contemporary CAE teams. Furthermore, SPDRM's multi-site architecture can be employed to cover the needs of geographically dispersed teams.

10. Which are the recommended system requirements and supported platforms?

(as of May 2024)

Server Hardware requirements	64bit
LINUX	
	CPU: 4-core/8-thread intel i7 CPU (e.g. i7 960) Memory: 16GB HDD: 1TB Network: 1Gbit

	Static IP
WINDOWS	
	Not supported

Server Software requirements	64bit
LINUX	
	<p>OS: CentOS (6.4 or later), Fedora (12 or later), SuSE (11 or later), RHEL 8/9, Rocky Linux 8/9</p> <p>Database: MySQL Community Server Edition 5.5, 5.6, 5.7, 8.0 (8.0.34 or later), Oracle Database Enterprise Edition, or Standard Edition 12.2.0.1.0 (12c Release 2), 12.2.0.3 // 19.3 (19c)</p> <p>Administrative privileges (create users/shares, change file privileges)</p> <p>Capability to share folders across the network (NFS/Samba)</p> <p>Configurable firewall</p> <p>Unzip and Isof packages must be available in Linux OS</p> <p>Max file descriptors (fd) must be at least 10240 in Linux OS</p>
WINDOWS	
	Not supported

Client Hardware requirements	64bit
LINUX	
	Memory: 4GB (memory requirements for applications that are used from within SPDRM are not included)
WINDOWS	
	Memory: 4GB (memory requirements for applications that are used from within SPDRM are not included)

Client Software	64bit
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requirements	
LINUX	
	OS: CentOS (6.4 or later), Fedora (12 or later), SuSE (11 or later), RHEL 8/9, Rocky Linux 8/9 Configurable firewall Ability to connect to the SPDRM Server IP Ability to connect to the SPDRM Server shares (i.e. vault and client directories)
WINDOWS	
	OS: Windows (7 or later) Configurable firewall Ability to connect to the SPDRM Server IP Ability to connect to the SPDRM Server shares (i.e. vault and client directories)

11. Which are the prerequisites for installed software (before installing SPDRM)?

The following software should be up and running, prior to the SPDRM installation:

- MySQL or Oracle Database
- BETA License Manager (BETA_LM)

More details about the above-mentioned steps can be found in the *SPDRM Installation Guide*.

12. Which databases are supported?

For the moment, MySQL and Oracle are fully certified and validated.

13. Which software applications can be used with SPDRM?

Any software application can be registered in SPDRM, only by specifying the path of its launch script and its command line options. A registered application can then be used in Process Design, as it can be configured to carry out certain steps of the process, or as a file editor, as it can be associated as a designated editor for certain types of files.

Application types can vary, from pre- and post-processors to solvers, document and spreadsheet editing programs etc.

14. With which PDM systems may I combine SPDRM? Do I need to have a PDM system already deployed in order to deploy SPDRM?

SPDRM offers out-of-the-box file-based interface for the reading of product structure files in the following formats:

PLMXML, STEP AP242, VPM xml, CATProduct, 3DXML, JT assembly, NX assembly, ProE assembly, Solidworks assembly.

For any other format, custom interfaces can be created with the aid of the Python API in KOMVOS.

Furthermore, SPDRM offers direct connection to Teamcenter, through the TC2SPDRM plugin, available upon request.

SPDRM does not require the prior existence of a PDM system for its installation and use. However, datasets exported from PDM or CAD systems are required in order to start model build activities.

15. What do I need to download?

The following components are required:

- BETA License Manager (BETA_LM) (only in case of new users that do not have this software installed already)
- SPDRM package
- KOMVOS package

KOMVOS is available as a standalone package and also as part of the BETA Suite of applications. Users that already make use of ANSA, have it already.

16. What does the installation package contain?

SPDRM's installation package contains:

- Server and Administrator Console Installer
- Plug-ins
- Administrator's Users Guide

KOMVOS contains:

- Documentation
- Tutorials

17. Could I have more than one SPDRM server installation in the same enterprise?

Yes, more than one server installation may be required in cases of:

- one "production" and one "development/test" environment, which must be supported by two separate servers, or
- two or more data vaults, with different DM Schema, to be used by different departments or corporate entities etc.

18. What background / knowledge / privileges do I need to have to set up SPDRM?

An IT background with knowledge on databases and network applications is recommended for the SPDRM set up. Additionally, root privileges for MySQL, Oracle and SPDRM Server are required.

19. What privileges do I need to have to run SPDRM?

For the launch of the SPDRM server, root privileges are required. For any data communication through the SPDRM client, the user must have access to the file paths declared as SPDRM vaults.

20. May I have an evaluation installation of SPDRM?

Yes. A fully functional evaluation licence is available for limited duration. An evaluation installation of SPDRM comes with the default system configuration and includes documentation and tutorials. During the evaluation period, support is provided by BETA CAE Systems.

Note: For the evaluation installation of SPDRM (where a small scale usage is expected), it is possible to install the database and the SPDRM server on the same workstation.

21. Can SPDRM integrate resources “external” to the enterprise (e.g. suppliers of engineering services)?

Yes, as long as the external resource (supplier) meets the following conditions:

- has network access to the enterprise SPDRM server (e.g. through VPN),
- has a local installation of KOMVOS
- has a valid user account in SPDRM, and
- has network access to the file paths declared as SPDRM vaults.

22. Can I access the data stored in SPDRM directly through my pre-/post-processor or other software?

SPDRM provides a built-in tight integration with ANSA and META, that enables the use of its data and process management capabilities through their standard tools and their Python API. Through this integration, model build and simulation engineers can browse through SPDRM data straight from within their ANSA and META sessions, download models to work on and save back as newer versions, submit simulations to the HPC, compare their models and results with other users' data and get informed decisions without leaving their main workspace.

All other applications can directly access SPDRM data through the SPDRM client, KOMVOS. Through KOMVOS, users can edit data with their preferred editor depending on the file extension, modify them and save them back as new versions. Furthermore, 3rd party applications can be integrated in SPDRM processes as data creators, editors or final consumers. Additionally, SPDRM offers a REST API for communication of data with third party applications, which will enable them to have direct data I/O.

Finally, SPDRM offers a comprehensive REST API, that enables 3rd party developers to build direct interfaces in order to interact with the data, process and resources management functionality.

23. Can I define different data access levels for different user roles (e.g. administrators, managers, analysts, external suppliers)?

In SPDRM, the groups of users have different data access privileges according to the roles their members belong to. The users that belong to more than one group get different privileges based on their active role each time they log in SPDRM.

24. Can I extract my data and defined processes from SPDRM for further use or migration to another system in the future?

All SPDRM data can be extracted to a designated location in the file system with the aid of functionality available to system administrators. The generated data package consists of all the files and their meta-data.

SPDRM processes can also be exported in JSON format.

25. Are the data stored in SPDRM accessible only through the client applications?

No. It is possible to configure SPDRM so that it exports selected data to a designated location in the file system and keeps that location in-sync with the data vault contents. This *exported file structure* is read-only, and enables users that are not registered resources of SPDRM to access the data directly through the file explorer.

26. Does SPDRM render the file-based DM solution obsolete?

No. File-based DM is an entry level solution, suitable for small projects and collocated teams of a size up to 10-15 users. The file-based DM's performance is susceptible to poor or questionable network reliability. Therefore, when such conditions apply, the recommended solution is the client/server SDM solution based on SPDRM.

BETA CAE Systems International AG
D4 Business Village Luzern, Platz 4
CH-6039 Root D4, Switzerland
T +41 41 545 3650, F +41 41 545 3651
ansa@beta-cae.com
www.beta-cae.com

physics on screen