



Architecture and Environment

- Architecture: J2EE-based using open standards, such as JSF (JavaServer Faces) for Web user interface (UI) development, JCR (Java Content Repository) for data management and SOAP for Web services
- Operating system: any JDK (Java Development Kit) supported OS, such as Windows®, Linux®, major UNIX® flavors, etc.
- Application server: any J2EE application server, such as JBoss, IBM® WebSphere®, BEA® WebLogic®, etc.
- Content management system: JCR 1.0-compliant CMS Apache Jackrabbit
- Database: any RDBMS such as MySQL™, DB2®, Oracle®, Microsoft® SQL Server
- Authentication mechanism: supports pluggable authentication modules
- Browser: Internet Explorer™ version 6 and above, Mozilla® version 1.7 and above, Firefox® version 2 and above

Performance and Scalability

- ANSYS EKM software can be run on a single server or a cluster; cluster environment allows easy scalability by adding more nodes for handling additional user requests
- Failover server supported
- Designed from ground up for supporting distributed simulation files, (i.e., on local or global file servers); files are not stored in a database, only meta-data
- Efficient caching minimizes session data and database requests, thereby increasing transaction throughput

Data Management

- Data is stored within the system as a tree of objects; objects include files, collections of properties, saved queries, users, groups, wizards, etc.
- Each object can have a set of properties (meta-data) associated with it; meta-data from known file types are extracted automatically during file upload
- Users can dynamically add new meta-data tags and dependencies
- Links allow objects to reference other objects; referential integrity is enforced automatically
- Basic data management operations, such as create, read, update, delete, copy, move, rename, etc., provided

Process Management

- Workflows to coordinate all aspects of a simulation process (users, data, CAE tools, computing resources, etc.) can be published and executed within system
- Complex business processes involving decision nodes, concurrent states, iterations, etc. can be modeled through simple XML files
- Support for manual and automated processes as part of the workflow is provided
- Integration with job submission systems (Windows® Compute Cluster, LSF, SGE, etc.) allows time-intensive simulations to be performed as part of a workflow
- Email notifications and graphical displays allow tracking of progress and status of a workflow

File Management

- Files are represented as objects within the system
- File data may be managed by the system or reside in external resource, such as shared file system or database
- Files can be uploaded or downloaded to a file server using HTTP or FTP
- Files optionally can remain in original locations with the system maintaining a soft link to the location, eliminating need for file transfers (e.g., a local file server or shared file system)
- Files may be cached, leading to faster response time across a wide area network (WAN)
- Java™ file transfer client allows easy-to-use UI for upload and download of files; progress notification with ability to pause and resume transfers provided

Search

- Keyword-based full text search available for object properties and common file formats, such as TXT, DOC, PDF, PPT, XML, HTML, RTF, etc.; files automatically indexed on upload
- Advanced search using object properties available; complex search criteria using “and/or” conditions supported
- Complex searches can be saved for later execution

Pedigree and Dependency Tracking

- An object can keep track of all other objects upon which it is dependent; these relationships can be visualized using a dependency graph

Security and Access Control

- Login using username and password is required for accessing or modifying any data within system
- Authentication managed by pluggable authentication modules
- Authorization controlled using an access control list (ACL) associated with each object; the ACL contains users and groups who have permission for executing a particular action (read, modify, create, delete, etc.) on an object
- Groups can be created for defining user roles and associated permissions; user may belong to any number of groups
- Custom authorization may be performed (e.g., for enforcing export control requirements)

CAE Data Handling

- Support for FLUENT®, ANSYS®, Workbench®, CFX® and Polyflow® simulation files provided; meta-data from these simulation files is extracted automatically when files are uploaded
- Support for other file types can be added
- Dynamic generation of plots from X–Y data provided
- Extraction templates that allow mining for desired data, such as force, moment, integrals, fluxes, point values, etc., from the result files provided
- Reporting features allow for creation of simulation summary reports, which contain meta-data, extracted results and associated images
- Reports can be compared to show differences across a range of simulations
- Reports can be downloaded in XML, HTML or PDF formats
- Allows for comparison of meta-data between objects

Configuration Management

- Checkin/checkout of objects
- Locking of objects
- Maintenance of different versions of objects and change log

Auto Notification

- Users can assign themselves to be notified of any events (e.g., create, update, delete, move) that are associated with a specific object
- All users in notification list will be sent an email automatically when event is triggered

User Interface (UI)

- DHTML- and AJAX-based UI offers look, feel, and interactivity of desktop applications
- Advanced UI components, such as trees, tables, tabs, hierarchical menus, modal dialogs, wizards, etc., provided
- All UI labels and error messages localizable and customizable
- UI skins can be customized easily
- UI-embedded viewers support common registered file types (e.g., DOC, PPT, PDF, JPG, PNG)

Web Service

- System can be accessed as Web service from non-browser desktop clients using SOAP
- All basic data management features, such as create, read, update, delete, search, file upload/download, etc., provided in the Web service application programming interface (API)

Configuration and Customization

- IT environment and system policies specified through XML configuration files
- New data types and file formats can be defined and existing data types can be modified through simple XML files
- Plug-in mechanism provides a powerful method for extending capabilities of base system
- Plug-ins can specify business rules, actions and new user interfaces without altering the base system
- Detailed documentation for configuration and customization provided

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