



Virtual vs. Meta

Q: How are virtual directories different from directories and meta-directories?

A: In general, directories store and supply information to a specific application. Directories can come in multiple forms, the most common being X.500 directories and LDAP-based directories. But directory information can also be tables of information found in relational databases or even text files. Even the information about users in a Network Operating System (NOS) can be considered a directory (e.g. Windows NT).

Meta-directories are able to read multiple directories of all types, and then look for related records between parallel repositories (the process of joining), and provide record level synchronization between different repositories. As an example, a meta-directory might be used to synchronize key infrastructure repositories such as an e-mail directory with Active Directory, and an enterprise directory such as IBM Directory. Meta-directories scan each repository attempting to determine what has changed since the last scan and then uses business rules to flow detected changes to other related repositories. The objective of Meta-directories is to improve data accuracy through propagation of changes, and to ensure all directories contain the most up-to-date information through daily or hourly synchronization.

In contrast, Virtual directories are often used as proxies connecting applications to disparate sets of identities providing federation. An example of this might be the linking of two or more Active Directory infrastructures owned by separate corporate divisions into a single virtual directory view enabling company-wide portal applications such as SAP Portal to work. Where as a meta-directory solution would require Division A to copy Division B's information and maintain synchronization, virtual directory acts as an information router directly connecting Division A's application to Division B's information. This avoids information duplication, and enables each organization that owns identity information to control and monitor its use.

Meta Directories and Virtual Directories are complementary technologies that attack different parts of the Identity Management and Directory Services infrastructure problems. Meta Directories focus on maintaining infrastructures, while in contrast, Virtual Directories focus on connecting applications into infrastructures.

Use a Meta Directory for:

- Synchronization of records between parallel infrastructures;
- Optimization of "enterprise" data through change propagation;
- Enable duplicate information, but eliminate duplicate management of information through automated synchronization;
- Providing optimized data in a single repository to meet the needs of a single strategic application;
- Transaction workflow - applying business rules between infrastructures on how changes should be propagated. This may include logic to support hire/fire workflow scenarios.

Use a Virtual Directory for:

- Integrating applications into existing directory infrastructures by providing necessary schema, attribute and namespace translation;
- Firewalling directory data;
- Federating multiple sources of identity data into a single directory view (e.g. a multi-division or multi-partner scenario);
- Load Balancing - providing transaction based load balancing and transparent failover in the event of a directory server failure;
- Connection Pooling - means that source directory servers perform less TCP/IP connection processing and perform more LDAP operations. Pooling means that an optimized number of connections are multiplexed between LDAP clients and the source directory;
- Routing - sending queries to relevant directory servers or replicas based on characteristics of the transaction or query;
- Proxy Authentication - providing flexible authentication and access control between different security domains;
- Application Centric Views - provide multiple "views" of directory information optimized for the specific needs of individual applications;
- Accuracy - no synchronization means that application use of identity data has zero latency due to dynamic architecture
- Data Ownership & Control - since there is no duplication of information, all identity data stays with its owner. Owners can audit and control information use at all times
- Cost - justifiable on a project by project basis. No duplicated information means very low cost of operation. Maximizes leverage of existing infrastructures and avoids creation of new infrastructure.

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