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Integrating z/VSE into an Identity Management System

zES03

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Authorized IBM Training

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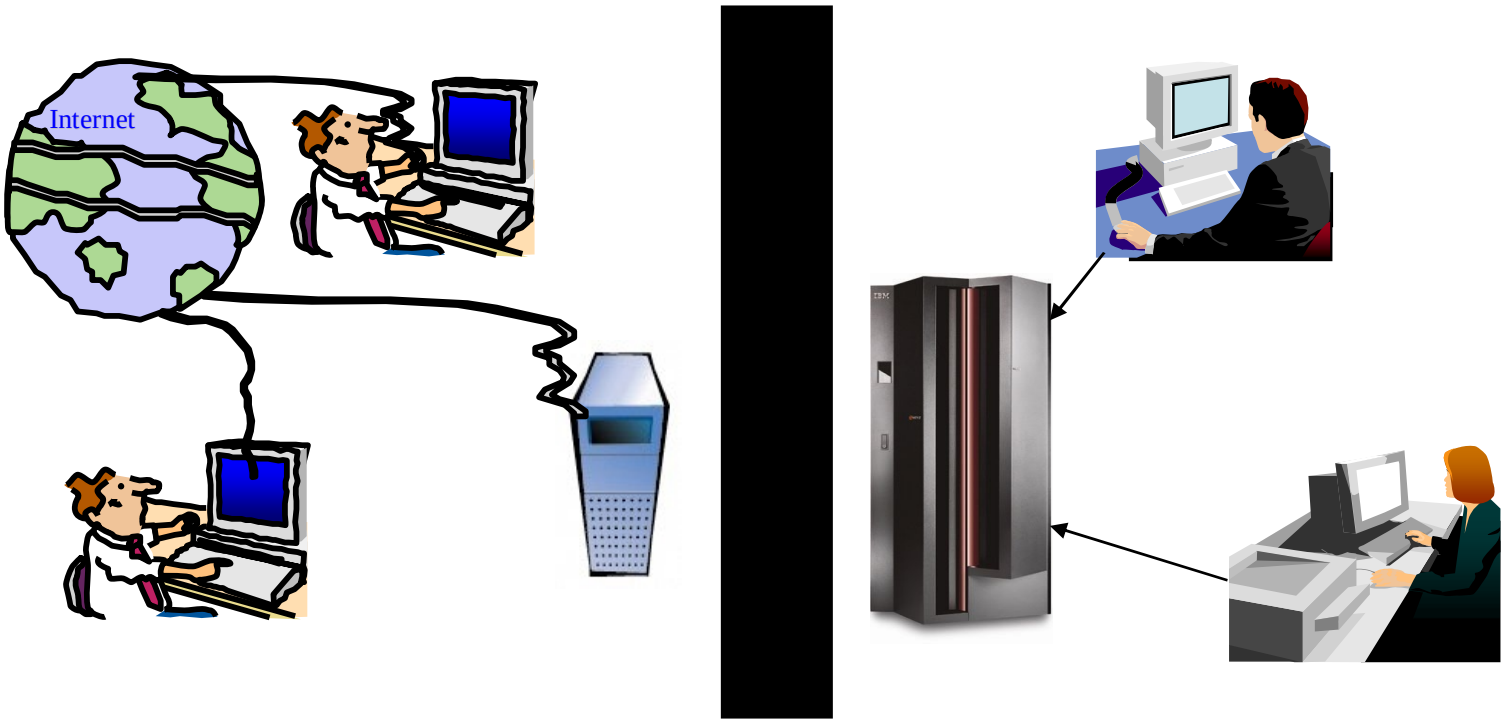
Situation today

- Separate User-ID Management Systems for z/VSE and the others (Unix, Linux, Windows)
  - Duplicate User IDs
  - No automatic syncronisation



Situation today - Risks

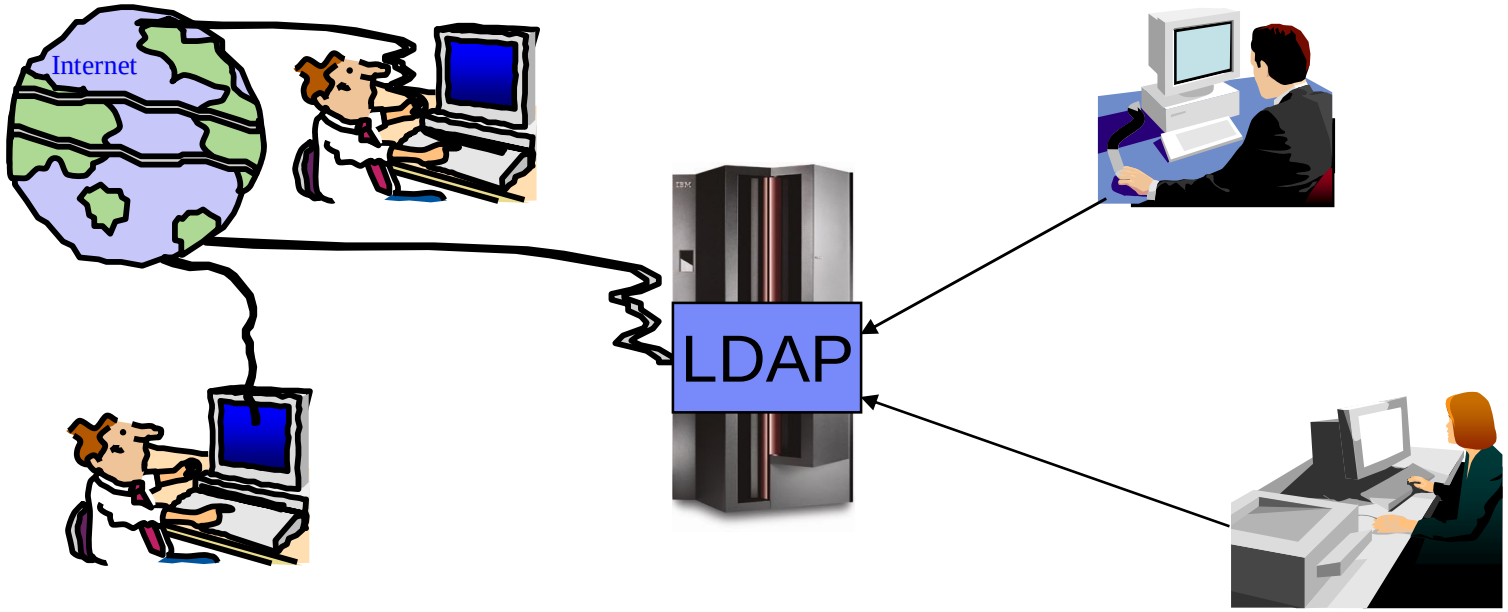
- User-ID management is very complex if different systems need to be updated
- Some User-IDs do not explicitely show who is the owner
  - e.g. z/VSE 4 character User-IDs
- Difficult to enforce corporate policies, like password renewal, auditing, ...
- Examples:
  - If an employee leaves the company
    - Deactive **all** of his User-IDs on **all** systems
  - If an emloyee moves to another department
    - Permissions to access files/programs needs to be adjusted according to his new job on **all** systems
- If you miss to update one system, the employee (or others) may still have access to confidential data

Solution: Centralized Identity management

- Goal:
  - Only **ONE** place where all Identity related information is stored
    - User-IDs
    - Permissions
    - Groups, Roles
  - All suronding systems access that single Identity Management System
  - Changes to a User-ID (deactivation, modification) automatically affect all systems, without any additional actions
  - Corporate policies can easily be enforced
  - Self servcie Help-Desk can easier be accomplished
    - e.g. Password reset, User-ID unlock, ...

Solution: Centralized Identity management

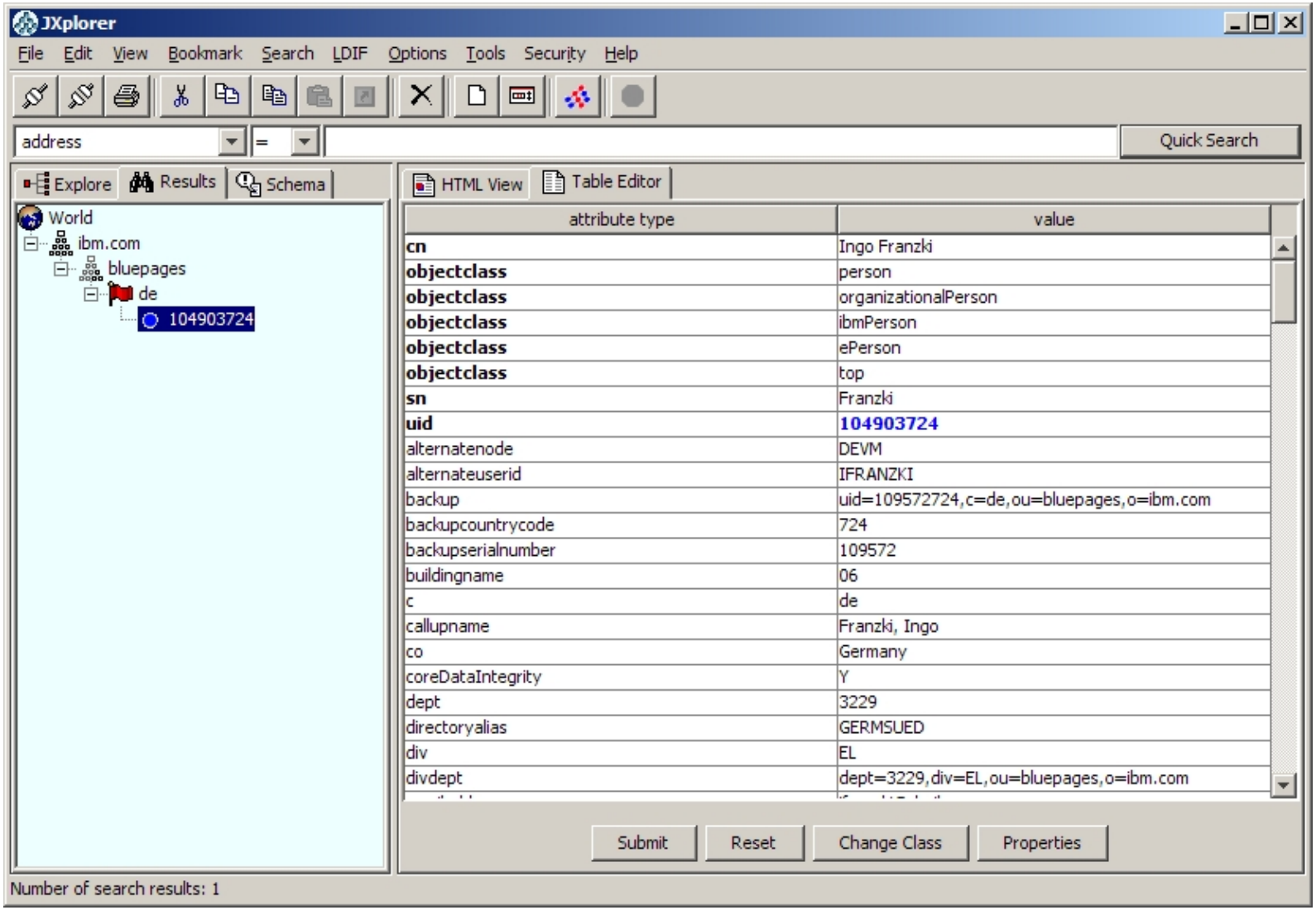
- Identity Management Systems typically use a Directory to store ID related information
  - Protocol to access the directory: **LDAP**



What is LDAP ?

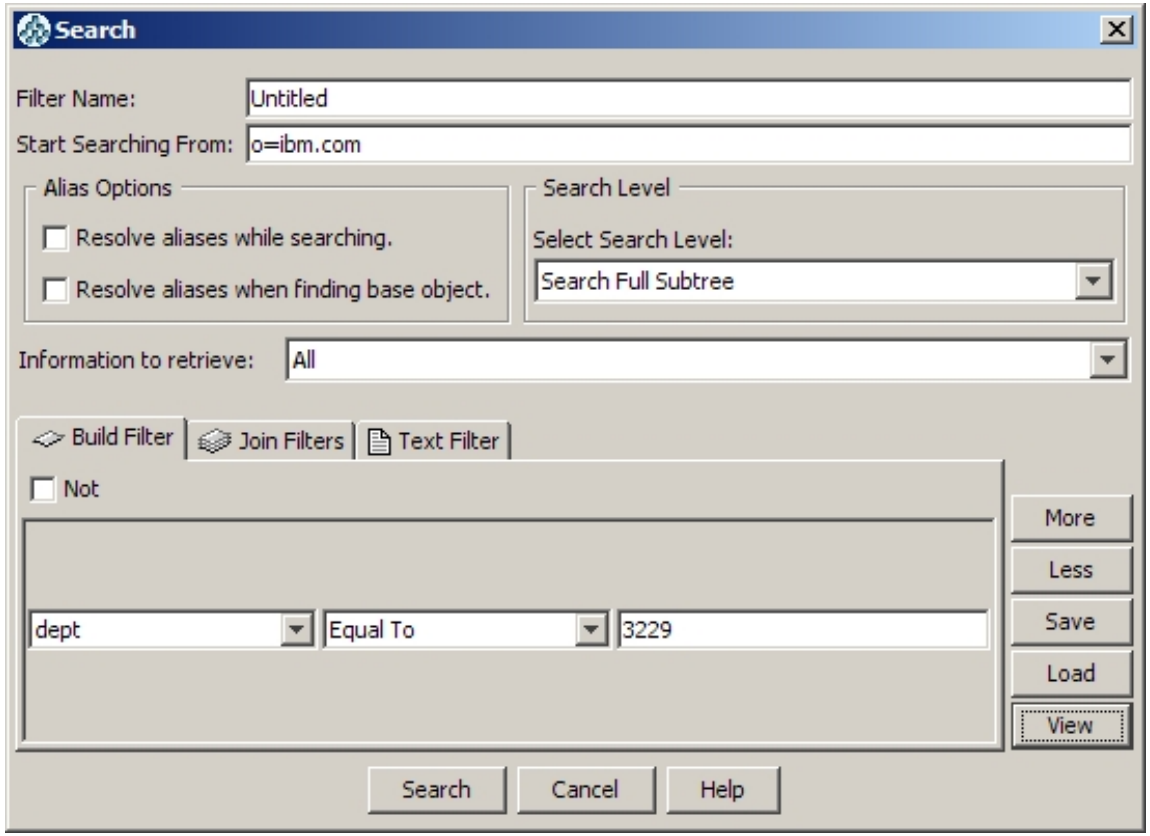
- The Lightweight Directory Access Protocol (LDAP) is an application protocol for querying and modifying directory services running over TCP/IP
  - A directory is a set of objects with similar attributes organized in a logical and hierarchical manner.
    - The most common example is the telephone directory, which consists of a series of names (either of persons or organizations) organized alphabetically, with each name having an address and phone number attached.
- Due to this basic design (among other factors) LDAP is often used by other services for authentication
- An LDAP directory tree often reflects various political, geographic, and/or organizational boundaries, depending on the model chosen.
- LDAP deployments today tend to use Domain name system (DNS) names for structuring the topmost levels of the hierarchy.
- Deeper inside the directory might appear entries representing people, organizational units, printers, documents, groups of people or anything else that represents a given tree entry (or multiple entries).
- See: Wikipedia: http://en.wikipedia.org/wiki/Lightweight_Directory_Access_Protocol

LDAP Example: IBM Bluepages

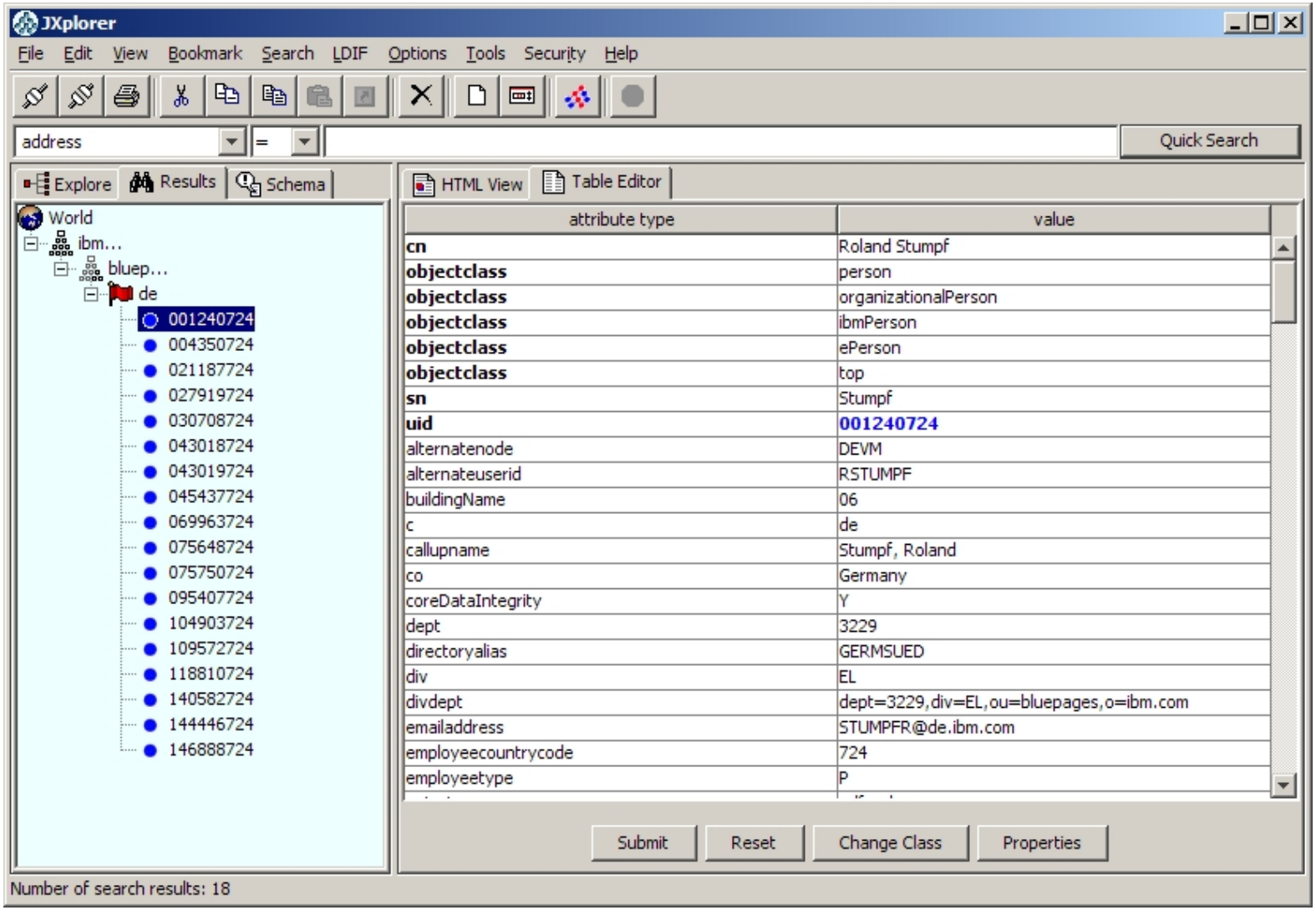


LDAP Example: IBM Bluepages

- Search for all Entries with „dept=3229“



LDAP Example: IBM Bluepages



LDAP Servers (incomplete list)

- IBM Tivoli Directory Server
- z/VM LDAP Server
- Microsoft Active Directory
- OpenLDAP
- Apache Directory Server
- Apple Open Directory
- CA Directory from CA, Inc. (formerly eTrust Directory)
- Fedora Directory Server (Red Hat Directory Server)
- MXMS, from Atos Origin
- M-Vault, from Isode Limited
- Novell eDirectory
- OneLDAP
- OpenDS
- Oracle Internet Directory
- Penrose - a Java-based Virtual Directory Server.
- Siemens DirX
- SIDVault
- Sun Java System Directory Server
- ....
- (And many more)

z/VSE V4.2 LDAP Signon Support

- LDAP Signon Support sits on top of any existing Security Manager
  - It can be used with the Basic Security Manager (BSM)
  - As well as an External Security Manager (ESM)

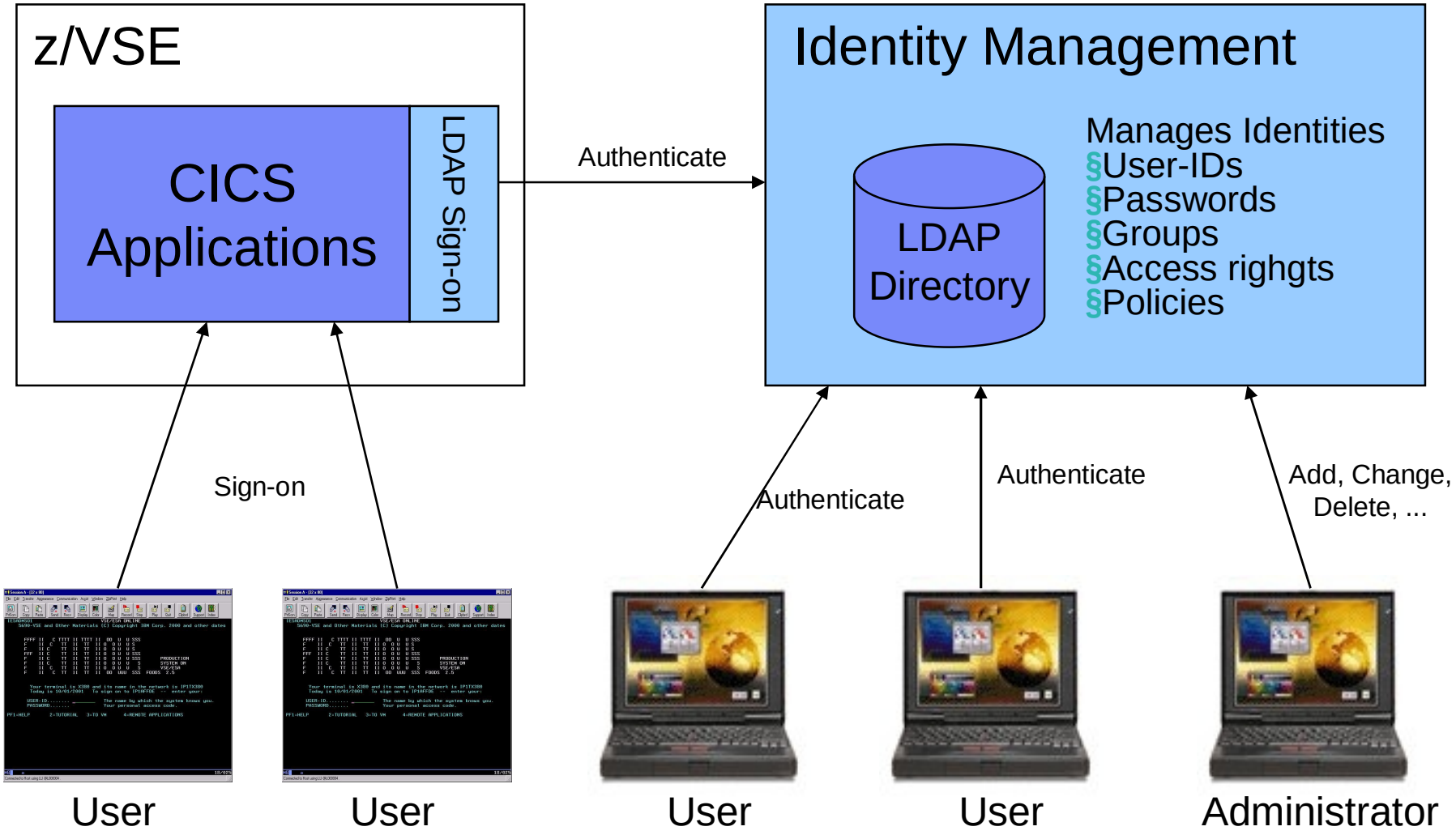
- Signon process (simplified)
  1. It first authenticates an user against a remote LDAP server
     - Via LDAP Bind and Search operations
  2. Then it maps the LDAP user to a short VSE user
     - Using a LDAP User Mapping File
  3. Finally passes the short VSE user and password to the existing signon process (BSM or ESM)

- Currently only available for CICS signon

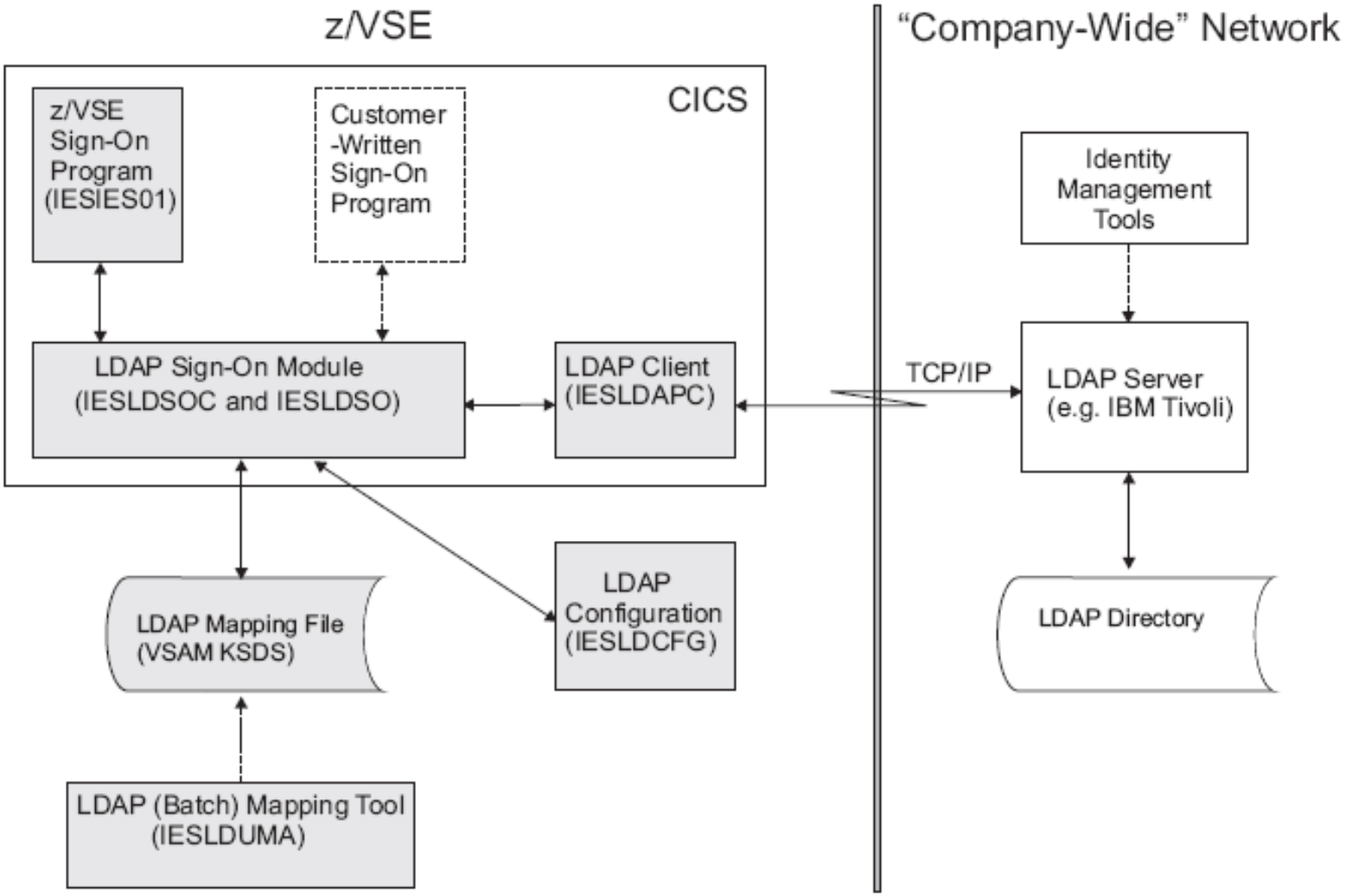
z/VSE V4.2 LDAP Signon Support

- Enables users to sign on z/VSE using a single, comprehensive, corporate-wide 'Identity Management' systems (i.e. IBM Tivoli Identity Manager, etc.)
- LDAP user-IDs and passwords can be up to 64 characters. Helps overcome VSE internal limits
  - 4 character VSE/ICCF user-IDs
  - 4 and 8 character CICS user-IDs
  - up to 8 character Passwords
- LDAP sign on sits on top of existing z/VSE security manager (i.e. BSM, ESM, etc.)
- z/VSE LDAP client can work with common LDAP servers
  - IBM Tivoli Directory server
  - z/VM LDAP server (with optional RACF repository)
  - Microsoft Active Directory, OpenLDAP, Apache Directory server, Novell eDirectory, and many others.
- Potential benefits include improved protection, consistent access rules, ease of use for end-users

The big picture



z/VSE V4.2 LDAP Signon Support



LDAP User Mapping File

- VSAM KSDS file used to store the user-ID mappings
  - LDAP Users & Passwords: up to 64 characters
  - VSE Users & Passwords: up to 8 characters
- The LDAP mapping file contains:
  - Records containing user-IDs that are to be used for LDAP-authentication
    - Contain a mapping of a long-user-ID (used in the LDAP environment) to a short-user-ID (used in z/VSE)
    - These user-IDs are referred to as being LDAP-enabled.
  - Records containing user-IDs that are not used for LDAP-authentication (for example, the SYSA user-ID)
    - These user-IDs are referred to as being not LDAP-enabled, and these users can sign on to z/VSE even if the LDAP server is not operational.
- Maintained using batch tool IESLDUMA

LDAP Password cache

- Authentication against a remote LDAP server can be time consuming (requires network communication)
- When a user signs on multiple times within a short period of time, it is very unlikely that the LDAP password has changed
- If caching is enabled, a shortpath is used to authenticate a user
  - A password hash (SHA-256) of the last sucessfull signon attempt (LDAP bind) is stored in the User Mapping File
    - There is no way to recover the password from a hash
  - A subsequent signon request builds the password hash, and compares the hash against the stored hash
    - If it is the same, the user has entered the same password
  - A stored password hash has an expiration period. When it is over, a full LDAP signon (LDAP bind) is enforced

LDAP Configuration

- Per default, LDAP signon is not enabled.
- You need to create a configuration to enable LDAP signon support
  - Use Skeleton SKLDCFG in ICCF library 59
- Specifies (summary)
  - DLBL Name of LDAP User Mapping File (default: IESLDUM)
  - IPs or hostnames of one or multiple LDAP Servers
  - Settings for Authentication method (see next foils)
  - Settings for Cache usage and expiration
  - Settings for Secure Socket Layer (SSL)

LDAP Authentication Methods

- LDAP Authentication relies on the LDAP bind operation with distinguished name (DN) and password

- **Direct Authentication:**
  - The specified user-ID is used directly for the LDAP bind operation.
  - A pattern is used to build the distinguished name for the bind, e.g. „cn=%u,dc=ibm,dc=com“

- **Search Authentication:**
  - In case the specified user-ID cannot be used directly for bind.
  - Instead, a LDAP search operation is performed first using the attribute that is specified in the configuration (e.g. „email“).
  - An additional search filter can be specified to further limit the search result, e.g. „dept=3229“
  - The search result’s distinguished name is then used for the LDAP bind operation.

Restrictions

- No support for using long-user-IDs in the ID statement within batch jobs
  - ID statements can only use a short-user-ID and short-password (a “z/VSE” user-ID and password).
- LDAP sign-on is only possible using a CICS sign-on panel.
  - The z/VSE-provided LDAP sign-on panel (IUI signon)
  - A customer-written sign-on panel.
- Only LDAP Authentication (using Bind) is supported
  - Kerberous authentication (often used by MS Active Directory) is not supported

Using your own CICS Sign-on program

- The Interactive Interface signon program (IESIES01) has been adapted to support LDAP authentication
  - If LDAP authentication is configured and enabled, it will automatically show longer fields for userid and password
- If you use your own sign-on program, you need to adapt it to use LDAP sign-on support:
  - Enlarge fields in screen (BMS map) for userid and password
  - Support case sensitive input
  - Call LDAP Sign-on Program IESLDSOC to perform LDAP authentication
    - Using EXEC CICS LINK with COMMAREA (see Admin Guide)
  - Sample CICS Sign-on Program supporting LDAP is available on request (zvse@de.ibm.com)

LDAP Tools and Documentation

- LDAP Browser
  - JXplorer (http://www.jxplorer.org/)
- z/VSE Manuals:
  - **Planning:** Subchapter in chapter 18. Security and Encryption Support: LDAP Sign-On Support
  - **Administration:** Chapter 45. Maintaining User Profiles in an LDAP Environment
- Internet:
  - Wikipedia: http://en.wikipedia.org/wiki/Lightweight_Directory_Access_Protocol

Questions ?