



## | IBM System z – Live Virtual Class

# Integrating z/VSE into an Identity Management System

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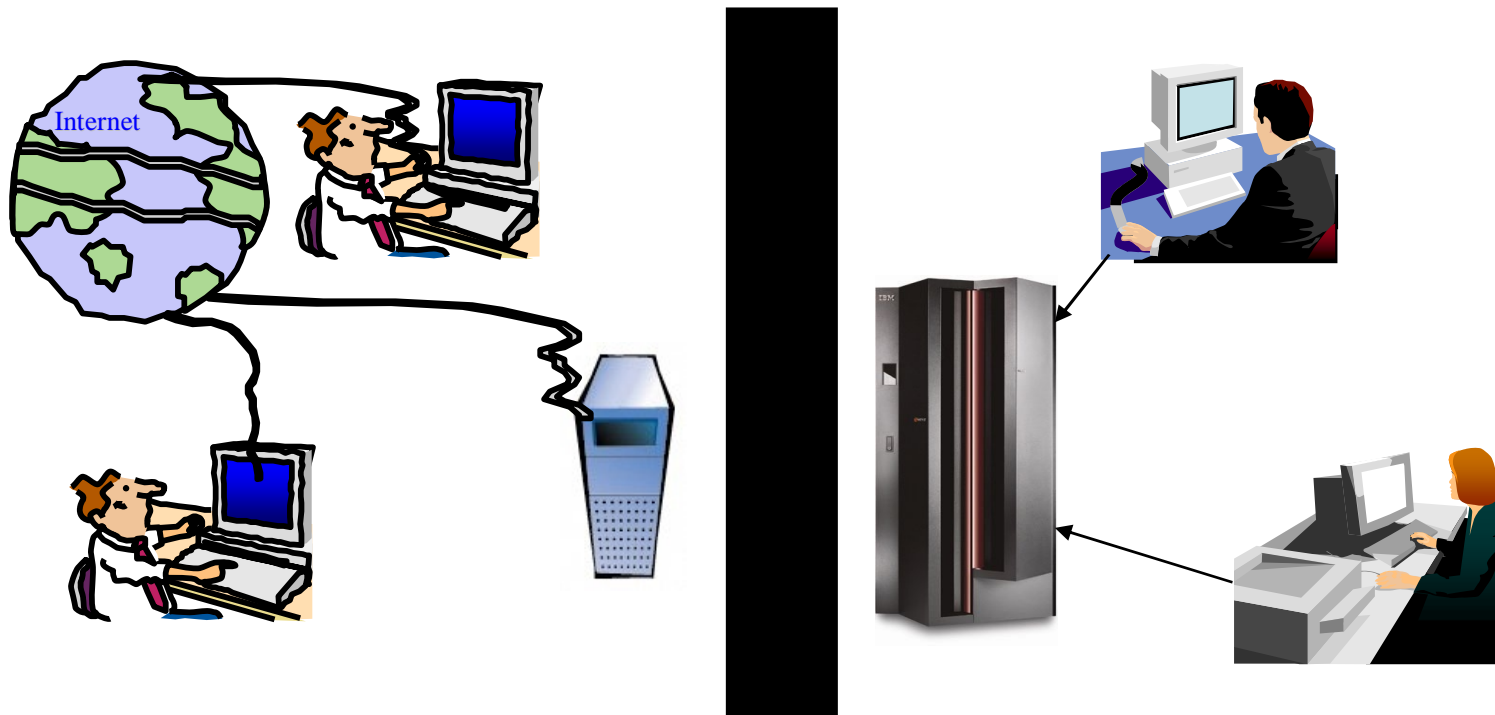
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## Situation today

### § Separate User-ID Management Systems for z/VSE and the others (Unix, Linux, Windows)

- Duplicate User IDs
- No automatic synchronisation



## Situation today - Risks

- § **User-ID management is very complex if different systems need to be updated**
- § **Some User-IDs do not explicitly 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 employee 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

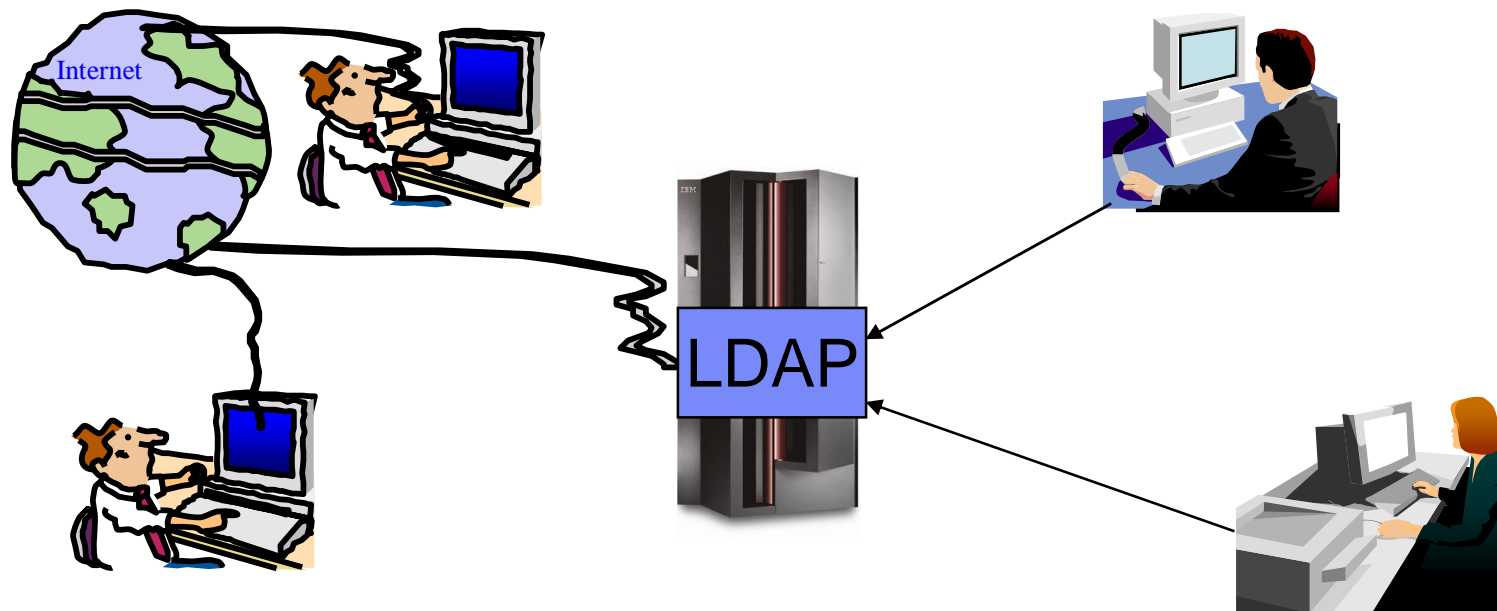
### § Goal:

- Only **ONE** place where all Identity related information is stored
  - User-IDs
  - Permissions
  - Groups, Roles
- All surrounding 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 service 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](http://en.wikipedia.org/wiki/Lightweight_Directory_Access_Protocol)**

# LDAP Example: IBM Bluepages

The screenshot shows the JXplorer application window. The left pane displays a tree view of the LDAP directory structure: World > ibm.com > bluepages > de > 104903724. The right pane shows the details for the selected entry in HTML View format.

attribute type	value
<b>cn</b>	Ingo Franzki
<b>objectclass</b>	person
<b>objectclass</b>	organizationalPerson
<b>objectclass</b>	ibmPerson
<b>objectclass</b>	ePerson
<b>objectclass</b>	top
<b>sn</b>	Franzki
<b>uid</b>	<b>104903724</b>
alternatenode	DEVN
alternateuserid	IFRANZKI
backup	uid=109572724,c=de,ou=bluepages,o=ibm.com
backupcountrycode	724
backupserialnumber	109572
buildingname	06
c	de
callupname	Franzki, Ingo
co	Germany
coreDataIntegrity	Y
dept	3229
directoryalias	GERMSUED
div	EL
divdept	dept=3229,div=EL,ou=bluepages,o=ibm.com

Number of search results: 1



## LDAP Example: IBM Bluepages

### § Search for all Entries with „dept=3229“

Search dialog box configuration:

- Filter Name: Untitled
- Start Searching From: o=ibm.com
- Alias Options:
  - Resolve aliases while searching.
  - Resolve aliases when finding base object.
- Search Level: Select Search Level: Search Full Subtree
- Information to retrieve: All
- Build Filter tab active
- Filter Rule: dept Equal To 3229
- Buttons: More, Less, Save, Load, View, Search, Cancel, Help

# LDAP Example: IBM Bluepages

The screenshot shows the JXplorer application window. The search address is set to 'address ='. The search results are displayed in a table with columns 'attribute type' and 'value'.

attribute type	value
cn	Roland Stumpf
objectclass	person
objectclass	organizationalPerson
objectclass	ibmPerson
objectclass	ePerson
objectclass	top
sn	Stumpf
uid	<b>001240724</b>
alternatenode	DEVM
alternateuserid	RSTUMPF
buildingName	06
c	de
callupname	Stumpf, Roland
co	Germany
coreDataIntegrity	Y
dept	3229
directoryalias	GERMSUED
div	EL
divdept	dept=3229,div=EL,ou=bluepages,o=ibm.com
emailaddress	STUMPF@de.ibm.com
employeeCountrycode	724
employeetype	P

Number of search results: 18

## 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)**

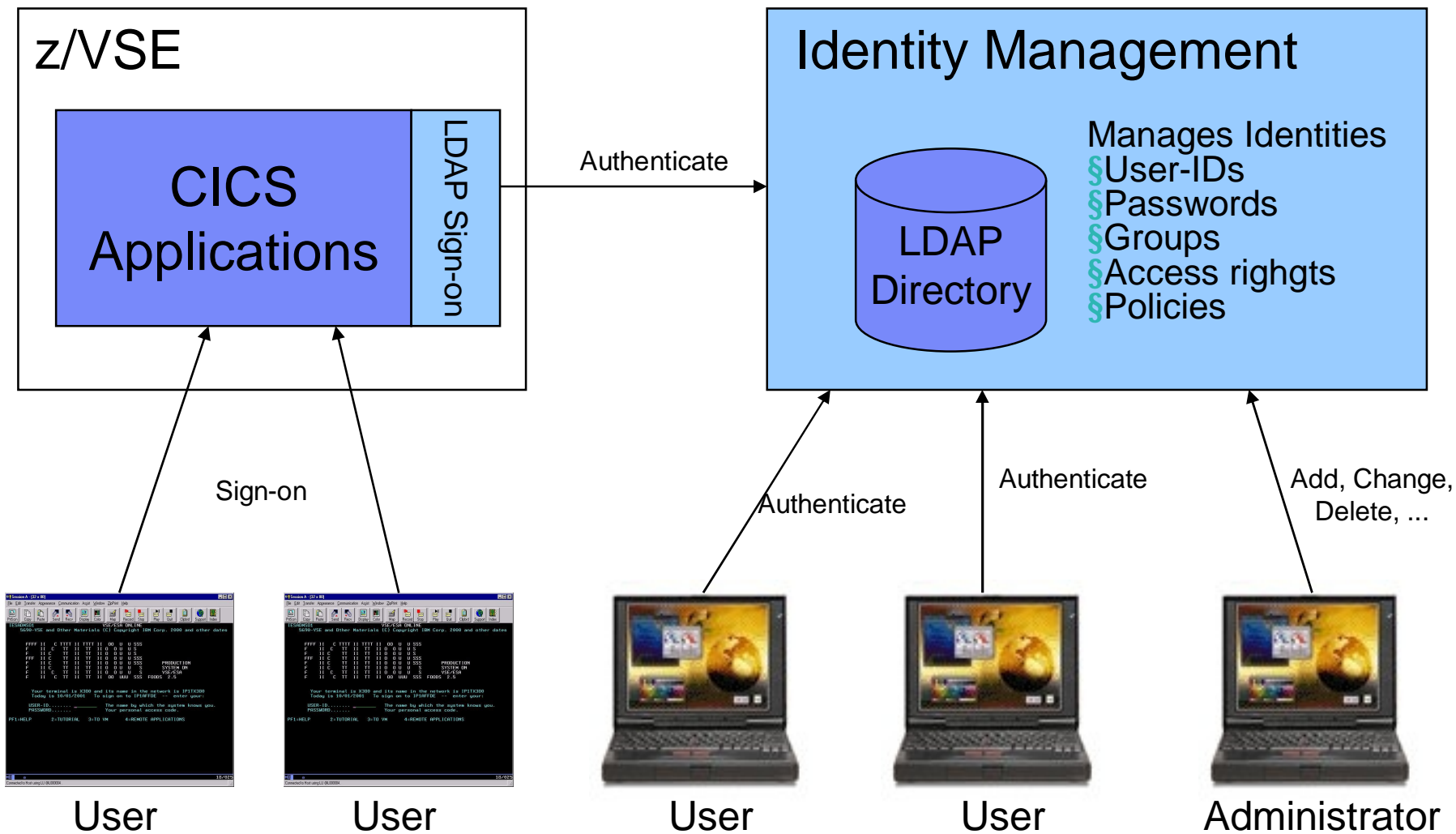
1. It first authenticates an user against a remote LDAP server
  - Via LDAP Bind and Search operations
2. Then it maps the LDAP user to a short VSE user
  - Using a LDAP User Mapping File
3. Finally passes the short VSE user and password to the existing signon process (BSM or ESM)

### § **Currently only available for CICS signon**

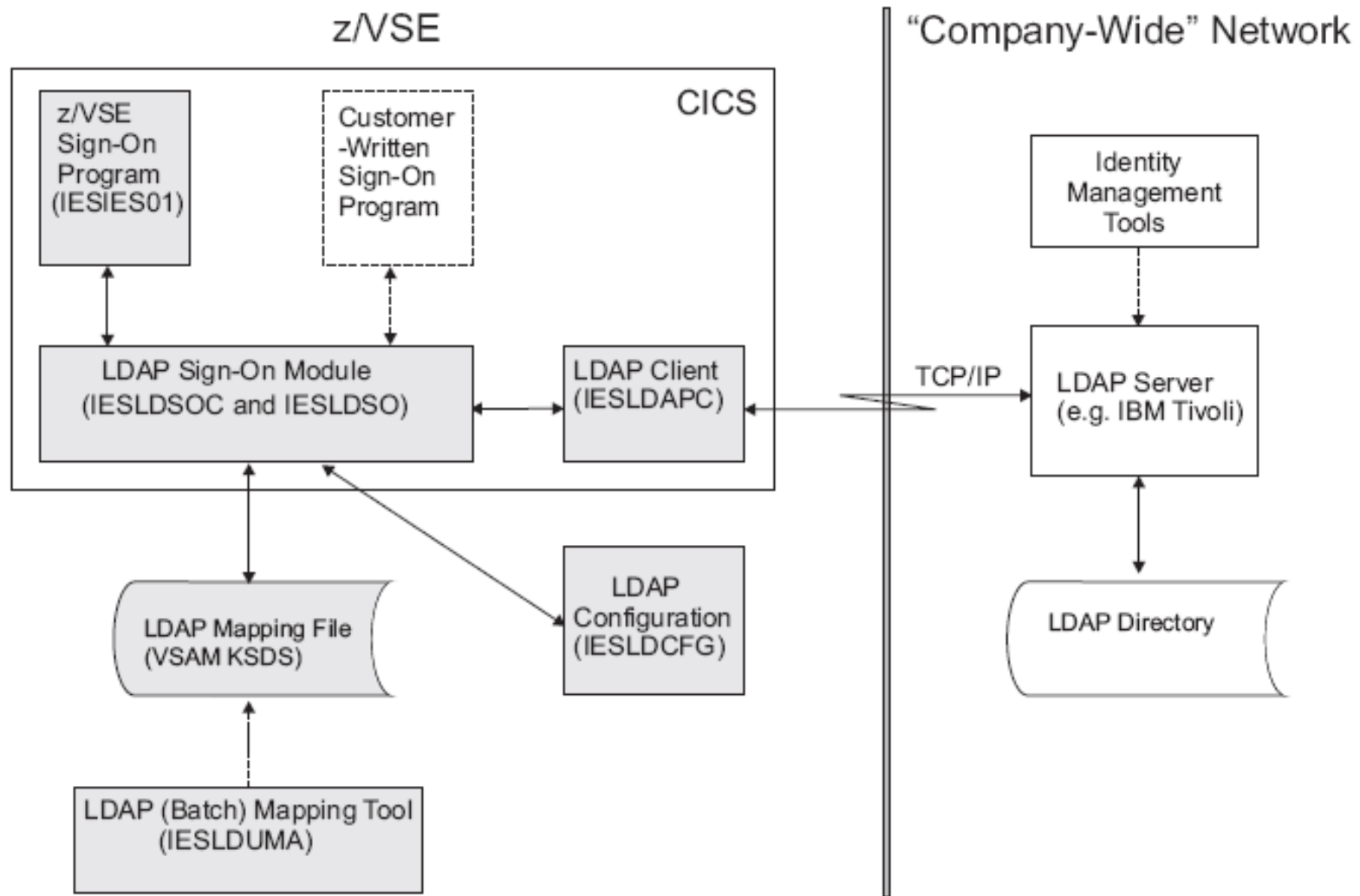
## z/VSE V4.2 LDAP Signon Support

- § **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 successful 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**
  - Kerberos 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](mailto: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](http://en.wikipedia.org/wiki/Lightweight_Directory_Access_Protocol)

Questions ?



## Mark your calendar:

### **Guide Share Europe (GSE)**

Dortmund, Germany

April 27-19, 2009

### **IBM System z Technical Conference**

Brussels, Belgium

May 4-8, 2009

### **WAVV 2009**

Orlando, Florida

May 15-19, 2009

Florida Hotel



<http://ibm.com/vse/events/>