



IBM Software Group

Rational Developer for System z Overview, Demo and Hands-on

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An IBM Proof of Technology

Powered by IMS Development at Silicon Valley Lab, California



Agenda for this session

- Rational Developer for System z (RDz) overview
- Live Demo
- Hands-on Lab



Overview



Rational Developer for System z (RDz) overview

▶ What is RDz

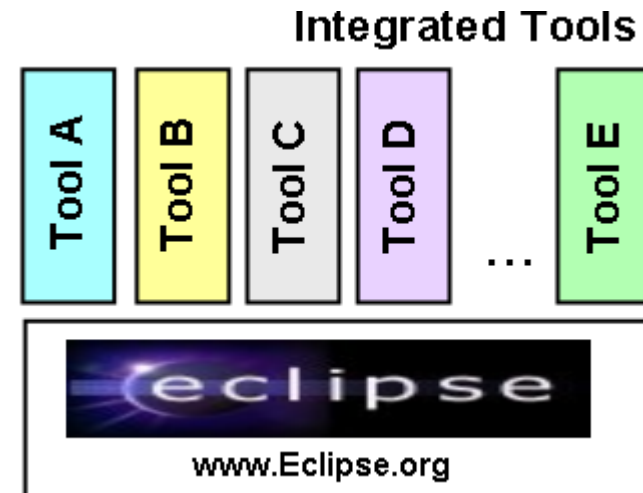
- Eclipse-based IDE
- IDE (Integrated Development Environment) - make developing faster and easier

▶ RDz supports development in the z/OS systems

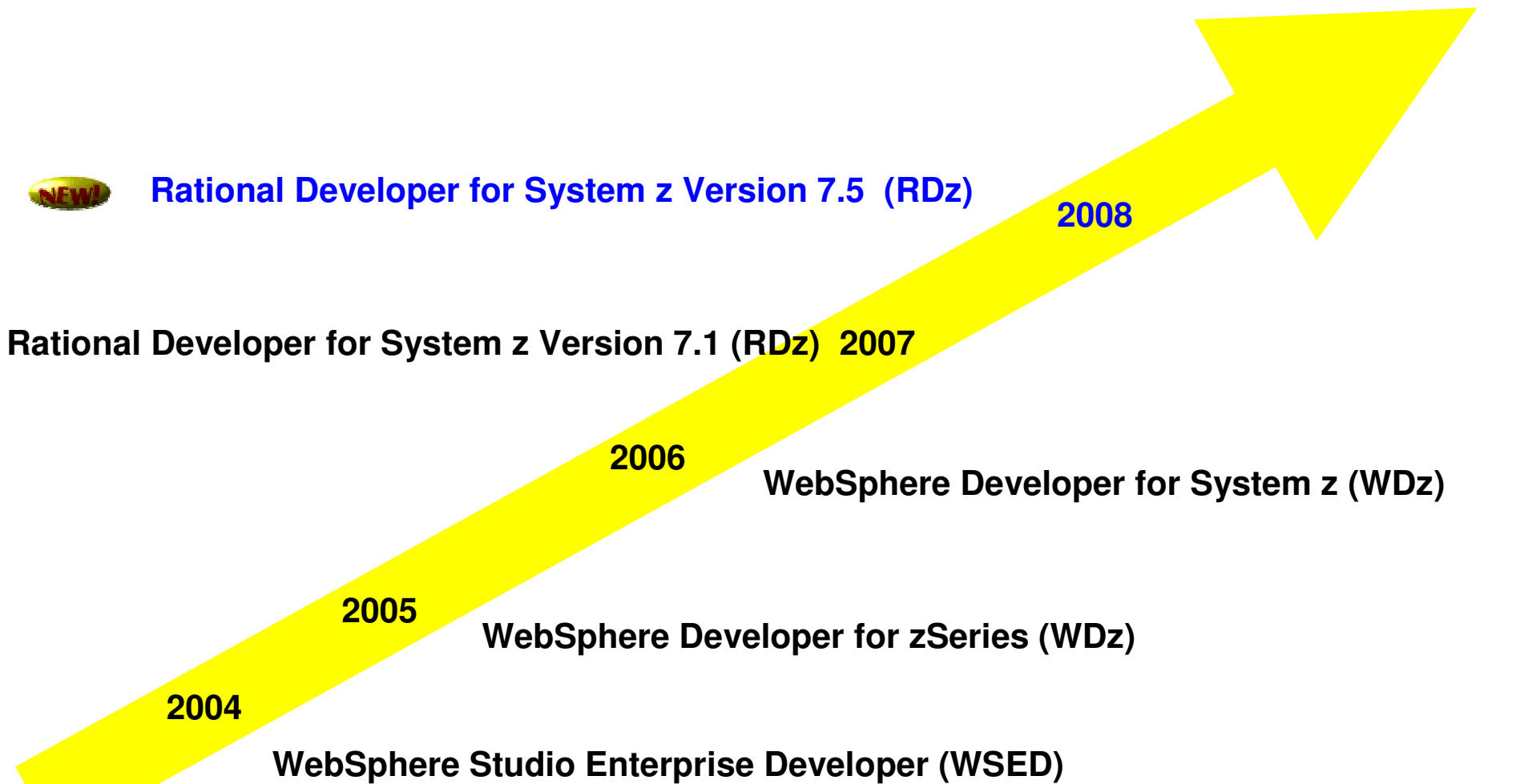
- COBOL, PL/I, C, C++, HL ASSEMBLER, Java, and Web Services
- Provides interactive access to z/OS systems
- Supports CICS, IMS, Batch, USS, DB2 Stored Procedure, Application Servers.

▶ RDz supports SOA

- Enables CICS and IMS applications for Web Services and SOA



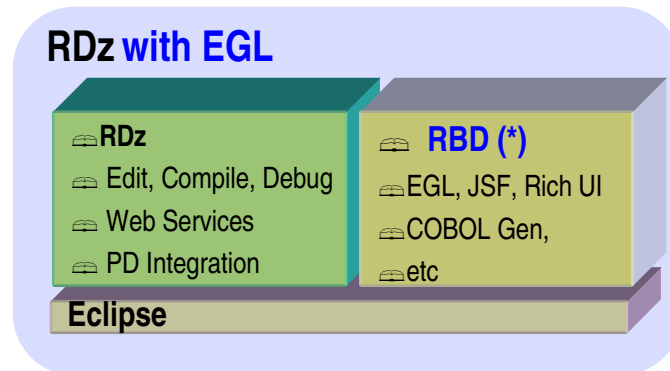
History of Rational Developer for System z



Two Rational Developer for System z (RDz) Offerings

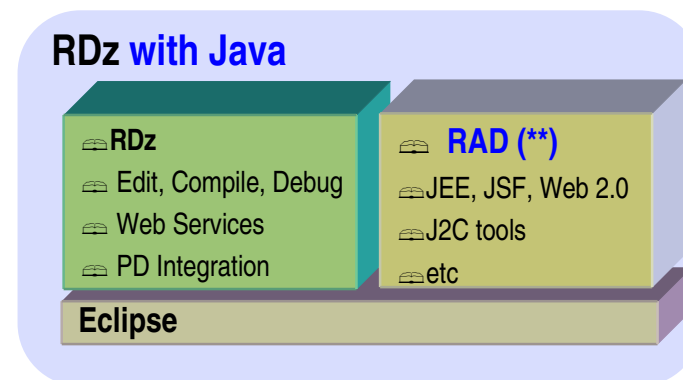
- **IBM Rational Developer for System z with EGL (Enterprise Generation Language)**

- Bundles RDz capability with Rational Business Developer (RBD)
- Best for creating System z applications with **EGL** web or Rich UI front-end applications (Web 2.0)



- **IBM Rational Developer for System z with Java**

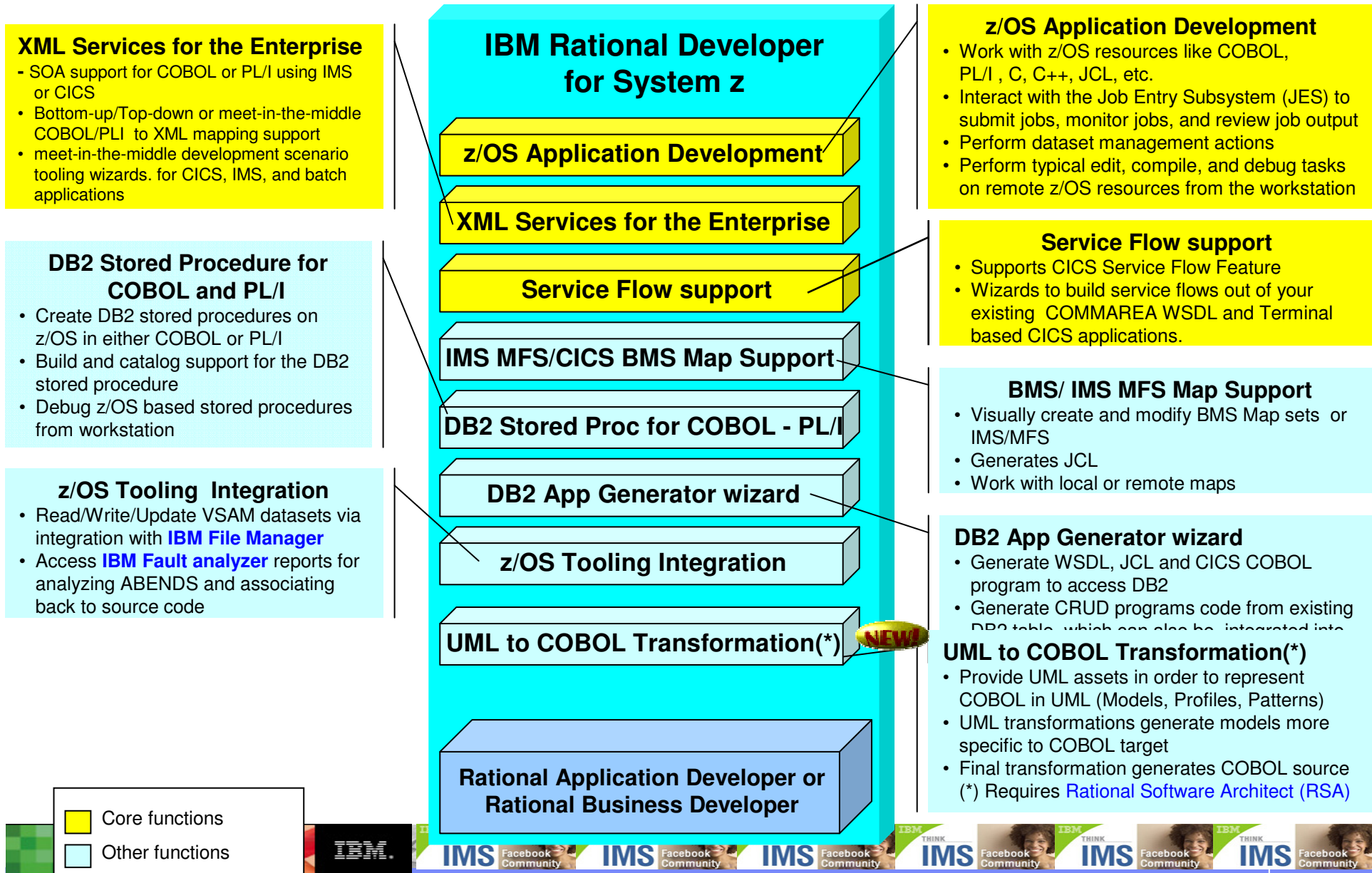
- Bundles RDz capability with Rational Application Developer (RAD)
- Best for creating System z applications combined with **Java Enterprise Edition** front-end applications



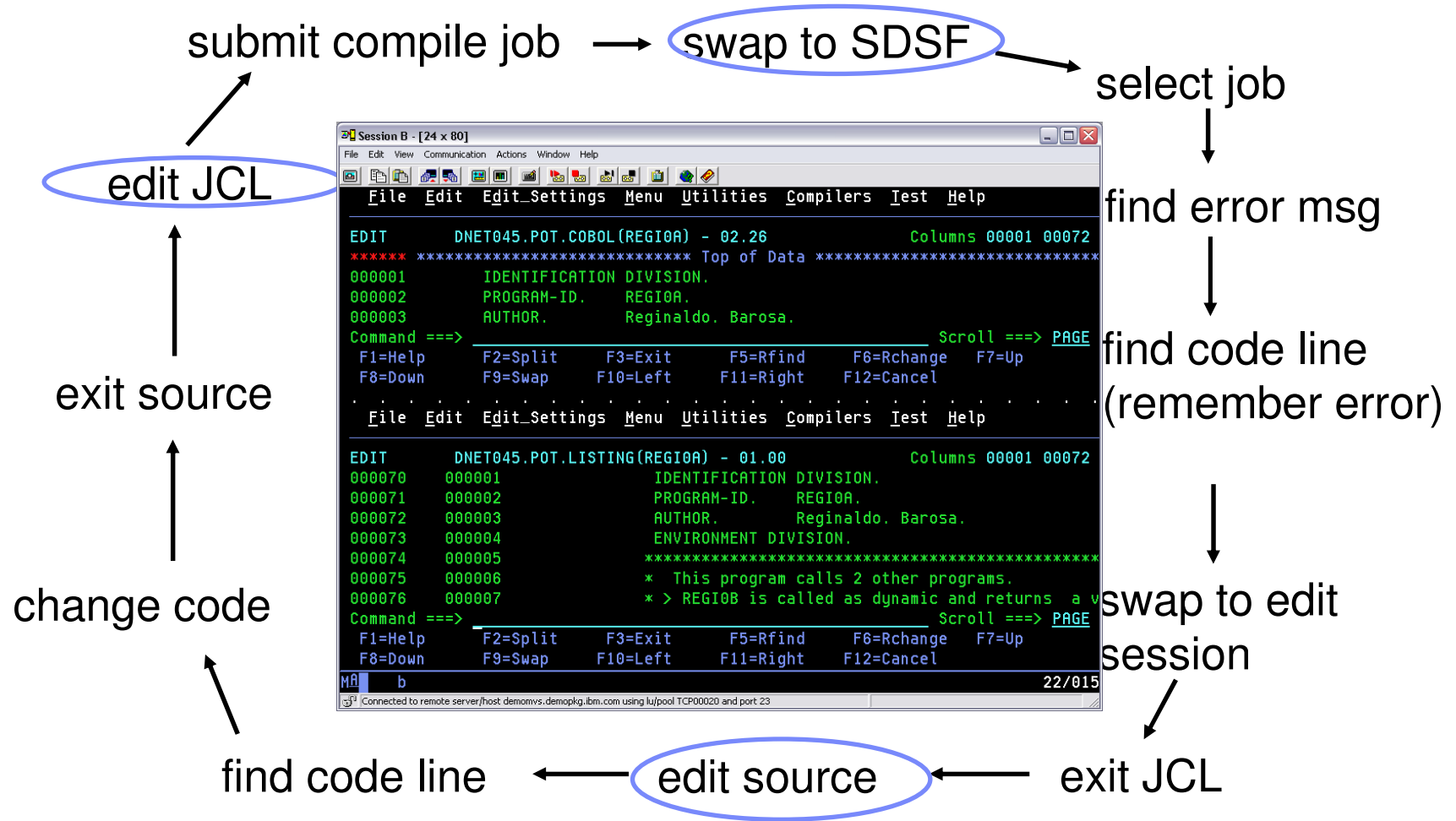
* RBD = Rational Business Developer

** RAD = Rational Application Developer

IBM Rational Developer for System z version 7.5



ISPF based z/OS development environment



```
Session B - [24 x 80]
File Edit View Communication Actions Window Help
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT DNET045.POT.COBOL(REGIOA) - 02.26 Columns 00001 00072
***** Top of Data *****
000001 IDENTIFICATION DIVISION.
000002 PROGRAM-ID. REGIOA.
000003 AUTHOR. Reginaldo. Barosa.
Command ==> Scroll ==> PAGE
F1=Help F2=Split F3=Exit F5=Rfind F6=Rchange F7=Up
F8=Down F9=Swap F10=Left F11=Right F12=Cancel
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT DNET045.POT.LISTING(REGIOA) - 01.00 Columns 00001 00072
000070 000001 IDENTIFICATION DIVISION.
000071 000002 PROGRAM-ID. REGIOA.
000072 000003 AUTHOR. Reginaldo. Barosa.
000073 000004 ENVIRONMENT DIVISION.
000074 000005 *****
000075 000006 * This program calls 2 other programs.
000076 000007 * > REGIOB is called as dynamic and returns a v
Command ==> Scroll ==> PAGE
F1=Help F2=Split F3=Exit F5=Rfind F6=Rchange F7=Up
F8=Down F9=Swap F10=Left F11=Right F12=Cancel
M& b 22/015
Connected to remote server/host demovs.demopkg.ibm.com using lu/pool TCP00020 and port 23
```



RDz based z/OS development environment

- Common development environment for COBOL, PL/I, C/C++, and Java

Edit Source

Syntax Check

Submit jobs, access job output, or open source members with a single click

Outline view presents COBOL structure

Open and edit multiple source and JCL members simultaneously

Statement in error indicated in source

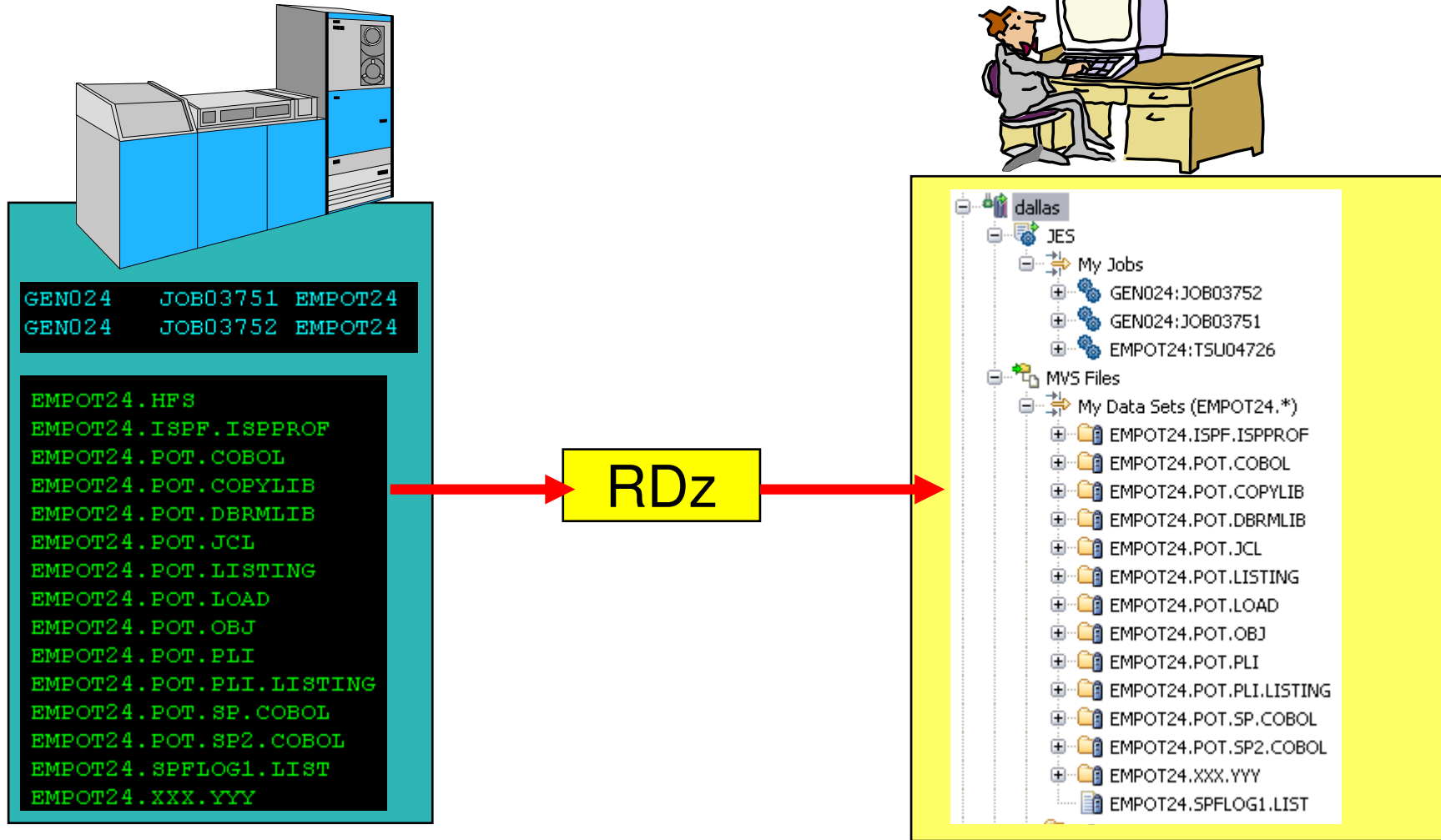
Double-Click on the Error

Error list in Problems view

The screenshot shows the IBM Rational z/OS Projects IDE. The main editor displays a COBOL source file named REGIOA.cbl. The code includes a DISPLAY statement on line 35: `DISPLAI "Program REGIOA STARTING "`. A red box highlights this line, with an arrow pointing to the "Edit Source" label. The Problems view at the bottom shows an error: `IGYPS2072-S "DISPLAI" was invalid. Skipped to the next verb, period or procedure-name d`. A red box highlights this error, with an arrow pointing to the "Double-Click on the Error" label. The Outline view on the left shows the COBOL structure, with `010-INITIALIZATION.` highlighted. A red box highlights this structure, with an arrow pointing to the "Outline view presents COBOL structure" label. The Properties view shows the file structure, with `REGIOA.cbl` highlighted. A red box highlights this file, with an arrow pointing to the "Submit jobs, access job output, or open source members with a single click" label. The Syntax Check label points to the top toolbar. The "Open and edit multiple source and JCL members simultaneously" label points to the file list on the left.



Host Workstation Overview



Files on the host look as they are workstation files

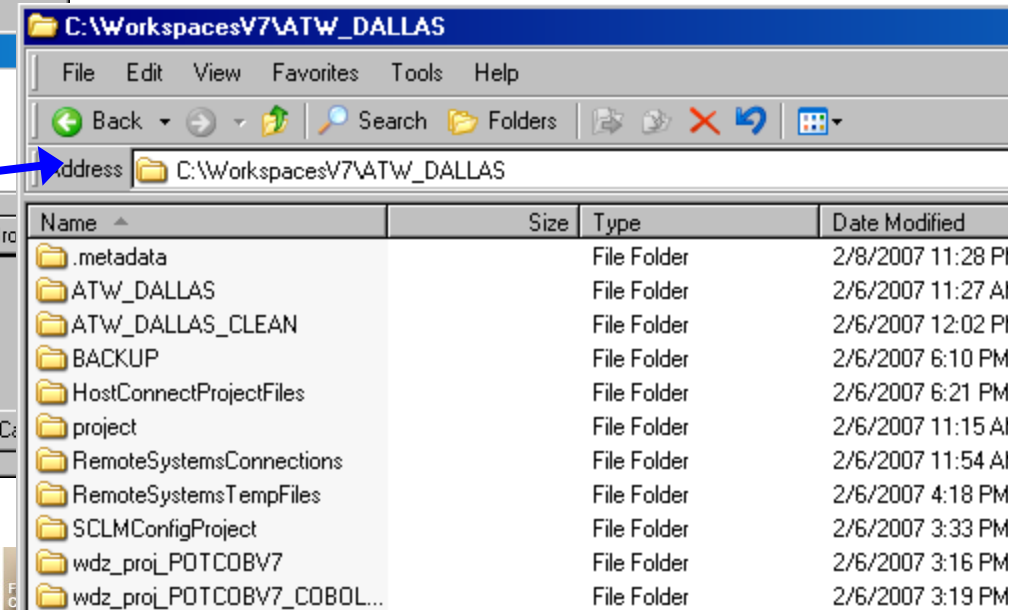
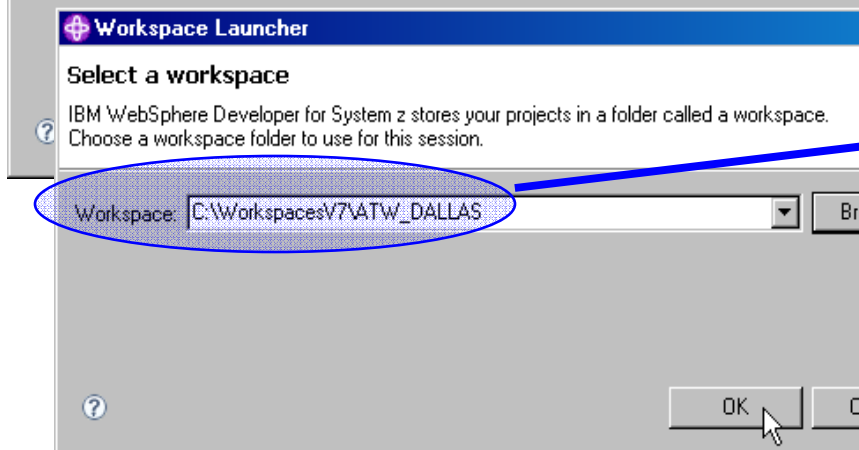
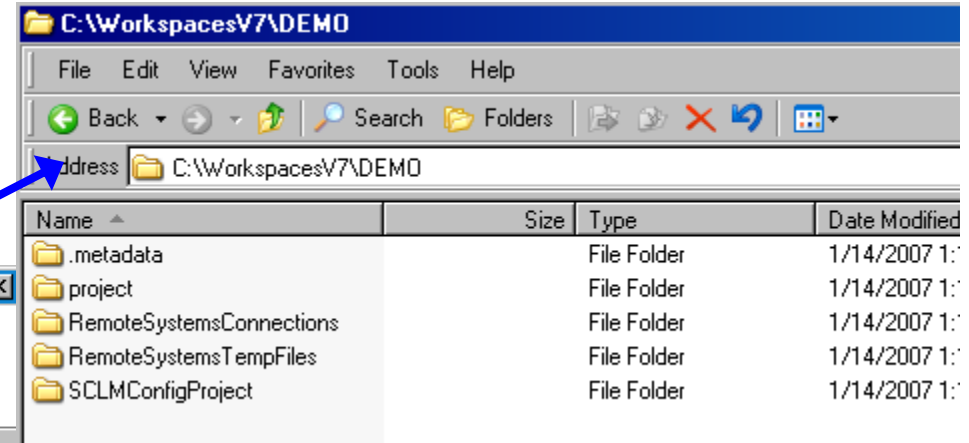
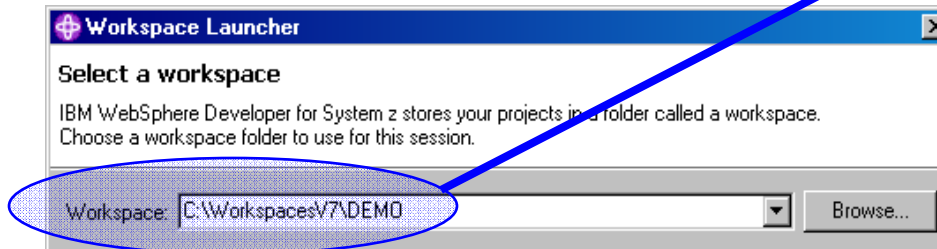


DEMO



Workspace - Introduction

- The workspace is where Application Developer stores project data files
- Application Developer stores metadata about the developer's work in the workspace
- Typically a different workspace is used for different projects or for different releases



User Assistance Features Tour

- Multimedia addition: User Assistance Tour provides an overview of user assistance features
- Embedded in the Welcome and in the Information Center
- Also available from the IBM Education Assistant
- Features audio and close-captioned text
- Translated into 4 languages
 - 📄 Brazilian Portuguese
 - 📄 French
 - 📄 German
 - 📄 Japanese

User Assistance features tour
This tour is an overview that will show you how to use the Information Center and other user assistance features that are available when using IBM Rational Developer for System z.

Develop z/OS applications
Learn key skills to help you develop z/OS applications.

Develop COBOL, PL/I, Assembler, and C/C++ applications
Learn how to develop host applications from the workstation using the integrated development environment.

Quick Start guide for the System z LPEX editor
Learn tips and tricks for using the System z LPEX editor.

Developing with EGL
Learn about EGL functionality for generating Java and COBOL.
[Select a topic ▾](#)

What's New
Read about major advances in product features and technology since our last release. For more details, look in the release notes.

Links to viewlets and demos for Rational® Developer for System z™, WebSphere® Developer for System z, common tasks, and specific features.

Create an EGL Hello World Web application
This cheat sheet guides you through creating a simple EGL Web application with two Web pages that forward data between each other.

Create an EGL Web service client
This cheat sheet shows you how to create an EGL application that uses a service provided by another application.

Create a Web service with EGL
This cheat sheet helps you create an EGL service application.

IBM Rational Developer for System z workbench

The screenshot displays the IBM Rational Developer for System z workbench interface. The main window is titled "z/OS Projects - IGYIVP.cbl - IBM Rational Developer for System z - C:\WDZLabs\Workspace". The interface includes a menu bar (File, Edit, Navigate, Search, Project, Data, Run, Window, Help), a toolbar, and several panes:

- z/OS Projects (2):** A tree view showing the project structure, including LocalCOBOL, LocalCOBOLDB2, and zOSProject. Under zOSProject, there is an MVSProject1 [ZSERVEROS] containing DDS0069.LABS.COBOL (with IGYIVP.cbl, IGYTSALE.cbl, IGYIVP.jd, and IGYIVP2.jd) and DDS0069.LABS.JCL.
- Code Editor (5):** Displays the source code for IGYIVP.cbl. The code includes an identification section with fields for DIVISION, PROGRAM-ID, AUTHOR, INSTALLATION, DATE-WRITTEN, and DATE-COMPILED. A comment line reads: "***** PRODUCT. *****".
- Remote Systems (1):** A pane showing connections to various systems, including Local, DEMOMVS, ZSERVEROS, and MVS Files.
- Properties (3):** Shows the properties for the selected program, CALLIVP1, listing divisions such as IDENTIFICATION DIVISION, ENVIRONMENT DIVISION, DATA DIVISION, and PROCEDURE DIVISION.
- Remote Error List (4):** A table showing error messages. One error is listed:

ID	Message	S...	Line	Location	
IGYPS2072	IGYPS2072-S "DIISPLAY" was invalid. Skipped ...		2	95	zOSProject/MVSProj...

The status bar at the bottom indicates "JES Job: DDS00691:JOB09469".



Perspectives and Views

- Always ONE or MORE **VIEWS** in ONE **PERSPECTIVE**

The screenshot displays the IBM Rational Developer for System z interface with the following components:

- Window Title:** z/OS Projects - CUSBATCH.cbl - IBM Rational Developer for System z
- Toolbar:** Includes icons for File, Edit, Navigate, Search, Project, Data, Run, Window, and Help. A red box highlights the 'z/OS Projects' icon, with a red arrow pointing from the text 'ONE or MORE VIEWS' to it.
- Left Panel (z/OS Projects):** A tree view showing project structure: LAB1_LOCAL_COBOL, .project, BuildOutput, cobol, CUSBATCH.cbl, REGIOC.cbl, copybooks, Lab4Client, Lab4Server, and POTCOB.
- Center Panel (CUSBATCH.cbl):** A code editor showing COBOL code:


```

Line 6      Column 1      Insert
-----+*A-1-B-+-----2-----3-----4-----+
000002      PROGRAM-ID. CUSBATCH.
000003      AUTHOR. R. Barosa.
000004      ENVIRONMENT DIVISION.
000005      DATA DIVISION.
000006      WORKING-STORAGE SECTION.
000007      * -----
000008              01 Program-Work-Fields.
000009                  03 Input-name
000010                  03 Output-name
000011                  03 program-to-call
      
```
- Right Panel (Remote ...):** A panel showing connection options: New Connection, Local, dallas, and demomvs.
- Bottom Panel (Remote Error List):** A table showing error messages:

ID	Message	S..	L..	Location	Host ...
IGYGR1130	IGYGR1130-I "RECORD KEY" or "ALTERNATE KEY" CUST-...	0	11	PotCOB_DEM...	demomvs N
- Bottom Panel (z/OS File System Mapping):** A panel for file system mapping.
- Bottom Panel (Remote System Details):** A panel for remote system details.
- Bottom Panel (Properties):** A panel showing properties for the selected program: PROGRAM: CUSBATCH., IDENTIFICATION DIVISION., ENVIRONMENT DIVISION., DATA DIVISION., WORKING-STORAGE SECT., 01 Program-Work-Fields, 01 Program-flags, 01 BRANCHFLAG, 01 WORK-AREA., 01 CUSTRECORD.

z/OS Projects Perspective

The screenshot displays the IBM Rational Developer for System z interface. The main window shows a project named 'CUSVSAM.cbl'. The left-hand side contains a project explorer with a tree view showing local files and remote projects. The central pane shows the source code editor with a COBOL program listing. The right-hand side shows a remote system browser connected to 'dallas', displaying JES jobs and MVS files. The bottom of the interface includes a properties window, a remote error list, and a file system mapping table.

Annotations:

- z/OS Projects:** Points to the top toolbar icon.
- Local Project:** Points to the 'LAB1_LOCAL_COBOL' folder in the project explorer.
- Local files:** Points to the 'CUSBATCH.cbl' and 'REGIOC.cbl' files in the local project.
- Remote Project:** Points to the 'LAB2_COBOL [dallas]' folder in the project explorer.
- Remote MVS Files:** Points to the 'CUSVSAM.cbl' and 'IGYIVP.cbl' files in the remote project.
- Local file LPEX editor - ISPF, - LPEX, - Xedit, etc.:** Points to the source code editor.
- Remote z/OS JES, MVS Files, USS:** Points to the remote system browser.
- Program outline:** Points to the 'PROGRAM: CUSVSAM.' section in the properties window.
- Errors, Warnings, etc.:** Points to the 'Remote Error List' table.

Remote Error List Table:

ID	Message	S..	L..	Location	Host
IGYGR1130	IGYGR1130-I "RECORD KEY" or "ALTERNATE KEY" CUST-...	0	11	POTCOB/LAB2...	dallas

Remote Systems Explorer Perspective

Remote System Explorer

Remote file LPEX editor
- ISPF
- LPEX,
- Xedit, etc..

Remote JES, MVS Files, USS

Program outline

Remote Properties

Remote System Details

Name	Extension	Transfer	Host Code ...	Local Code...	Local Bidi F...	Size
CUSVSAM.cbl	cbl	text	IBM-037	Cp1252	Default	7706
IGYIVP.cbl	cbl	text	IBM-037	Cp1252	Default	37308
IGYTSALE.cbl	cbl	text	IBM-037	Cp1252	Default	333000
LAB3POT.cbl	cbl	52		Default	8362	
REGIOB.cbl	cbl	text	IBM-037	Cp1252	Default	1392
REGIOC.cbl	cbl	text	IBM-037	Cp1252	Default	2294

JES = Job Entry Subsystem

Lab





IBM Software Group

Lab: COBOL application development in z/OS using RDz

Maria Querales – querales@us.ibm.com

An IBM Proof of Technology

Powered by IMS Development at Silicon Valley Lab, California



LAB: COBOL application development in z/OS using RDz

Overview of development tasks

1. Connect to a z/OS System:

→ Prepare your Workspace to connect to the z/OS system, defining a Remote System and connecting to it

2. Allocate z/OS Data sets:

→ Allocate and load assets required for this lab.

4. Send the COBOL or PL/I program to the z/OS

→ You will copy a COBOL or PL/I program from the workstation to the z/OS

5. Create a z/OS Project

→ Specify which data sets you will use in this tutorial, specify properties, etc..

6. Work with z/OS remote assets – edit, syntax check, submit, execute and see the output.

7. (Optional) Working offline using z/OS Projects



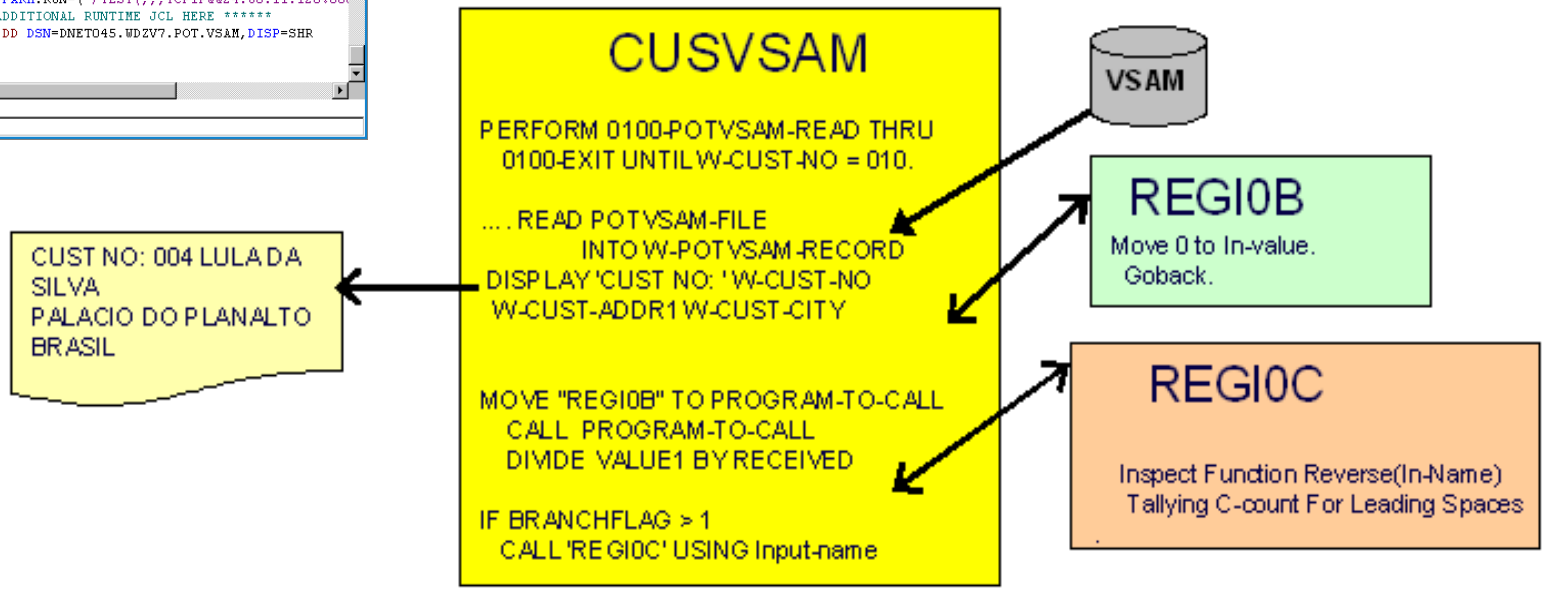
LAB: COBOL application development in z/OS using RDz

The Display Application

```

CUSVSAM.jcl
Line 29      Column 1      Insert
//-----1-----2-----3-----4-----5-----
000029  GO EXEC  PROC=ELAXFGO,GO=CUSVSAM,
000030          LOADDSN=ENPOT24.POT.LOAD,
000031          PARM.RUN=('/TEST',,TCPIP&424.60.11.120&800
000032  //***** ADDITIONAL RUNTIME JCL HERE *****
000033  //POTVSAM DD DSN=DMNET045.WDZV7.POT.VSAM,DISP=SHR
000034  //
000035
    
```

Batch execution



IBM® Enterprise Modernization Sandbox

- The Enterprise Modernization sandboxes let you evaluate the IBM Enterprise Modernization solutions
- Sandboxes make it easy and fun to quickly try practical scenarios guided by self-paced exercises
 - 📄 You can integrate, test, and deploy applications in a live test environment
- IBM provides a mix of full version software trials and "try online" hosted environments
- Sandboxes are available to everyone



Where to find EM4Z

- [Enterprise Modernization Sandbox for System z \(EM4Z\)](#)
- <http://www.ibm.com/developerworks/downloads/emsandbox/>
- ibm.com/ims

Software > Information Management > Data Management >

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- **IMS TM Resource Adapter Demo**



LAB: COBOL application development in z/OS using RDz

Each of you gets **two** different set of credentials:

- **The sandbox credentials** – Use it to start the lab and connect to the image in the sandbox. This image is a windows systems with RDz installed. You get an ip port, ID and password
- **The z/OS ID credentials** - Use it during the lab it to connect to the remote z/OS systems. You get an z/OS ID and password



LAB: COBOL application development in z/OS using RDz

Credentials for the lab

You get **two** different set of credentials:

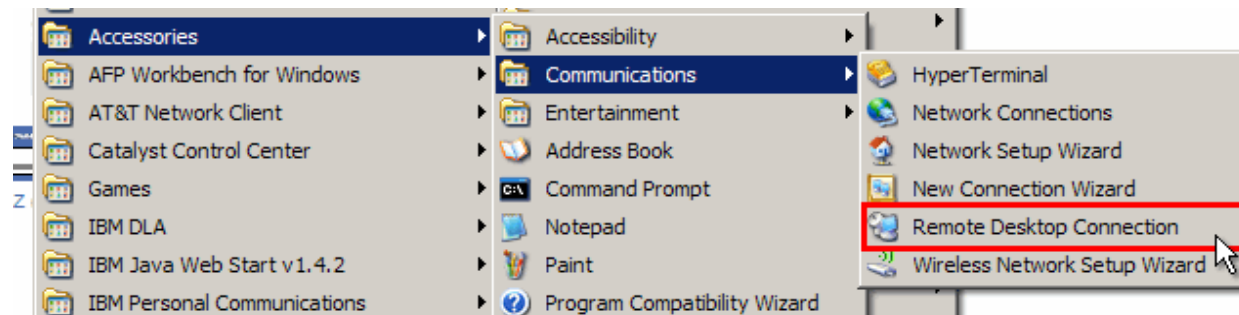
- **The sandbox credentials –**
Computer: 204.90.115.210:111xx
ID: db2admin
Password: xxxxxxxxxxxx

RDP computer

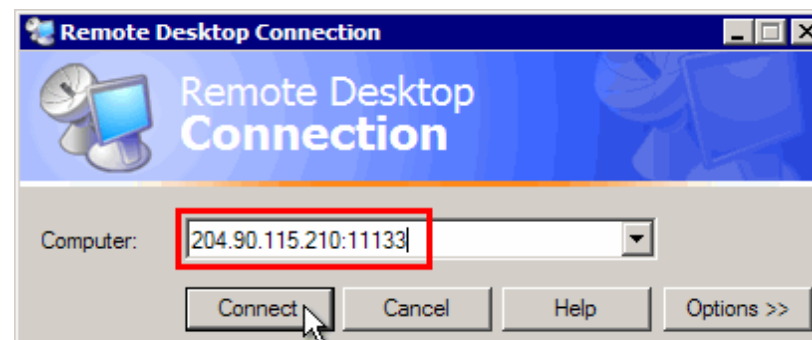
- **The z/OS credentials –**
ID: IMPOTxx
Password: IMSxx
-

Connecting to EM4Z (RDP)

- Click **Start** → **All Programs** → **Accessories** → **Communications** → **Remote Desktop Connection**



- Enter RDP computer (**204.90.115.210:11XYZ**)
- Click **Connect**



Thank
YOU

