Session 02

z/OS V1R9
Security Server Update

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z Security Update

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Agenda

- Password Phrase Minimum Length
- Java APIs For z/OS Security

Password Phrase Minimum Length

RACF Password Extensions

Background

- Longer passwords desired by customers but the RACF password length (8 characters) cannot be modified due to very deep integration in the operating system and APIs
- The z/OS two-step approach
  - 8-character mixed-case passwords at z/OS V1R7
  - Password Phrase (a.k.a. Passphrase) support at z/OS V1R8
    - Character string, 14 to 100 characters in length
    - Requires changes in applications which currently support passwords and want to support phrases (new keywords when calling SAF)
    - Users can have both a password and password phrase at the same time. It is expected that this will be common for some time

The first Password Phrase exploiter is HCM at z/OS V1R9

RACF Password Extensions

Background

The Password Phrase has fixed syntax rules:

•The user ID (as sequential upper case characters or sequential lower case characters) is not part of the password phrase

•At least 2 alphabetic characters are specified (A - Z, a - z)

•At least 2 non-alphabetic characters are specified (numeric characters, punctuation, special characters)

•No more than 2 consecutive characters are identical

A new Password-Phrase exit (ICHPWX11) can be used to install customized syntax rules

RACF Password Phrase – z/OS V1R9 Improvements

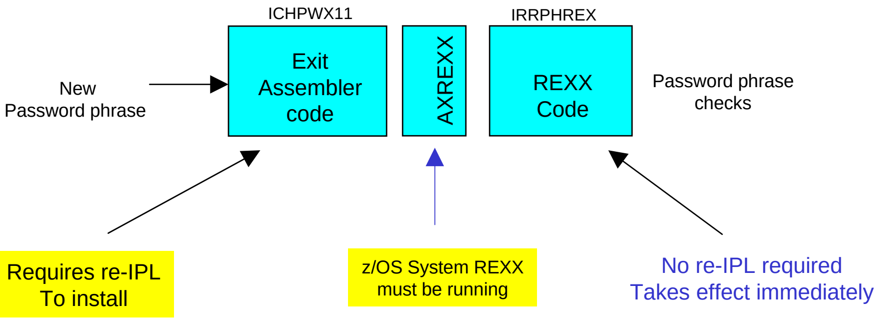
1. Allow a password phrase minimum length of 9 characters (instead of 14) – Maximum is still 100 chars
   - Password phrases of length 9-13 characters in length may be specified if
     - the installation has coded the ICHPWX11 password phrase quality exit
     - and the exit accepts the shorter password phrase.
   - If the ICHPWX11 password phrase exit is not present, the minimum password phrase length remains 14.
2. Provides a REXX sample password phrase quality rules in REXX
   - Robust, easy to code, easy to change, and immediately effective password phrase quality rules
   - Exploits the z/OS System REXX facility
3. Make the coding of authentication routine, using RACROUTE REQUEST=VERIFY/X more easy
   - The RACROUTE VERIFY process can automatically recognize password (length < 9 chars) and password phrase (length >= 9 chars)

No support yet for password phrase enveloping

RACF Password Phrase – z/OS V1R9 Improvements

Coding password phrase quality rules in REXX

- A sample assembler code for the ICHPWX11 exit
  - source code in SYS1.SAMPLIB(RACEXITS)
  - accumulates a number of parameters and then passes them to IRRPHREX, using the new z/OS System REXX facility



Requires re-IPL To install

z/OS System REXX must be running

No re-IPL required
Takes effect immediately

- The sample SYS1.SAMPLIB(IRRPHREX) REXX exec Implements check for:
  - Maximum/minimum length
  - Allowable characters
  - Leading/trailing blanks
  - User name allowed or not
  - Triviality checks with respect to previous phrase
  - Minimum unique characters/words with respect to previous phrase
  - Dictionary check

Java APIs
For z/OS
Security Services

z/OS Security Services – Java APIs

APIs provided in z/OS

- RACF Passticket Java evaluation and generation (z/OS V1R7)
  /usr/include/java_classes/IRRRacf.jar & IRRRacfDoc.jar
- EIM Java client (z/OS V1R7)
  /usr/lpp/eim/lib/
- RACF users and groups administration – JSec

New at z/OS V1R9

APIs provided in the IBM SDK for z/OS

SAF classes (JDK V1.R4): PlatformAccessControl, PlatformThread, PlatformSecurityServer, PlatformAccessLevel, PlatformReturned, PlatformUser

See the appendix for further details

Java And z/OS Security Server

New at z/OS V1R9

Java Interface To Users And Groups (JSec)

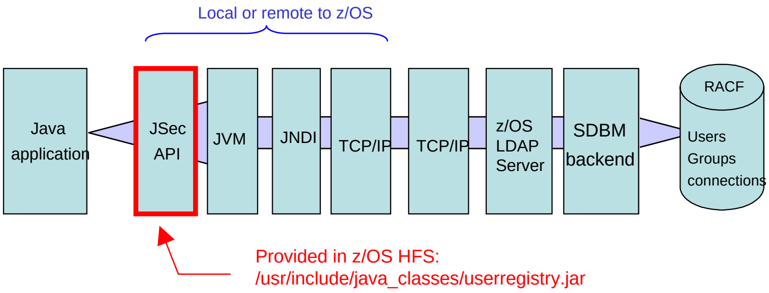
- Two parts
  - Generic interface (true Java interface) that could be used to query users and groups in other security repositories.
  - RACF implementation of this interface – Maps the ADDUSER, ALTUSER, CONNECT, …, commands
- Extensible - to allow for future RACF enhancements or use by other security repositories.
- Built on commonly used objects and interfaces in JSDK
  e.g. javax.naming.directory.BasicAttributes, javax.naming.directory.ModificationItem
- Can be run ON or OFF z/OS platform (LDAP interface used)
  Access RACF through the SDBM LDAP backend

www-03.ibm.com/servers/eserver/zseries/software/java/jsec/overview.html

Java And z/OS Security Server

New at z/OS V1R9

Java Interface To Users And Groups (JSec) Implementation



Provided in z/OS HFS:
/usr/include/java_classes/userregistry.jar
/usr/include/java_classes/RACFuserregistry.jar

```
import com.ibm.eserver.zos.racf.userregistry.*;
import com.ibm.security.userregistry.*;
import javax.naming.*;
import javax.naming.directory.*;

public class sample {
public static void main(String[] args)
   {
   RACF_remote remote = new
RACF_remote("ldap://alps4214.pok.ibm.com:389",
      "simple",
      "IBMUSER",
      "secret", "o=racfdb,c=us");
try
   {
     SecAdmin racfAdmin = new RACF_SecAdmin(remote);
     if (racfAdmin != null)
       {
       User ibmuser = racfAdmin.getUser("ibmuser");
       BasicAttributes ibmuser_attr = ibmuser.getAttributes();
       System.out.println("Attributes returned for IBMUSER are: ");
       RACF_SecAdmin.displayAttributes(ibmuser_attr);
       }
```

```
Attributes returned for IBMUSER are:
BASE_CREATED: 11/04/94
BASE_DAYS: SUNDAY, MONDAY, TUESDAY,
        WEDNESDAY, THURSDAY, FRIDAY, SATURDAY
BASE_DFLTGRP: SYS1
BASE_LAST-ACCESS: 06/09/06/17:32:24
BASE_OPERATIONS: No values ← boolean attribute
BASE_OWNER: IBMUSER
BASE_PASS-INTERVAL: 30
BASE_PASSDATE: 06/05/06
BASE_PASSWORD: Password Exists
BASE_SECLABEL: SYSMULTI
BASE_SPECIAL: No values ← boolean attribute
BASE_TIME: ANYTIME
BASE_USERID: IBMUSER
OMVS_PROGRAM: /bin/sh
OMVS_UID: 0
```

Thank You

Any Questions ?

Appendix

- See the following RACF books for more details
  - Security Server RACF System Programmer's Guide (SA22-7681)
  - Security Server RACF Security Administrator's Guide (SA22-7683)
  - Security Server RACF Command Language Reference (SA22-7687)
  - OSecurity Server RACROUTE Macro Reference (SA22-7692)

- And the following z/OS books for System REXX
  - MVS Assembler Services Guide (SA22-7605)
  - MVS Programming: Authorized Assembler Services Reference, Volume 1 (ALESERV-DYNALLOC) (SA22-7609)
  - MVS System Commands (SA22-7627)
  - MVS Initialization and Tuning Reference (SA22-7592)

z/OS SAF Interfaces

- Java static class methods provide an interface to the z/OS Security Server using SAF (System Authorization Facility) and z/OS services to provide basic authentication and authorization services.
  - PlatformSecurityServer class
    - IsActive(), resourceIsActive()
  - PlatformUser class
    - authenticate(), changePassword(), isUserInGroup()
  - PlatformAccessControl.checkPermission()
  - PlatformThread.getUserName()
- z/OS documentation available at http://www.ibm.com/servers/eserver/zseries/software/java/security14.html

Java SAF classes (JDK V1R4 and above)

These APIs are implemented through Java classes wrapping z/OS UNIX Services. The z/OS UNIX Services are in turn handled by a Security Server for z/OS that implements SAF interfaces (such as RACF).

The classes provided are:

- PlatformAccessControl
- PlatformThread
- PlatformSecurityServer
- PlatformAccessLevel
- PlatformReturned
- PlatformUser

These methods of these new classes allow a Java application to:

- Check to see if the Security Server or a specific security server class is active
- Extract the **userid** in effect for the current running thread
- Check the **userid** in effect for access rights to a resource
- Authenticate a **userid** and password

http://www-03.ibm.com/servers/eserver/zseries/software/java/j5security.html

RACF Passticket Java evaluation and generation (z/OS V1R7 and above)

- Java applications may now use the new IRRPassTicket class to generate and evaluate RACF PassTickets.

- The IRRPassTicket class is found in /usr/include/java_classes/IRRRacf.jar.
- IRRPassTicket uses native methods (JNI) to call r_tickerserv and/or r_gensec to perform PassTicket operations.

- JavaDoc documentation for the IRRPassTicket is located in /usr/include/java_classes/IRRRacfDoc.jar, which must be copied to a workstation, uncompressed and viewed with a web browser.

EIM Java client (z/OS V1R7 and above)

- Registry names in RACF profiles
  - –Methods in the ConfigurationMgr class will retrieve the names of the local SAF registry, Kerberos registry, or x.509 registry from the IRR.PROXY.DEFAULTS profile in the facility class.
  - –The names can be used on calls to the lookup methods – findTarget, findTargetFromSource, getAssociations, and getAssociatedEids

- EIM Domain name and bind dn and password stored in RACF profiles
  - –LDAPBIND class profile name stored in the LDAPPROF field in the EIM segment of the USER profile
  - –IRR.EIM.DEFAULTS profile in the LDAPBIND class or IRR.PROXY.DEFAULTS profile in the FACILITY class
    - DOMAINDN field in the EIM segment
    - LDAPHOST, BINDDN, and BINDPW fields in the PROXY segment.