E55

z/VSE Security Concepts and News

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IBM System z Expo
September 17-21, 2007
San Antonio, TX

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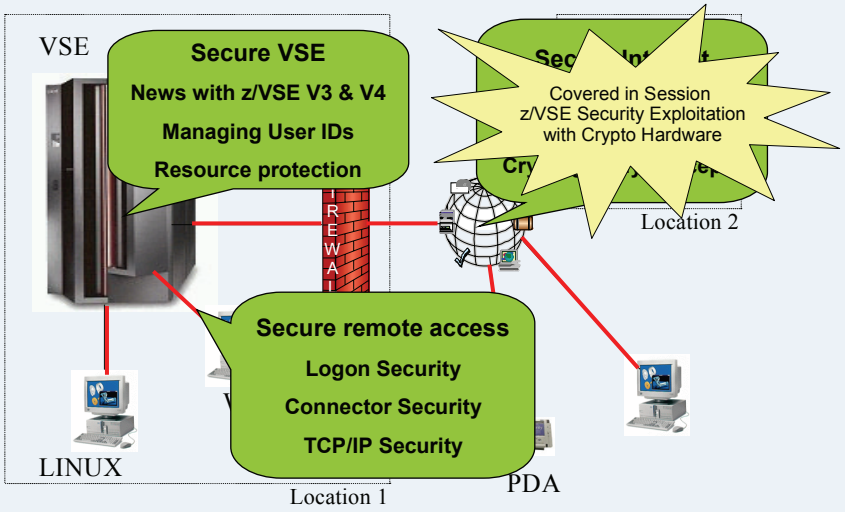
Security requirements

- Security requirements are increasing in today's world
  - Data security
  - Data integrity
  - Keep long-term data audit-save
- The number of attacks increase daily
  - Industrial spying
  - Security exploits, Denial-of-Service attacks
  - Spam, Phishing, …
- Not paying attention to security requirements can be very expensive
  - Your data is the heart of your company
  - Loosing your customer data is a disaster
  - You can loose customers
- IT Security gets more and more important
  - You need to consider the whole IT Environment not only single systems

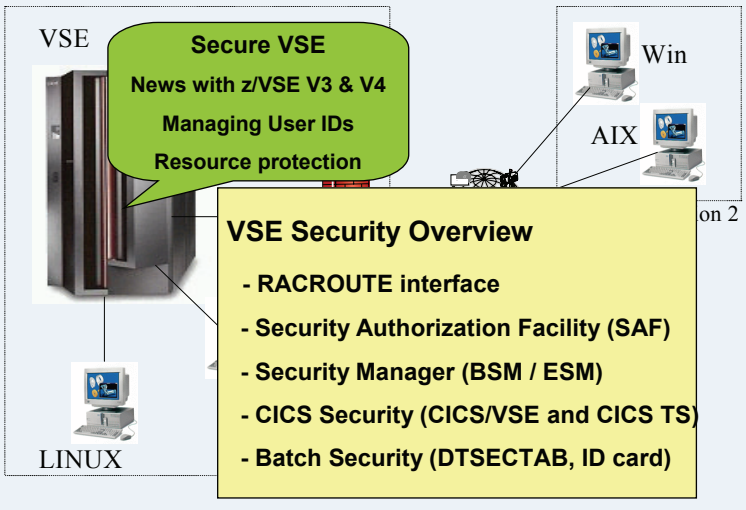
Security in a heterogeneous environment



Security in a heterogeneous environment

- **Security is very important**
  - Restrict access to systems
  - Keep secrets
  - Prove identity of users
  - Prevent data modification
- **Security can be very complex**
  - In an heterogeneous environment
  - A lot of different servers and technologies
- **You must know what you are doing !**
  - Incomplete security setup can be more dangerous than NO security

Security in a heterogeneous environment



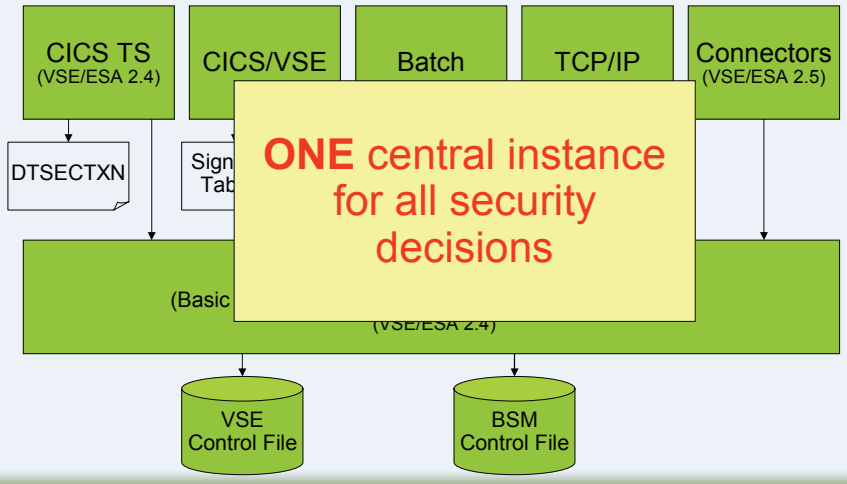
Why secure VSE ?

- Prevent unauthorized access to VSE and data
  - Keep secret data secret
  - Data modification by unauthorized users
- Prevent users from damaging the VSE system (maybe by accident)
  - Deletion of members or entries
  - Submission of jobs

VSE Security Overview

- VSE/ESA 2.3 (or below)
  - SECHECK macro (DTSECTAB)
  - CICS/VSE internal security
- VSE/ESA 2.4-2.7, z/VSE 3.1
  - Security Server (BSM/ESM)
  - Security decisions delegated to Security Manager
  - Architecture defined interface (RACROUTE)
- New with z/VSE 3.1.1: BSM enhancements
  - User Groups
  - Description field for all profiles
  - BSM Resource Profiles
  - New resource classes
- New with z/VSE 4.1: Audit-logging and reporting

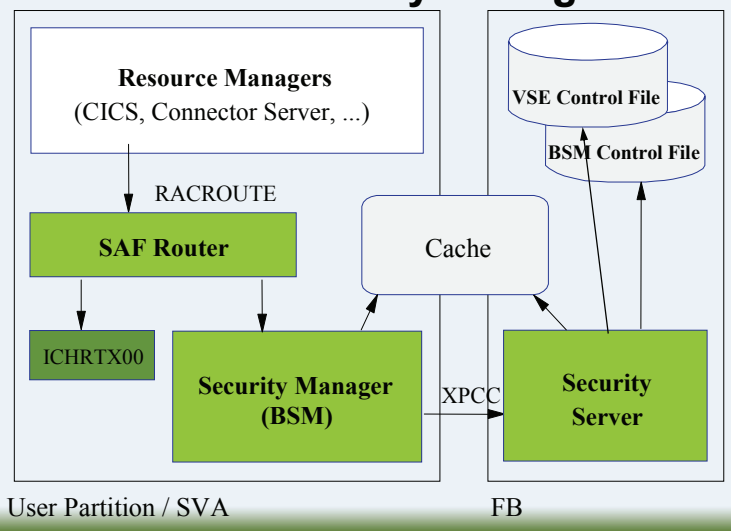
VSE Security Components



Security Managers

- **Basic Security Manager (BSM)**
  - **Part of VSE Central Functions**
  - **Sign on Security**
  - **Transaction Security**
  - **Resource Security**
- **External Security Manager (ESM)**
  - **CA-Top Secret**
  - **BIM Alert**
  - **Vendor**

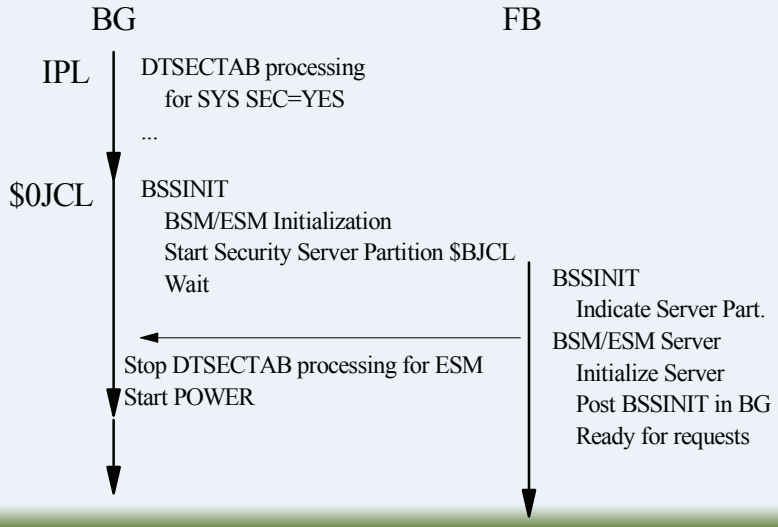
Security Authorization Facility (SAF) and Basic Security Manager



RACROUTE interface

- Architecture defined interface
- External interface to the Security Authorization Facility (SAF)
- To be used by Resource Managers and Subsystems
  - CICS TS
  - VSE Connector Server
  - DITTO/ESA for VSE
  - TCP/IP Security Exit
  - Interactive Interface Sign on

Common Security Startup



Common Security Startup (continued)

- **Security manager (BSSINIT) has to initialize before other partition or POWER are active**
- **BSSINIT will fail, if there are other partition active**
- **Static partition required for Security Server**
- **SYS ESM=phasename in IPL proc to start ESM**
- **If no ESM is started, BSM is activated**
- **For SYS SEC=YES with ESM a DTSECTAB protection is active until ESM is initialized**

Basic Security Manager - Recovery

- If an active Security Manager does not allow to recover from a problem
  - IPL cuu LOADPARM ..P
  - STOP=DPD
  - 0 SYS SEC=RECOVER
  - BSSINIT will not start a Security Manager
  - Re-IPL required to start Security Manager again

Basic Security Manager

- Provides RACROUTE support for
  - Sign on (CICS and VSE Connector Server)
  - Batch sign on (ID statement)
  - Transaction security
- Supports also the SVC-based security calls
  - SECHECK
- Resource classes
  - USER
  - DATASET
  - VSELIB, VSESLIB, VSEMEM
  - TCICSTRN
  - New with z/VSE 3.1.1: MCICSPPT, FCICSFCT, JCICSJCT, SCICSTST, DCICISDCT, ACICSPCT, APPL, FACILITY

Basic Security Manager
New with z/VSE 3.1.1

- New BSM repository
  - BSM Control File (VSAM file)
  - Maintains a copy in data space for performance reasons
  - Replaces DTSECTXN
- New resource classes (see next foil)
- Description field for all profiles (20 characters)
- User Groups
  - Replaces the security classes concept for CICS
- Password rules can be changed by command
  - Replaces IESIRCVT
- New admin functions
  - BSTADMIN (console or batch)
  - Interactive Interface Dialogs

Basic Security Manager
New with z/VSE 3.1.1

- New resource classes
  - TCICSTRN - Transactions (as on VSE/ESA 2.7)
  - MCICSPPT - Application programs
  - FCICSFCT - Files
  - JCICSJCT - Journals
  - SCICSTST - Temporary storage queues
  - DCICISDCT - Transient data queues
  - ACICSPCT - Transactions (CICS START)
  - APPL - Applications
  - FACILITY - Miscellaneous resources

Basic Security Manager
New with z/VSE 4.1

- **Audit-Logging and Reporting**
  - **All access attempts to protected resources can be logged**
    - **Allowed access as well as disallowed access**
  - **Possible attacks can be detected**
    - **E.g. multiple logon attempts with invalid password**
  - **You can comprehend who did when access which resource**
  - **Analysis can be done using a reporting tool**
    - **Summary report**
    - **Detailed report of all access attempts**
  - **Uses the CICS DMF Tool**
    - **Creates SMF records containing logging information**

Audit-Logging and Reporting

- **To activate logging for a specific resource, you need to specify the AUDIT option (BSTADMIN) on the resource profile**
  - **AUDIT(*audit-level*)**
    - ALL
      - **Specifies that all authorized accesses and detected unauthorized access attempts should be logged.**
    - FAILURES
      - **Specifies that all detected unauthorized access attempts should be logged (the Default).**
    - SUCCESS
      - **Specifies that all access attempts that were authorized should be logged.**
    - NONE
      - **Specifies that no logging should be done.**
- Note: You should use the auditing function with care. It will increase the BSM and DMF processing and might negatively affect the performance of your z/VSE system!

Audit-Logging and Reporting

- Audit-Logging uses the CICS DMF facility to store the recorded SMF records
- Use the DMF dump utility DFHDFOU to dump the audit records (type 80) to a intermediate file
- Use the BSM Report Writer to create a readable report from the audit records
- The report contains
  - **A detailed listing of the processed records**
  - **A summary of the user entries**
  - **A summary of the resource entries**
  - **A general summary**

Audit-Logging and Reporting

```
05.081 09:35:32                        BSM Report - Listing of Process Records
                                     E
                                     v  Q
                                     e  u
                  *Job/User          n  a
Date   Time       Name               t  l
05.076 12:26:06   SYSA               1  8 Job=(CICSICCF) - User verification: Sucessful termination
                  AUGUST WONG             Auth=(None),Reason=(None)
05.076 12:26:12   HUGO               1  1 Job=(CICSICCF) - User verification: Invalid password
                  HUGO MAYER              Auth=(None),Reason=(User ve rification failure)
05.076 12:26:17   HUGO               1  0 Job=(CICSICCF) - User verification: Sucessful initiation / logon
                  HUGO MAYER              Auth=(None),Reason=(None)
05.076 12:26:17   HUGO               2  1 Job=(CICSICCF) - Resource access: Insufficient authority
                  HUGO MAYER              Auth=(Normal),Reason=(Audit options)
                                          Resource=CESN,Intent=Read,Allowed=None,Resource class=TCICSTRN,GenProf=CES
05.076 12:26:18   HUGO               1  8 Job=(CICSICCF) - User verification: Sucessful termination
                  HUGO MAYER              Auth=(None),Reason=(None)
05.076 12:26:29   SYSA               1  0 Job=(PAUSEBG ) - User verification: Sucessful initiation / logon
                  AUGUST WONG             Auth=(None),Reason=(None)
05.076 12:26:30   SYSA               2  0 Job=(PAUSEBG ) - Resource access: Sucessful access
                  AUGUST WONG             Auth=(Administrator),Reason=(Administrator)
                                          Resource=MYAPPL.MYPRINT,Intent=Read,Allowed=Read,Resource class=FACILITY
05.076 12:26:33   SYSA               1  8 Job=(PAUSEBG ) - User verification: Sucessful termination
                  AUGUST WONG             Auth=(None),Reason=(None)
```

Audit-Logging and Reporting

```
05.081 09:35:32                    BSM Report - Listing of User Summary
                                   ---------- R e s o u r c e   S t a t i s t i c s ----------
 User/     Name              ---- Job/Logon ----                 ------- I n t e n t s -------
*Job                          Success Violation     Success Violation     Alter   Update     Read     Total
 HUGO      HUGO MAYER              1         1           0         1         0        0        1         1
 SYSA      AUGUST WONG             1         0           1         0         0        0        1         1


05.081 09:35:32                    BSM Report - Listing of Resource Summary
                                                                  ------- I n t e n t s -------
  Resource Name                                  Success Violation     Alter   Update     Read     Total
Class = FACILITY
  MYAPPL.MYPRINT                                       1         0         0        0        1         1
Class = TCICSTRN
  CESN                                                 0         1         0        0        1         1


05.081 09:35:32                    BSM Report - General Summary

Process records:                                    8

                                  --- Job / Logon  Statistics ---
Total Job/Logon/Logoff                              6
Total Job/Logon successes                           5
Total Job/Logon violations                          1
Total Job/Logon attempts by undefined users         0
Total Job/Logon successful terminations             2

                                  --- Resource Statistics ---
Total resource accesses (all events)                2
Total resource access successes                     1
Total resource access violations                    1
```


Basic Security Manager – Repositories

- **VSE Control File (IESCNTL)**
  - **VSAM KSDS file**
  - **Contains all user profiles**
- **DTSECTAB**
  - **Contains resources like files, libraries, sub libraries and members**
  - **Only 2 user ids are still needed in DTSECTAB**
    - **(FORSEC, DUMMY)**
- **DTSECTXN (replaced by BSM Control File)**
  - **Transaction security profiles**
  - **Dialog (28) to define the profiles**
- **BSM Control File**
  - **Resource Profiles**
  - **Password rules**
  - **User groups**

Basic Security Manager – User Profiles

- VSE Control File (IESCNTL)
  - All Users must be defined here (SNT no longer supported by CICS TS)
  - VSE/ESA 2.4 (or above) Control File records are NOT compatible with previous releases
  - New: description field
  - Definition
    - User Maintenance Dialog (211)
    - Batch utility IESUPDCF
- DTSECTAB
  - Contains 2 user ids for ASI procedure
  - No CICS TS user settings

Basic Security Manager – User Groups

- User Groups are stored in BSM Control File
- User IDs can be added (connected) into a group
- Replaces the security classes for CICS resources
- Definition
  - Security Maintenance Dialogs (282)
  - Batch utility BSTADMIN

Migrating to the new BSM Resource Profiles

- DTSECTXN no longer used
  - Use the new BSM Control File to protect CICS resources
- Migration steps:
  - Create group profiles from existing User-IDs
    - User Maintenance Dialog 211 – press PF6
    - Creates a group for each security class (GROUP01-GROUP64)
  - Migrate DTSECTXN definitions
    - Use Migrate Security Entries Dialog 285
- Detailed description:
  - See Administration Guide

Administrating new BSM resources

- BSTADMIN provides command to administrate the new BSM profiles
  - From the console in a PAUSE job
  - In a batch job
- Commands
  - ADD, CHANGE, DELETE
  - ADDGROUP, CHNGROUP, DELGROUP
  - CONNECT, REMOVE
  - LIST, LISTG, LISTU
  - PERFORM
  - STATUS
- Security Maintenance Dialogs – 28x

Password rules

- Password rules can be changed
  - Use BSTADMIN

```
PERFORM PASSWORD HISTORY|NOHISTORY
                 LENGTH(5)
                 REVOKE(4)
                 WARNING(3)
```

  - HISTORY: a password history is maintained
  - LENGTH: minimum password length of password
  - WARNING: number of days a warning is displayed before password is expired
  - REVOKE: number of unsuccessful sign-on attempts before user id is revoked
- Do not use IESIRCVT anymore !
  - Remove it from USERBG.PROC

CICS Security

- CICS/VSE uses SNT for user verification
  - Duplicate user definitions
  - SNT users can not change password
- CICS TS uses RACROUTE calls for
  - Sign on
  - Resource Security
  - Transaction Security

CICS TS Sign on

- Native CICS TS sign on (CESN)
- VSE/Interactive Interface sign on (IEGM)
- Private sign on programs based on CICS SIGNON

- Sign on characteristics
  - Inherit user identification and password verification by Security Manager
  - CICS TS and Interactive Interface extracts subsystem specific user settings
    - CICS: Operator ID, Operator classes, ...
    - II: User type, Initial panel, access flags, ...
  - No user definitions to subsystems necessary

CICS TS Resource Security

- Most CICS TS resources can be protected now
  - Protection via Resource Classes and Resource Profiles, held in VSE.BSTCNTL.FILE
  - Transactions – as in previous releases
  - Programs, Files, Journals, Temporary storage, Transient data, Start Transactions, VTAM Applications, miscellaneous resources

- This is similar to Resource Level Checking under CICS/VSE
  - RSLC=YES defined within a transaction
  - RSLKEY defined for
    - Users being allowed to access protected resources
    - Resources for being allowed to be accessed

CICS TS Resource Security

- Resource security definitions under CICS TS
  - DFHSIT
    - **SEC=YES** **Enables security**
    - **XTRAN=YES** **Resource Class TCICSTRN**
    - **XDCT=YES** **Resource Class DCICSDCT**
    - **XFCT=YES** **Resource Class FCICSFCT**
    - **XJCT=YES** **Resource Class JCICSJCT**
    - **XPCT=YES** **Resource Class ACICSPCT**
    - **XPPT=YES** **Resource Class MCICSPPT**
    - **XTST=YES** **Resource Class SCICSTST**

CICS TS Resource Security

- **Resource security definitions under CICS TS**
  - **Definition within single resource definition (e.g. file FILEA and FILEB)**
    - **Within DEFINE FILE: RESSEC(YES)**
    - **With BSTADMIN Resource Profiles for Resource Class FCICSFCT:**
      - **ADD FCICSFCT FILEA UACC(NONE) (resource = FILEA)**
      - **ADD FCICSFCT FILEA UACC(NONE) (resource = FILEB)**
      - **PERMIT FCICSFCT FILEA(GROUP1) ACCESS(UPDATE)**
      - **PERMIT FCICSFCT FILEB(GROUP1) ACCESS(READ)**

CICS TS Resource Security

- Enhancement for Report Controller Facility (RCF) to browse reports
  - Access protection under CICS/VSE 2.3
    - **RSLKEY for program DFHPSBRS – just 1 level of protection for all repots**
    - **All users with that RSLKEY can access all reports**
  - Access protection under CICS TS 1.1.1 (requires APAR PK11491)
    - **RSL concept retained for compatibility reasons**
      - **RSL keyword within SPOOLOPEN REPORT unchanged**
    - **For browsing purposes profile names**
      - **DFHRCF.BRSL01 – DFHRCF.BRSL24**
    - **There are 24 levels for browse protection now –**
      - **user must be authorized on access list of these related profiles DFHRCF.BRSLxx (RSLxx within SPOOLOPEN)**
    - **Protection based on report, not on browse program**
  - Definition for RCF protection
    - **ADD FACILITY DFHRCF.RSLnn UACC(NONE)**
    - **PERMIT FACILITY DFHRCF.RSLnn ID(usergroup1) ACCESS(READ)**

CICS Security - Prefixing

- **CICS Prefixing can be used to differentiate between two or more CICS TS running on the same VSE system**
- **CICS Prefix is identical with the user id of the CICS startup job**
  - **SECPRFX=YES in SIT**
  - **SYS SEC=YES: user id in * $$ JOB or ID statement is used**
  - **SYS SEC=NO: user id in ID statement is used**
  - **When no user id is given: FORSEC is used**

CICS Security - DTSECTXN Macro

- Macro to support CICS transaction profiles
  - Replaced by new BSM Control File
    - Can still be used for compatibility
  - CICS-region = user id in CICS startup job
  - transid = up to 4 characters
  - class = 1-64
  - 1 = public transactions
  - 64 = interactive interface transactions

```
DTSECTXN NAME={CICS-region.}transid,
         TRANSEC=(class)
         [,SUBTYPE={INITIAL | FINAL}]
         [,TYPE=GENERIC]
```


CICS Security - Coexistence

- Exit program for CICS/VSE to do user verification against BSM user profiles
- DFHXSE and DFHXSSCO in PRD1.BASE
  - Requires RACROUTE macro from GENLIB
- Requires default user entry in SNT
- Activate ESM in CICS/VSE
  - EXTSEC=YES in SIT

CICS Security – Migration from CICS/VSE

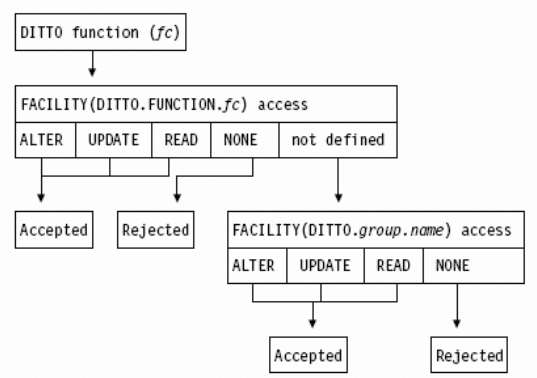
- Security related resource to be migrated
  - Interactive Interface user profiles from an old VSE control file
  - ICCF user records in DTSFILE
  - CICS user profiles from a CICS/VSE sign on table (SNT)
  - Transaction definitions from CICS/VSE PCT
  - For Batch security users: DTSECTAB
  - VSE migration utility IESBLDUP
  - migrate user profiles
- see VSE System Utilities manual

Batch Security

- ID statement or * $$ JOB specifies user id and password for a job
- User id and password are verified against
  - DTSECTAB
  - Security Manager (RACROUTE)
- Subsystems (LIBR, VSAM, ...) uses this user id to verify access rights against DTSECTAB

DITTO Security

- DITTO uses the FACILITY profiles to protect access to data

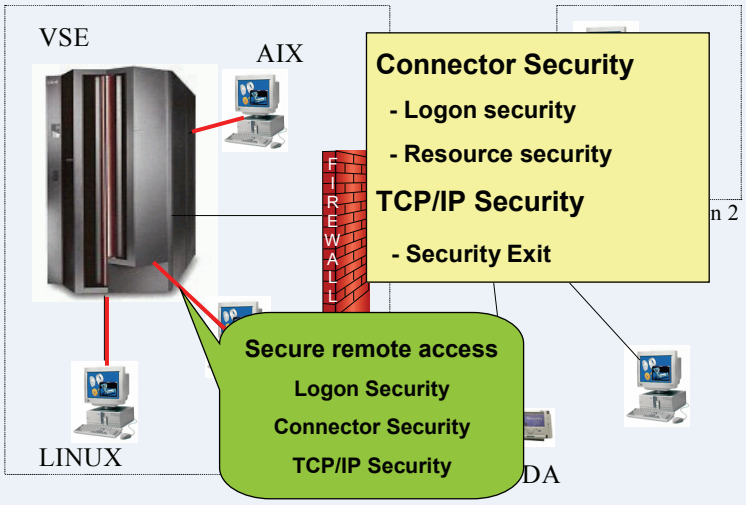


- Make sure batch security is active
  - IPL SEC=YES
- Make sure you define the FACILITY profiles
- ALTER, UPDATE and READ means accepted, NONE means rejected

Security Checklist for VSE

- SYS SEC=YES/NO
  - YES if batch security is required
- CICS SIT SEC=YES (!)
  - If NO, all users can logon without a password
- Change passwords for predefined users
  - POST, PROG, OPER, SYSA, ...

Security in a heterogeneous environment



Why secure remote access ?

- Today most computers are part of a network
  - Can connect to your VSE system
- Prevent unauthorized access to VSE and data
  - Requires to authenticate the user (logon)
- FTP allows to access production data
  - VSAM
  - POWER entries (listings)

Connector Security

- VSE Connector Server acts as a Resource Manager
  - Issues RACROUTE calls for
    - User id and password verification
    - Resource security
- Connector user ids are the same as for CICS TS and Batch
- No additional user profile setup required

- But:
  - Additional access restriction by user id and/or IP address possible

Connector Security - Logon

- VSE Connector Server requires a client to logon with valid user id and password
- User id and password is checked via RACROUTE calls
- Additional information is extracted from ACEE and IUI or AF segment
  - User type, access flags, ...
- The user's ACEE is kept during the whole session
- Used to do resource access checking
- Multiple logon attempts with same userid is possible

Connector Security – Resource Security

- When a client issues a resource access request
  - The server does RACROUTE calls to check if the user is allowed to access the resource
  - Access is done only if user is allowed to access the resource
- VSE Connector Server runs under a special userid (VCSRV)
  - specified in ID statement in startup job
  - should be allowed to access all resources

Connector Security - Internals

- Logon processing
  - RACROUTE VERIFY CREATE
  - RACROUTE EXTRACT (user type checking)
    - AF segment, if this fails (e.g. CA-TopSecret)
  - IUI segment
  - Flags used in AF segment
    - AFADMIN user is a administrator = type 1
    - AFMCONS user is allowed to open a console
  - Flags used in IUI segment
    - IESISUTP user type (1,2 or 3)
    - IESISFL1 user flag byte 1
    - IESISFL2 user flag byte 2

Connector Security - User types

- Type 1 (Administrator)
  - read and write access for all resources
- Type 2 (Programmer)
  - read only access for all resources
  - allowed to submit jobs
- Type 3 (Application User)
  - read only access for selected resources

Connector Security – Resource classes

- The following Resource class are used
  - VSELIB, VSESLIB, VSEMEM (LIBR)
  - DATASET (VSAM)
- Resource not protected by Security Manager
  - POWER queue entries
    - protected by user type and access flag
  - Console
    - protected by user type and access flag
    - If user is allowed to access the console, he can issue all console commands, even REIPL NOPROMPT (!)
  - ICCF Libraries and Members
  - VSAM Record Mappings

Connector Security – Additional Security

- Configuration member allows to restrict logon (connect) by
  - User id
  - IP address
- See skeleton SKVCSUSR in ICCF library 59

```
* ****************************************************************
* USERS FROM THIS IP'S ARE ALLOWED TO LOGON
* ****************************************************************
IP   = *,              LOGON = ALLOWED
* IP = 9.164.123.456, LOGON = DENIED
* IP = 9.165.*      , LOGON = DENIED
* IP = 10.0.0.*     , LOGON = ALLOWED
* ****************************************************************
* THIS USERS ARE ALLOWED TO LOGON
* ****************************************************************
USER = *,              LOGON = ALLOWED
* USER = BOBY,        LOGON = ALLOWED
* USER = SYS*,        LOGON = DENIED
```


Deactivation of Connector Security

- Since PTF UQ66736 (VSE/ESA 2.6), UQ66733 (VSE/ESA 2.5) Connector Security can be deactivated
  - New keyword SECURITY in main configuration member:
    - SECURITY = FULL (default, as before)
    - SECURITY = RESOURCE (no user type checking)
    - SECURITY = LOGON (no resource, only logon)
    - SECURITY = NO (no security at all)
  - Access restriction (previous foil) is still active, even if SECURITY = NO

TCP/IP Security

- In general TCP/IP uses its own user id definitions
  - DEFINE USER,ID=user,PASSWORD=pwd
  - Readable in initialization member (IPINITxx.L)
  - Duplicate user definitions
- Security Exit available from IBM to check the user ids and resource access via Security Manager

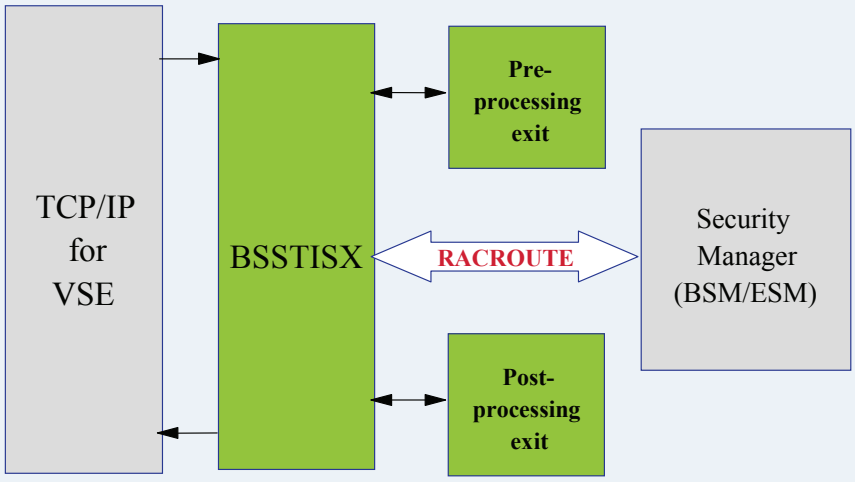
TCP/IP Security – news with ServPack E

- Security Enhancements:
  - Logging: Results of security "decisions" can now be written to the log (routing code SECURITY): Modes available are: All, Failed, and None
  - All changes to security parameters are logged
  - Security can be operated in "Fail" and "Warn" modes
  - "Automatic" security is now available for all files, based upon the values provided with DEFINE USER commands
  - Control and monitoring of security functions consolidated in the SECURITY and QUERY SECURITY commands
  - Security settings can be "locked" to prevent tampering
  - FTPBATCH security no longer relies on loading the user exit into the FTPBATCH partition. This potential security exposure is eliminated by having FTPBATCH pass security calls to the target stack partition, using the "protected" libraries and routines.
    - Logging and control is automatically handled by the stack routines and stack-based user exit, using the security settings established by the customer.
  - UserIDs can now be associated with specific uses. For example, having valid ID for TN3270 access does not automatically permit FTP access.

TCP/IP Security – news with ServPack E

- **Security Enhancements (continued):**
  - Security requests passed to the user exit will now contain the type of usage requested. For example, FTP or LPR
  - Specification of POWER userid and password can be done with SET POWERUSERID= and SET POWERPASSWORD=
    - The default user ID remains SYSTCPIP and the default password remains XL8'00'
  - Automation (event) processing now uses a default userID / password of $EVENT/$EVENT
    - These values may be overridden via DEFINE EVENT
  - LPR processing now sets a default userID/password of $LPR/ $LPR
    - These values are passed to security processing unless overridden by the user, either explicitly or via script
  - All processes now run under user IDs and passwords, either explicitly or by default.
  - If you make no other changes, you MUST provide the following commands in your initialization deck (unless a security exit is actively used, and the scripts and jobs sets the user IDs and passwords):
    - DEFINE USER,ID=$WEB,PASSWORD=$WEB,WEB=YES
    - DEFINE USER,ID=$LPR,PASSWORD=$LPR,LPR=YES
    - DEFINE USER,ID=$EVENT,PASSWORD=$EVENT,LPR=YES
    - DEFINE USER,ID=$LPD,PASSWORD=$LPD,LPD=YES

TCP/IP Security Exit



TCP/IP Security Exit

- Issues RACROUTE calls for
  - User identification and verification
  - Resource access control
    - VSE files, libraries, members
    - POWER entries
    - SITE commands
- Provides a pre- and post-processing exit interface
  - Activation
    - DEFINE SECURITY,DRIVER=BSSTISX[,DATA=data]
      - DATA='anonym_uid,anonym_pwd,preproc,postproc'
  - SET SECURITY=ON
- For details see VSE/ESA Software Newsletter #20 (First/Second Quarter, 2000)

TCP/IP Security - HTTPHACK.L

- Typical hacker attacks are normally no problem for VSE, only for Windows
- Rejects hacker attacks
  - by filtering known URL prefixes
- HTTPHACK.L:

```
* Example:
*
* "SCRIPTS/" will cover...
*       GET /SCRIPTS/ROOT.EXE?C+D
*       GET /SCRIPTS/ROOT.EXE?CAT+PASSWD
*       etc...
* ======================================================
SCRIPTS/
MSADC/
_VTI_BIN/
_MEM_BIN/
C/WINNT/SYSTEM32/CMD.EXE
D/WINNT/SYSTEM32/CMD.EXE
CGI-BIN/
```

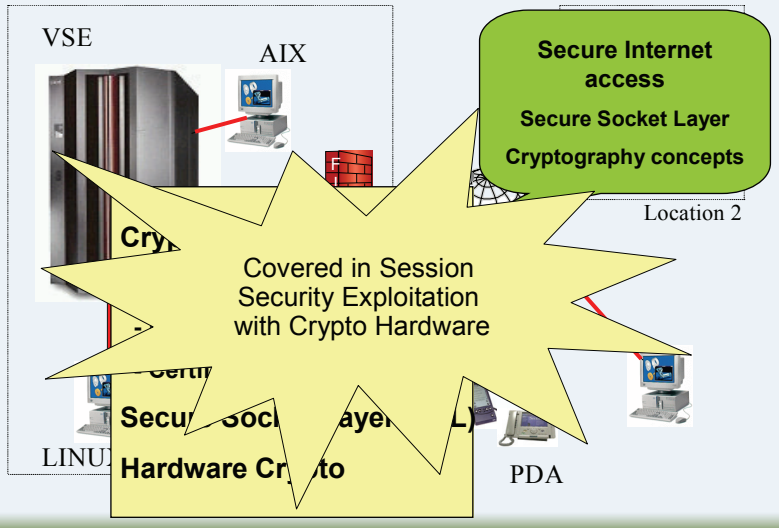
Single Sign on Solutions

- Every server/application requires you to logon
  - Different user ids and passwords for each server
- A single sign on solution
  - Requires a user to sign on only once
    - one user id, one password
  - Stores sign on information for several servers or applications
  - Automatically performs a sign on on each server or application
  - Using the stored sign on information
- Example: LDAP

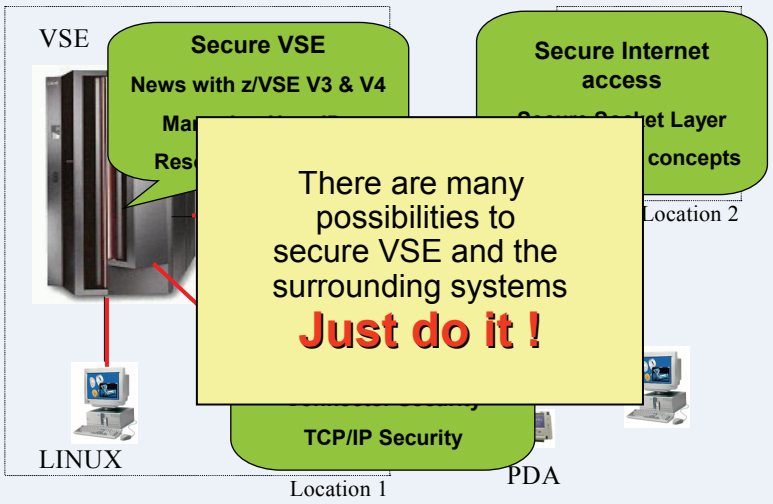
Security Checklist for TCP/IP

- Connector Security
  - Set SECURITY=FULL (SKVCSCFG)
  - Define resource access rights (BSM/ESM)
  - Restrict remote access to specific users and IPs (SKVCSUSR)
- TCP/IP Security
  - SET SECURITY=ON in IPINIT member
  - Use Security Exit
  - Do not define users in IPINIT member

Security in a heterogeneous environment



Security in a heterogeneous environment



Related Documentation

- IBM System z cryptography for highly secure transactions
  - http://www.ibm.com/systems/z/security/cryptography.html
- VSE Security Homepage
  - http://www.ibm.com/servers/eserver/zseries/zvse/documentation/security.html
- z/VSE Planning
- z/VSE Administration
- VSE/ESA Software Newsletter No. 17, 18 and 20
- OS/390 Security Server External Security Interface (RACROUTE) Macro Reference (GC28-1922)
- OS/390 Security Server (RACF) Data Areas (SY27-2640)
- z/VSE V4R1.0 e-business Connectors, User's Guide
- CICS Enhancements Guide, GC34-5763
- VSE/ESA 2.7.3 Release Guide, Chapter 1, section "Hardware Crypto Support"

Questions ?