

IBM Workload Simulator (WSim)

Version 1 Release 1.0.1

Program Number 5655-I39

General Enhancements

September 17, 2004

## **Introduction**

Applying the PTF which fixes APAR PQ94132 for the IBM Workload Simulator (WSim) product provides the general enhancements described in this document.

## **3270 Password Masking**

Passwords are generally maintained on formatted 3270 screens in unprotected non-display fields. While not visible, the passwords are sent in the clear to host application programs. This enhancement will mask (encrypt or hide using asterisks) potential passwords entered by users of the WSim data capture and script generation utilities and mask their presence in generated WSim scripts, simulation data views, and output reports. The following paragraphs provide additional detail.

### **Interactive Data Capture (IDC)**

IDC is a VTAM application, which allows 3270 SNA session traffic to be captured for WSim script generation using the log script generation utility ITPLSGEN.

The potential 3270 passwords are masked as follows.

- Transmit and receive data records logged with potential passwords will have all the SNA RU data after the 3270 AID and cursor location bytes masked using asterisks.
- Log Display records logged with potential passwords will be encrypted.

### **ITPLU2RF**

ITPLU2RF reformats a VTAM buffer trace into a WSim log for WSim script generation using the log script generation utility ITPLSGEN.

The potential 3270 passwords are masked as follows.

- Transmit data records logged with potential passwords will have all the SNA RU data after the 3270 AID and cursor location bytes masked using asterisks.
- Log Display records logged with potential passwords will be encrypted.

### **ITPLSGEN**

ITPLSGEN generates a WSim script from a WSim log data set created by IDC, ITPLU2RF, or a WSim simulation run.

The potential 3270 passwords will be masked in the generated script using the following STL code.

```
upnd = 'encrypted_potential_password_data'x  
userexit('ITPUMNDX',upnd)
```

The ITPUMNDX message generation exit will ensure the simulated 3270 cursor is in an unprotected non-display field large enough to hold the password and then decrypt the encrypted potential password data into the simulated screen for transmission to the host application program.

### **WSim Simulator ITPENTER**

The WSim simulator tokenizes the network definition and scripts into a main storage performance format and executes the scripts to simulate one or more terminals and their simulated operators.

The potential 3270 passwords are masked as follows.

- Transmit data records logged with potential passwords will have just the SNA RU data containing potential 3270 passwords masked using asterisks.
- Log Display records with potential passwords in unprotected non-display fields will be masked using asterisks.
- Display images and transmit data made available for monitoring using the Display Monitor facility will be displayed with potential passwords masked using asterisks.

### **Loglist Utility ITPLL**

The WSim loglist utility formats out the WSim log data set for post simulation analysis of the simulation run.

The potential 3270 passwords are masked as follows.

- When Log Display records are processed with encrypted image data from the IDC utility or ITPLU2RF, the potential 3270 passwords will be masked in the output report using asterisks.

### **Compare Utility ITPCOMP**

The WSim compare utility compares Log Display records from IDC, ITPLU2RF, or simulation log data sets.

The potential 3270 passwords are masked as follows.

- When Log Display records are processed with encrypted image data from the IDC utility or ITPLU2RF, the potential 3270 passwords will be masked in the image compare buffer using asterisks. Since the WSim simulator generates Log Display records with the potential 3270 passwords also masked using asterisks, all potential 3270 passwords will contain asterisks for the length captured or entered by the simulation script.

### **ITPGNKYZ Utility To Generate Encryption Key/IV USERMOD**

The ITPGNKYZ utility generates an SMP/E USERMOD to set a site unique encryption key and initialization vector (IV) value. The following JCL is used to execute the ITPGNKYZ utility. The IN and OUT DDs are for RECFM=FB, LRECL=80 data sets.

```
//GNKEYZAP JOB
//STEP1 EXEC PGM=ITPGNKYZ
//STEPLIB DD DSN=WSIM.SITPLOAD,DISP=SHR
//IN DD *
kykykykykykykykyiviviviviviviviv
/*
//OUT DD DSN=KEYIV.USERMOD,DISP=SHR
```

Where kykykykykykykyky is an eight-byte key value in hex and iviviviviviviviv is an eight-byte IV value in hex, i.e. a total of thirty-two hex characters.

The following return codes are set by ITPGNKYZ.

|    |                            |
|----|----------------------------|
| 0  | OK                         |
| 8  | Invalid Key or IV Value    |
| 12 | OPEN Error on Input File   |
| 16 | READ Error on Input File   |
| 20 | OPEN Error on Output File  |
| 24 | WRITE Error on Output File |

### **Master Exit ITPMSTRX**

The WSim master exit has been added to provide user sites with the potential for additional control over the WSim simulations.

The WSim master exit is always called regardless of whether one is coded in the WSim network definition or not. The WSim master exit also has the ability to end the WSim simulation at any time. The master exit is given control when the WSim simulator is first brought up and when it is ended. The WSim master exit is also called at each of the other

exit interfaces prior to calling the exit, which may have been coded in a WSim network definition.

A WSim master exit stub program is provided with the WSim product named ITPMSTRX. This module should be replaced by an installation unique WSim master exit, if one is desired. The current stub module is link-edited REUS, RMODE 24, AMODE 31.

The standard exits parameter lists are maintained by increasing the number of flag bits from sixteen to thirty-two. The first sixteen bits are for the standard exit calls (exits coded in the WSim network definition) and the last sixteen are for the master exit calls.

The WSim User Exits manual, SC31-8950-00, should be used in conjunction with this documentation to understand the parameters passed to the WSim master exit.

The parameter list passed to the WSim master exit will always have six words passed. Word 4 contains the address of the thirty-two bit flags used to identify the exit call. The bit flags are defined as follows.

Bits 0-15 WSim Standard Exit Call Flags

|     |    |  |
|-----|----|--|
| Bit | 0  | ON = Input, OFF = Output                         |
| Bit | 1  | Set ON By Exit = Stop Processing Data – SNA Only |
| Bit | 2  | Set ON By Exit = Cancel Any Outstanding Delay    |
| Bit | 3  | ON = Information Exit Call                       |
| Bit | 4  | ON = Message Generation Exit Call                |
| Bit | 5  | ON = Network Exit Call                           |
| Bit | 6  | ON = Normal Network Exit Call, Bit 0 Used        |
| Bit | 7  | ON = Network Start-Up Exit Call                  |
| Bit | 8  | ON = Network Cancel Exit Call                    |
| Bit | 9  | ON = Network Reset Exit Call                     |
| Bit | 10 | ON = Operator Command Exit Call                  |
| Bit | 11 | ON = Operator Command Completion Exit Call       |
| Bit | 12 | Not Used   |
| Bit | 13 | Not Used   |
| Bit | 14 | Not Used   |
| Bit | 15 | Not Used   |

Bits 16-31 WSim Master Exit Call Flags

|      |       |  |
|------|-------|--|
| Bit  | 16    | ON = WSim Master Exit Being Called                                     |
| Bit  | 17    | ON = Start WSim Simulator Master Exit Call                             |
| Bit  | 18    | ON = End WSim Simulator Master Exit Call                               |
| Bit  | 19    | ON = Other WSim Simulator Master Exit Call, Bits 0-15 Define Exit Call |
| Bit  | 20    | Set ON By WSim Master Exit = End WSim Simulation Now                   |
| Bit  | 21    | Set ON By WSim Master Exit = Do Not Call WSim Master Exit Again        |
| Bits | 22-31 | Not Used   |

Notes:

1. Bit 20 can be set ON during any call to the WSim master exit and the WSim simulator will terminate with a return code of 32.
2. Bit 21 can be set ON during any call to the WSim master exit and the WSim simulator will not call the WSim master exit again. The WSim master exit stub sets bit 21 ON when called for the start WSim simulator master exit call to avoid being called again.

### **Start WSim Simulator Master Exit Call**

When bits 16 and 17 are ON, the WSim master exit is called when the WSim simulator is starting up. This exit call allows for installations to control what happens when the WSim simulator is started. For example, the WSim master exit could restrict the time period the WSim simulator can execute during the day. Parameter list Words 1, 2, 3, 5, and 6 will contain the address of a half word of zeros.

### **End WSim Simulator Master Exit Call**

When bits 16 and 18 are ON, the WSim master exit is called when the WSim simulator is shutting down. This WSim master exit call might be used to close data sets or free storage originally set up during the start WSim simulator exit call. Parameter list Words 1, 2, 3, 5, and 6 will contain the address of a half word of zeros.

### **Other WSim Simulator Master Exit Calls**

When bits 16 and 19 are ON, the WSim master exit is called for the standard INEXIT, OUTEXIT, NCTLEXIT, UCMEXIT, UCMDEXIT, NETEXIT, INFOEXIT, and UXOEXIT exit calls. The WSim master exit is called prior to calling the standard exits, which may be coded in the WSim network definition. Parameter list Words 1, 2, 3, 5, and 6 will contain the address of the parameters defined in the WSim User Exits manual.

### **Set Return Code Exit ITPRCX**

The set return code exit ITPRCX is a message generation exit routine, which can be invoked from an executing script to set the WSim simulator return code value. Return code values from 0-32767 can be set. The exit is invoked from STL as follows.

```
userexit('ITPRCX', '100')  
  
my_rc = 333  
userexit('ITPRCX', char(my_rc))
```

### **Set Return Code Exit Interface Routine Request**

The WSim Exit Interface routine can be used to set the return code from a WSim exit. Request number '08'x is used to set the WSim simulator return code. When the set return code request ('08'x) is set, Word 3 contains the address of a half word with the return code to set. See the WSim User Exits manual, SC31-8950-00, for additional WSim Exit Interface Routine information.

## **WSIMISPF**

This exec starts the WSim/ISPF Interface without having the data sets concatenated in the TSO logon procedure.

## **IBM Workload Simulator Adapters for Rational® TestManager**

The IBM Workload Simulator Adapters for Rational® TestManager allows WSim Test Manager schedules to be launched from the Rational TestManager product running on a remote workstation.

See the IBM Workload Simulator Adapters for Rational TestManager White Paper for additional information. Execute the migration steps below if there are schedules created by WSim Version 1 Release 1.

## **Migration Steps for WSim Test Manager Schedules**

### **ITMSEQ**

Run the ITMSEQ CLIST member to change all schedules to be used by the Rational TestManager Adapters for WSim. This CLIST will add a new operand, SEQ=, to the NTRK statement. Do not change or remove this operand value. This value will keep track of the number of resources in a schedule.

A copy of the old schedule will be kept and can be deleted by the user. To run the CLIST, a schedule data set will need to be entered and a schedule name is optional. For instance, a user's schedule data set, TSOID1.DEMOPRJ.NTRKS, with the schedule name DEMONET is entered. A new data set, TSOID1.DEMOPRJ.NTRKS.OLD is allocated. A copy of DEMONET is placed into the new data set. The DEMONET member in TSOID1.DEMOPRJ.NTRKS is then changed. A user can also just enter the schedule data set and '\*' for all members in the data set.

The members will be copied to a new data set for the user to retain if needed. The members are modified in the old data set. Schedules created from the WSim/ISPF

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models will not be updated since the message deck, WTMEND, is not used in the resource's PATH operand values.

The ITMSEQ CLIST will also copy the four modified skeletons, ITMCPNET, ITMSFNET, ITMSTEND, and ITMTPNET from the shipped data set into the userid.WTMUSER.SKELS data set.

Example:

```
TSO EXEC 'WSIM.SITPEXEC(ITMSEQ)'
```

### **WSim Test Manager Changes Needed**

In order to use the IBM Workload Simulator Adapters for Rational TestManager, two members must be created in the userid.WTMUSER.SKELS data set. Start the WSim Test Manager and execute the following steps.

Select the VARS panel from the Utilities selection off the main menu. After the VARS panel is shown, press PF3. This action will create the VARSINFO file to be used by the RTM adapters.

Next, select the PROJECT panel off the main menu. Once the panel is shown, press PF3. This action will create the PROJLIST file to be used by the RTM adapters.

Ensure all created schedules have been executed through the WSim Test Manager in order for an associated log data set to be used during the run using the RTM adapters.