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H363I USER-Access®

for HP Integrity NonStop Guardian Environments

Release 3.4.2

Memo to Users

June 1, 2018

Document Revision Record

Revision	Description
MTU-H363I-01	First revision of document associated with H363I release 3.2.
MTU-H363I-R3.4.1	• Updated revision of document associated with H363I release 3.4.1 • Added a note about behavior of –CREATE REPLACE under specific circumstances. • Added a note about removal of the CART (Central Archive Restore from Tape) Utility.
MTU-H363I-R3.4.1-1	• Update copyright; correct trademarks
MTU-H363I-R3.4.1-2	• Correct note on Buffer Overflow fix
MTU-H363I-R3.4.2	• Release with newly formatted manual; moving details from MTU to Manual; compatibility with Restore in J06.20

Introduction

This document contains information on release 3.4.2 of the Network Executive Software H363I USER-Access product for HP Integrity NonStop systems including product installation instructions.

This document should be reviewed in its entirety before the product is installed.

Prerequisites

Prerequisites for this product are:

- HP Integrity NonStop host processor running NonStop OS release H.06.03 or above.

- HP NonStop OS TCP/IP software fully installed and tested. The library LIBINETL must be available for linking.

- One or more Ethernet LAN interfaces.

Related Publications

The following Reference Manual provides more information about this software product:

H363 (Rel 3.4.2) USER-Access™ for HP NonStop Guardian Environments

Software Support Limitations

Modifications to H363I that are not specifically authorized by NetEx Software are prohibited.

Any unauthorized modifications to H363I may affect its operation and/or obstruct NetEx Software's ability to diagnose problems and provide corrections. Any work resulting from unauthorized modifications shall be paid by the customer at NetEx Software's then-current support rates and may result in the immediate termination of warranty/support coverage.

Service Notes

- Beginning with release 3.4.1, USER-Access no longer includes installation support for the NetEx/IP protocol. The install script no longer prompts the user to select a network protocol and installs for TCP/IP only.

- The CART (Central Archive Restore from Tape) utility is no longer available beginning with release 3.4.1 of USER-Access.

  The original purpose of this tool was to provide the ability to restore backup files from tape, as a contingency plan in case there was a network outage, thus making a restore over the network not possible. These tapes would have contained backup data created by using Central Archiving or Management Tools, which were products previously supported by Network Systems Corp, TMD, or StorageTek, but are no longer supported by anyone.

- The –CREATE REPLACE qualifier does not work correctly when the source and destination files are the same (i.e., the source and destination \node.volume.subvolume and file name are exactly alike). If a SEND or RECEIVE command is issued this way, the source/destination file will be empty.

- The parameters SI_USERNAME and SI_PASSWORD should be defined in the SICONFIG file as part of the standard install. Failure to define a valid non-privileged username/password can result in a potential security loophole. Valid SI_USERNAME and SI_PASSWORD parameters allow the Service Initiator to reset itself back to a non-privileged user ID following each successful login. It also allows the Service Initiator to be stopped (e.g., STOP $SI) by the user designated as SI_USERNAME. This could be a standard OPERATOR account but should not be SUPER.SUPER or group.SUPER (a group manager). Any UID of *,255 should be avoided.

  If SI_USERNAME or SI_PASSWORD are missing or invalid, appropriate warning messages will be displayed in the Service Initiator log file (SILOG). However, the Service Initiator will continue to operate.

  The SI_PASSWORD can be encrypted in the SICONFIG file. To do so, use the ENCRYPT string function (or ENCRYPT alias) provided with USER-Access. Refer to the section titled "Password Encryption" for more information on password encryption.

- Due to USER-Access enhancements to support NonStop EXPAND networks, previous support for 5 character process names (e.g., $USERA) may no longer be valid. Limit any USER-Access client and server process names to a maximum of 4 characters (plus the dollar sign).

- Three or more consecutive failures to logon through the Service Initiator (via the USER-Access "CONNECT" or "LOGIN" command) will cause the Service Initiator to be suspended for 60 seconds before returning the message 'Invalid username or password (SI363-8002)'. This delay will be experienced by the user currently connecting to the HP NonStop host. Other connect attempts during this interval will return a "service not offered" message. This is a result of the VERIFYUSER system service.

- HP NonStop local/remote exit status is currently a bit crude. The command is assumed to complete successfully (status = STOP). Then each line of the output stream is scanned for the string 'ABENDED:' as the first eight characters. If this string is detected, the command is considered to have failed (status = ABEND). The ON commands for LOCAL_ERROR and REMOTE_ERROR will respond to this command failure.

  In order for USER-Access to determine exit status from a TACL command, beginning in release 3.4.1 USER-Access also recognizes the string 'TACLEXIT:nnn'. If this string is detected, the exit status becomes 'nnn'.

- File transfer modes BACKUP, RESTORE and COPY do not capture/restore the file characteristics during peer-to-peer transfers unless they are used with BACKUP/RESTORE. BACKUP, RESTORE, and COPY modes do not save file characteristics outside of the NonStop BACKUP utility.

- Execution of the first local/remote NonStop command will experience a delay while activating the command interpreter. This same delay is experienced following a previous command abort (due to a keyboard interrupt) or when the command interpreter is changed (e.g., SET LOCAL/REMOTE COMINT) since a new command interpreter is being activated.

- It is possible to write a NonStop USER-Access script that contains a tight loop during which keyboard interrupts are ignored. On tight loops (e.g., LOOP: GOTO LOOP) keyboard interrupts have no affect.

Installation

This section provides complete installation procedures for the H363I Integrity NonStop USER-Access product.

Before you Begin

- Please review all of the information in the "Service Notes" section before proceeding with the installation.

- If your system is currently running a previous release of USER-Access, you can preserve it by renaming the existing USER-Access root subvolume. This allows easy recovery if the current installation fails. You may also wish to copy some of the site files from the previous release once the current release is installed. Use FUP to rename all the files in the current subvolume.

  For example, if the current release (say 2.0 8905 R9 M10) is installed in $SYSTEM.UA, rename all of the files to the subvolume $SYSTEM.UASAVM10 as follows:

  ```
  15> FUP RENAME $SYSTEM.UA.*, $SYSTEM.UASAVM10.*
  ```

  Once the new release is installed, site control files (e.g., SCLIENT) can be copied from the renamed subvolume to the new USER-Access root subvolume.

- The installation procedure assumes your logon command interpreter is a named TACL process. If this is not the case, logon to a named TACL process before continuing.

- The USER-Access release is loaded into a distribution volume.subvolume and is then installed into the target volume.subvolume. Existing files in the target volume.subvolume are replaced with the new release files. Any user-modified control files are automatically preserved.

  Nothing is modified in the distribution volume.subvolume during the installation process allowing repeated installations into different target volume.subvolumes, each with different install options. To preserve disk space the distribution volume.subvolume can be deleted once USER-Access is fully installed into the target volume.subvolume.

  The distribution volume.subvolume requires less than 2000 pages (4 Mbytes) of disk space. The target volume.subvolume requires less than 2500 pages (5 Mbytes) of disk space.

- The installation procedures and examples assume a distribution volume.subvolume of "$SYSTEM.UA341" and a target volume.subvolume of $SYSTEM.UA. However, any valid volume.subvolume (with adequate space) can be selected. If you choose an alternate volume.subvolume, be sure to replace $SYSTEM.UA341 or $SYSTEM.UA with the alternate volume.subvolume in subsequent commands.

- TCP port number 6900 is used by the USER-Access Service Initiator as its default listen port. This is the recommended port number for use by USER-Access. However, if other applications require this port number, see "Appendix A: Updating the TCP/IP Network Control Files" for instructions to change these defaults.

Installation Procedure

To perform a complete installation and verification of this product, follow the steps in this section.

Step 1. Select USER-Access volume.subvolume

Set your current volume to volume.subvolume that you will copy the USER-Access distribution file to:

        16> *VOLUME $SYSTEM.UA342*

Step 2. Download the Distribution

From the NetEx Software download service (contact Support) or the desktop where you initiated the download, perform a binary file transfer of UA342PAK to the distribution volume.subvolume you selected in the previous step.

Step 3. UNPAK the Distribution

Issue the following UNPAK command:

        17> *UNPAK UA342PAK,*.*.*,LISTALL,MYID,TAPEDATE,VOL <$vol.subvol>*

The list of restored files should agree with the file list in the Distribution Contents section.

Step 4. Install the Software from the Distribution

The USER-Access INSTALL procedure is a TACL routine that prompts for the site install options and invokes another TACL routine named MAKE with the selected parameters.

The Installation Process

Invoke the USER-Access INSTALL procedure using the prompts shown below. Default responses are enclosed in square brackets:

        $SYSTEM.UA342 6> run install

        The target volume.subvol defines the location where USER-Access
        is installed.

        Enter the target volume.subvol [$SYSTEM.UA]?

        Starting USER-Access install
        Copying .. UAMACROS
        FILES DUPLICATED: 1
        Copying .. SISTART
        FILES DUPLICATED: 1
        Copying .. SICONFIG
        FILES DUPLICATED: 1
        Copying .. SHOWLOG
        FILES DUPLICATED: 1
        Copying .. UASRVR
        FILES DUPLICATED: 1

```
     FILES DUPLICATED:  1
     FILES DUPLICATED:  1
     FILES DUPLICATED:  1
     FILES DUPLICATED:  1
     FILES DUPLICATED:  1
     FILES DUPLICATED:  1
     FILES DUPLICATED:  1
     FILES DUPLICATED:  1
     #output Linking.....
     Linking.....
     eld /in LINKIN2  , out UALINK.LINKIN2  /
     eld /in LINKIN3  , out UALINK.LINKIN3  /
     eld /in LINKIN4  , out UALINK.LINKIN4  /
     eld /in LINKIN5  , out UALINK.LINKIN5  /
     FILES DUPLICATED:  1
     FILES DUPLICATED:  1
     FILES DUPLICATED:  1
     FILES DUPLICATED:  1
     Finished USER-Access install
     $SYSTEM.UA 7>
```

Be sure to scan the generated output for any errors or warning messages.

Note: During the installation procedure (between "Starting …" and "Finished …") the install program does the following:

- Copies and edits the USER-Access control files, substituting the target volume.subvolume for the USER-Access root directory. Any user modified control files (e.g., SCLIENT, SSERVER, and so on) are preserved with an appropriate message displayed.

- Generates a ROOT object module defining the target volume.subvolume as the USER-Access root directory.

- Links the USER-Access modules: CLIENT, SERVER, SVCINIT, and CONTROL.

- Sets the file security on the USER-Access control files and executable images.

Step 5. Start the Service Initiator

The Service Initiator is a program that services USER-Access CONNECT or LOGIN requests from hosts on the network. It runs as a NOWAIT process named **$SI**. To use an alternate process name (e.g., running multiple Service Initiators) replace **$SI** with a valid process name in the following commands.

Set your current volume to the USER-Access target volume.subvolume:

```
     19> VOLUME $SYSTEM.UA
```

You must make any site-specific changes to the **SICONFIG** file before starting the Service Initiator. Refer to the section on "Service Initiator Keywords" for more details. Be sure to define the parameters **SI_USERNAME** and **SI_PASSWORD**. Remove the comment character (#) from the sample lines and change the group.userid and password entries to that of a valid non-privileged account. This account should not be SUPER.SUPER or group.SUPER (i.e., the UID should not be *,255). Make any other changes appropriate for your site:

```
     20> EDIT SICONFIG
          .
          .
```

To activate a new Service Initiator, issue the following command:

        21> *RUN SISTART $SI*

To verify that the Service Initiator is running, the named process $SI should display when the following command is issued:

        22> *STATUS $SI*

Once the Service Initiator has started successfully, users on remote hosts can connect into the NonStop host by providing a valid username and password. The Service Initiator will activate a server process with a home terminal of $SI. A site manager can monitor the amount of USER-Access activity by listing the active processes associated with $SI (i.e., STATUS *, TERM $SI).

Step 6. Verify USER-Access

A simple verification command procedure has been supplied as part of the USER-Access release. This verification procedure prompts you for the name of the local host and a valid username/password on this host (for verification purposes, the username/password specified should at least have the privileges you do - specify your username/password to be safe). It attempts to connect back to the host, logon, and send and receive several files.

To run the verification command, first load the **UAMACROS** file to define the TACL macro USER (used to invoke the USER-Access CLIENT) along with other USER-Access macros:

        24> *LOAD UAMACROS*

Then invoke the USER-Access client with the VERIFY script:

        25> *USER VERIFY*

There should be several messages printed to your terminal followed by a final "Verification Successful" message. If an error is encountered during the verification, the procedure will terminate and an error message will be printed.

This completes the installation of USER-Access on your client host.

Making USER-Access Available To Other Users

In order to make USER-Access easily available to other NonStop users, load the TACL macros found in the file **$SYSTEM.UA.UAMACROS** from your site startup files (TACLLOCL or TACLBASE) or from your individual user startup file (TACLCSTM). This allows users logging into TACL to invoke the USER-Access client by simply typing "USER". If "USER" conflicts with other site definitions, the recommended alternative is "USERA".

To automatically start the Service Initiator following a system RELOAD, run the "$SYSTEM.UA.SISTART" command as part of the reload process. Make sure any network processes have been started first.

Update Summary

Release 3.4.2

This release includes fixes and/or enhancements from prior releases and the following:

2999   Add LZW back into the send/receive

5258   SILOG contains offered port message

7906   User Access error when using tapeless backup on J06.21.01

Release 3.4.1

This release includes the following fixes and/or enhancements:

- Support for Service Initiator log files to be entry-sequenced was re-established.

- Changed the default file type of SILOG to entry-sequenced.

- Increased default SILOG extent size as entry-sequenced files are not compressed.

- Allow shared open of SILOG.

- **SHOWLOG** will function while Service Initiator is running if Service Initiator log file is entry-sequenced.

- Invalid (unprintable) characters removed from SHOWLOG.

- Determine "rootdir" at execution time.

- Fixed initialization of option parameter to FILE_OPEN_ to prevent "UA-8306".

- Size of the remote environment buffer was increased to prevent a situation where the error "UA-302" ("Overflow of x byte environment buffer") could occur. Increased default environment buffer size to 2500 bytes.

- Removed "NetEx" as a network protocol option during installation process.

- Removed "CART" (Central Archive Restore from Tape) as an install option

- The "Service offered" message in the SILOG has been modified so that it now includes the port number assigned to the Service Initiator process for incoming connection requests (TCP port 6900 by default).
  ```
  6  Jul 31 10:06:34  USER     Service offered 6900.
  ```

Release 3.2

This release includes the following fixes and/or enhancements:

- All executable modules were upgraded to run native-mode.

- Support for NonStop OS H06 was added in this release.

- Support for Integrity NonStop was added in this release.

- Support for connecting with a Safeguard alias was added in this release.

Release 3.2 200612

This release includes the following fixes and/or enhancements:

- Fix incorrect error message resulting from certain illegal filename usage.
- Fix uninitialized pointer to rcv_buffer.

Appendix A: Updating the TCP/IP Network Control Files

The network control file **$SYSTEM.ZTCPIP.SERVICES** can be updated to change the USER-Access default.

You must first select a unique port number. Port numbers in the range 0-1023 are reserved for TCP network services. USER-Access uses port number 6900 as the default. For example, add the following line to the end of the file:

```
user        6900/tcp   USER
```

Appendix B: Running with TCP/IP over Multiple Ethernet Adapters

This section describes how USER-Access can be configured on a NonStop system with multiple Ethernet adapters. This configuration is most often used to increase aggregate TCP/IP performance from a single system. In a configuration such as this, the NonStop host has a TCP/IP hostname for each Ethernet adapter, thus the two Ethernet adapters make the NonStop function as two TCP/IP hosts on the network. This section shows how to select an adapter when running USER-Access.

An example of a NonStop system is one that has two TCP/IP processes running, one for each Ethernet adapter installed. The first TCP/IP process is named $ZTC0 and is identified by TCP/IP hostname TAN0. The second TCP/IP process is named $ZTC1 and is identified by TCP/IP hostname TAN1.

The key to running USER-Access on a particular Ethernet adapter is to set the "**TCPIP^PROCESS^NAME**" environment variable to the proper value. This is done with the NonStop "**PARAM**" command. If this variable is not set to a particular TCP/IP process name prior to running USER-Access, the default process name will be used (the default is setup when NonStop TCP/IP is installed).

The rest of this section describes:

- Running the USER-Access TCP/IP Client over multiple Ethernet adapters.

- Running the USER-Access TCP/IP Service Initiator and Server over multiple Ethernet adapters.

Running the USER-Access TCP/IP Client

The USER-Access TCP/IP Client can be started such that it will run using either TCP/IP process. If a TCP/IP process name is not specified prior to invoking the client, the default TCP/IP process name is used.

For example, to run the USER-Access client on TCP/IP process name $ZTC0, issue the following:

```
TACL> add define =tcpip^process^name, file $ztc0
TACL> user
```

To run the client on TCP/IP process name $ZTC1, the following commands should be issued:

```
TACL> add define =tcpip^process^name, file $ztc1
TACL> user
```

The commands to run the client could be defined in a TACL macro to automatically start the client on a particular TCP/IP process name. For example, to define a TACL macro named USER0 to always start the client on TCP/IP process $ZTC0, put the following commands in your system or user TACL script:

```
?section user0 macro
add define =tcpip^process^name, file $ztc0
user %*%
```

Running the USER-Access TCP/IP Service Initiator and Server

In order to connect into this example NonStop system over either Ethernet adapter, two different service initiators must be started - one for each TCP/IP process. Then one can access this NonStop by connecting

to hostname TAN0 or TAN1. Given two TCP/IP processes ($ZTC0 and $ZTC1), the following steps will start two independent Service Initiators, one will offer service USER on $ZTC0 and the other will offer service USER on $ZTC1:

1. Start the editor and create a new file that will start both Service Initiators.

       TACL> *EDIT $system.ua.GOSI*

   The following log and configuration file names should not be qualified with a $volume.subvolume because they are created in $SYSTEM.UA (or where USER-Access was installed).

   Edit the following lines into the file to start the Service Initiators:

   ```
   ?TACL MACRO
   ADD DEFINE =TCPIP^PROCESS^NAME, FILE $ZTC0
   RUN $system.ua.SISTART $SI0 SILOG0 SICFG0
   ADD DEFINE =TCPIP^PROCESS^NAME, FILE $ZTC1
   RUN $system.ua.SISTART $SI1 SILOG1 SICFG1
   ```

2. Make a copy of the Service Initiator configuration file for $ZTC0.

       TACL> *FUP COPY $system.ua.SICONFIG $system.ua.SICFG0*

   Start the editor with the file $system.ua.SICFG0 and find the following line:

   ```
   USER    SERVER    run $system.ua.uasrvr /name/ -si -service %s
   ```

   Add parameters to the line to indicate the TCP/IP process name to use for the USER-Access server:

   ```
   USER    SERVER    run $system.ua.uasrvr -tcp $ZTC0 /name/ -si
   -service %s
   ```

3. Make a copy of the Service Initiator configuration file for $ZTC1.

       TACL> *FUP COPY $system.ua.SICONFIG $system.ua.SICFG1*

   Start the editor with the file $system.ua.SICFG1 and find the following line:

   ```
   USER    SERVER    run $system.ua.uasrvr /name/ -si -service %s
   ```

   Add parameters to the line to indicate the TCP/IP process name to use for the server:

   ```
   USER    SERVER    run $system.ua.uasrvr -tcp $ZTC1 /name/ -si
   -service %s
   ```

Appendix C: Stopping the Service Initiator

The Service Initiator can be stopped by using the Service Initiator Control program $SYSTEM.UA.CONTROL. To stop the Service Initiator, enter:

```
24> RUN $SYSTEM.UA.CONTROL STOP -H host
```

Substitute your local host name for 'host'.

Appendix D: Service Initiator Keywords

The Service Initiator configuration file, **$SYSTEM.UA.SICONFIG**, contains a list of keywords that can be set to alter the way the Service Initiator operates for a given SERVICE being offered. Each keyword is listed here along with a brief description of the value that can be assigned to it:

SI_USERNAME

> The group.userid of a non-privileged account used to reset the Service Initiator back to a non-privileged state following a successful logon. The username should not be SUPER.SUPER or group.SUPER (i.e., a UID of *,255).

SI_PASSWORD

> The password associated with the account specified for the SI_USERNAME parameter. The SI_PASSWORD value can be encrypted. To do so, use the ENCRYPT string function (or ENCRYPT alias) provided with USER-Access. Refer to the "Password Encryption" section of this document for more information on password encryption.

SERVER

> Specifies the command that is used to invoke or run the USER-Access server. The '%s' that appears in this string marks the command line position where the service name to offer is passed (e.g., USER001).

COMMAND

> The command interpreter used for logon and activating the USER-Access server. Note that this command interpreter has no relationship to the command interpreter used for local or remote command execution. TACL is the default.

CPU

> A round-robin list of CPU numbers for use by the USER-Access servers. By default, all USER-Access servers are started on the same CPU as the Service Initiator. The server load can be balanced by providing a list of CPUs on which to execute (e.g., CPU 0 1 2 3). A single CPU can be favored by repeating it in the list (e.g., CPU 0 1 1 2 3). The Service Initiator CPU is represented by the value -1 (e.g., CPU -1 4 alternates between the Service Initiator CPU and CPU #4).

> **Note:** On systems where the $CMON process makes CPU assignments this parameter will have no effect.

USERNAME

> Specifies the guest username if none is provided on the connect request.

PASSWORD

> Specifies the guest password if none is provided on the connect request.

OPERATOR

> Specifies a password that is required when issuing commands through the CONTROL program (e.g., for shutting down the Service Initiator).

LOGTIMEOUT

> Specifies the logon timeout in seconds. This is used to terminate a logon request that for some unknown reason, is hanging around.

MINIMUM

Specifies the minimum session number that will be offered for this service. For example, a MINIMUM value of 5 would result in SERVICE "USER" being offered as "USER005" up to MAXIMUM (below).

MAXIMUM

Specifies the maximum session number that will be offered for this service. A value of 30, for example would, result in the last offer of "USER" being "USER030", before the offers started over at MINIMUM.

TRACE

Allow different levels of tracing for the Service Initiator. Refer to the comments in the configuration file for a description of the different trace levels.

VERBOSE

Specifies whether the LOGON output is displayed back to the connecting user. The LOGON output is the normal TACL startup information that displays when a user logs onto a NonStop system.