



z/OS Introduction and Workshop

TN3270, FTP, and SSH Access

Unit Objectives

After completing this unit, you should be able to:

- Briefly describe 3270
- Access z/OS using TN3270 Emulator
- Access z/OS using SSH client (PuTTY)
- Access z/OS using FTP

3270 Protocol

3270 is an IBM display device introduced in 1971

- Text only display
- Session attributes determine screen number of rows and columns
- Existed long before HTML and Browsers
- VT100 (text display) introduced in 1978

3270 protocol is a 'data stream' consisting of commands and orders to:

- Write data to display device
- Read data from display device

3270 Emulator Keyboard Mapping vs. PC Keyboard Layout

- 3270 protocol 'enter' command, x'7D', is used to send screen data
- PC keyboard right side '**Ctrl**' is mapped by emulator to generate 'enter' command
- Emulator keyboard mapping can be changed

3270 Emulator Mapping to Physical Keyboard

The screenshot shows a software window titled "Customize Keyboard - US Enhanced [Untitled]". The window has a menu bar with "File", "Actions", and "Help". Below the menu bar is a section titled "Select a Key" which displays a virtual keyboard layout. The right-hand Ctrl key is highlighted with a red border. Below the keyboard is a section titled "Change Current Actions for Selected Key". This section contains two buttons: "Ctrl" and "->". The "Ctrl" button is selected, and an arrow points from the highlighted right Ctrl key on the keyboard to this "Ctrl" button. To the right of the buttons is a text input field containing the text "[enter/ctrl]". An arrow points from the highlighted right Ctrl key on the keyboard to this text field.

Right side Ctlr key generates 3270 'enter' command by default

TN3270 Configuration Customization Options

- IP address (target system)
- Port number (target system application)
- Model size (screen # rows and # columns)
- Code page (1047 recommended)

Keyboard Mapping

TN3270 signon screen following successful configuration

```
=====
=====
===
===  ==WELCOME==TO  THE=====
===  IBM Innovation Center - Dallas==  ===
===
=====
=====
```

```
MVR22GA      *** z/OS V2 R2   via TCPIP Telnet ***
```

Choose from the following commands:
(Not all applications are available in every system.)

- TSO - Logon TSO (24x80)
- IMS - Logon IMS
- CICS - Logon CICS TS 5.3
- CICS42 - Logon CICS TS 4.2



← *Cursor placed here automatically*

TN3270 signon screen following successful configuration

```

=====
=====
===
===  ==WELCOME==TO  THE=====
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```

MVR22GA *** z/OS V2 R2 via TCPIP Telnet ***

Choose from the following commands:
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```

TSO      - Logon TSO (24x80)
IMS      - Logon IMS
CICS     - Logon CICS TS 5.3
CICS42   - Logon CICS TS 4.2

```

tso

type tso – then 'enter' command – right side Ctrl key

```

IKJ56700A ENTER USERID -
zibm050

```

type your assigned ID – then 'enter' command – right side Ctrl key

Tab to Password field enter bluesky, New Password required with verification

```

----- TSO/E LOGON -----
IKJ56447A Reenter the new password in the NEW PASSWORD field for verification

Enter LOGON parameters below:                                RACF LOGON parameters:

Userid   ==> ZIBM050
Password ==>
Procedure ==> DBPROCBG                                     *New Password ==> █
Acct Nbr ==> FB3                                           Group Ident  ==>
Size     ==> 32768
Perform  ==>
Command  ==>

Enter an 'S' before each option desired below:
      -Nomail          -Nonotice          -Reconnect          -OIDcard

PF1/PF13 ==> Help    PF3/PF15 ==> Logoff    PA1 ==> Attention    PA2 ==> Reshow
You may request specific help information by entering a '?' in any entry field
  
```


TSO logon writes message to display device

```
ICH70001I ZIBM000  LAST ACCESS AT 10:49:16 ON TUESDAY, APRIL 4, 2017  
ZIBM000 LOGON IN PROGRESS AT 10:51:44 ON APRIL 4, 2017  
NO BROADCAST MESSAGES
```

```
z/OS Introduction and Workshop
```

```
Today is  4 Apr 2017
```

```
Time in Central USA is 10:51:49
```

```
You logged on with ID  ZIBM000
```

```
Have Fun!
```



TSO automatically starts ISPF

```

Menu Utilities Compilers Options Status Help
-----
                ISPF Primary Option Menu
                More:      +
0 Settings      Terminal and user parameters      User ID . . : ZIBM050
1 View          Display source data or listings    Time. . . . : 14:01
2 Edit          Create or change source data       Terminal. . : 3278
3 Utilities     Perform utility functions          Screen. . . . : 1
4 Foreground   Interactive language processing      Language. . : ENGLISH
5 Batch        Submit job for language processing    Appl ID . . : ISR
6 Command      Enter TSO or Workstation commands        TSO logon . : DBPROCBG
7 Dialog Test  Perform dialog testing                          TSO prefix: ZIBM050
8 LM Facility  Library administrator functions                System ID : SOW1
9 IBM Products IBM program development products      MVS acct. . : FB3
10 SCLM        SW Configuration Library Manager        Release . . : ISPF 7.2
11 Workplace   ISPF Object/Action Workplace

----- Other Install Products -----

D Debug Tool  Debug Tool Utility V13.1
SD SDSF      System Display and Search Facility
IP IPCS      Inter Problem Control Facility
IS ISMF      Inter Storage Management Facility
SM SMP/E     SMP/E and CBIPO Dialogs
HC HCD       HW Configuration Definition Dialog
R RACF       Resource Access Control Facility
S DFSORT     Data Facility Sort
OE OEDIT     OpenEdition MVS Edit files
OB OBROMSE   OpenEdition MVS Browse files
OS OSHELL    OpenEdition MVS ISPF Shell
BR READ      BookManager READ/MVS
BB BUILD     BookManager BUILD/MVS
BI READ INDEX BookManager Index Utility

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5650-ZOS      Copyright IBM Corp. 1980, 2015.
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by GSA ADP Schedule Contract with IBM Corp.
ns
B2
n

Option ==> =0
F1=Help      F2=Split    F3=Exit     F7=Backward F8=Forward  F9=Swap
F10=Actions  F12=Cancel

```

change settings

ISPF Settings

Before

Log/List Function keys Colors Environ Workstation Identifier Help

ISPF Settings

Options

- Enter "/" to select option
- / Command line at bottom
- / Panel display CUA mode
- / Long message in pop-up
- / Tab to action bar choices
- Tab to point-and-shoot fields
- / Restore TEST/TRACE options
- Session Manager mode
- / Jump from leader dots
- Edit PRINTDS Command
- / Always show split line
- Enable EURO sign

Print Graphics

Family printer type 2
 Device name
 Aspect ratio 0

General

Input field pad . . B
 Command delimiter . :

Member list options

- Enter "/" to select option
- / Scroll member list
- Allow empty member list
- Allow empty member list (nomatch)
- / Empty member list for edit only

Terminal Characteristics

Screen format	2	1. Data	2. Std	3. Max	4. Part
Terminal Type	3	1. 3277	2. 3277A	3. 3278	4. 3278A
		5. 3290A	6. 3278T	7. 3278CF	8. 3277KN
		9. 3278KN	10. 3278AR	11. 3278CY	12. 3278HN
		13. 3278HO	14. 3278IS	15. 3278L2	16. BE163
		17. BE190	18. 3278TH	19. 3278CU	20. DEU78
		21. DEU78A	22. DEU78T	23. DEU90A	24. SW116
		25. SW131	26. SW500	27. 3278GR	28. 3278L1
		29. OTHER			

Command ==>

F1=Help F2=Split F3=Exit F7=Backward F8=Forward F9=Swap
 F10=Actions F12=Cancel

After

Log/List Function keys Colors Environ Workstation Identifier Help

ISPF Settings

Options

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Family printer type 2
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		9. 3278KN	10. 3278AR	11. 3278CY	12. 3278HN
		13. 3278HO	14. 3278IS	15. 3278L2	16. BE163
		17. BE190	18. 3278TH	19. 3278CU	20. DEU78
		21. DEU78A	22. DEU78T	23. DEU90A	24. SW116
		25. SW131	26. SW500	27. 3278GR	28. 3278L1
		29. OTHER			

Return
 Exit
 F3

Command ==>

F1=Help F2=Split F3=Exit F7=Backward F8=Forward F9=Swap
 F10=Actions F12=Cancel

Program Function key display off, 'x' to terminate ISPF session, then logoff of TSO

Before

```

Menu Utilities Compilers Options Status Help
-----
ISPF Primary Option Menu
Option ==> pfshow off
More: +
0 Settings Terminal and user parameters User ID . : ZIBM050
1 View Display source data or listings Time. . . : 14:04
2 Edit Create or change source data Terminal. : 3278
3 Utilities Perform utility functions Screen. . : 1
4 Foreground Interactive language processing Language. : ENGLISH
5 Batch Submit job for language processing Appl ID . : ISR
6 Command Enter TSO or Workstation commands TSO logon : DBPROCBG
7 Dialog Test Perform dialog testing TSO prefix: ZIBM050
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OB OBROWSE OpenEdition MVS Browse files
OS OSHELL OpenEdition MVS ISPF Shell
BR READ BookManager READ/MVS
BB BUILD BookManager BUILD/MVS
BI READ INDEX BookManager Index Utility
DU MVS/DITTO MVS/DITTO Utility
IN INSPECT INSPECT for C/370 and PL/I
MQ MQSeries MQSeries 8.0.0
D2 DB2I Perform DB2 Interactive functions
DM DB2ADM DB2 Admin Tool
QM QMF Query Management Facility for DB2
CO CICS PD/MVS CICS PD/MVS Online Customization
F1=Help F2=Split F3=Exit F7=Backward F8=Forward F9=Swap
F10=Actions F12=Cancel
  
```

After

```

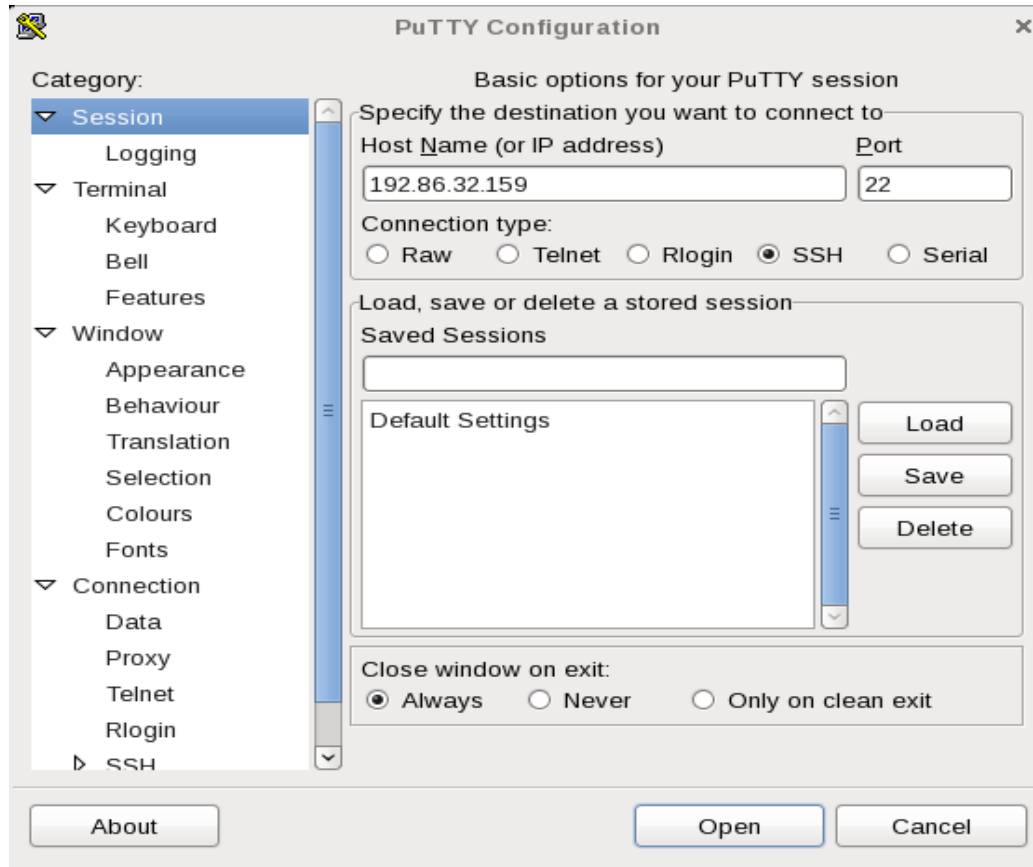
Menu Utilities Compilers Options Status Help
-----
ISPF Primary Option Menu
Option ==> x
More: +
0 Settings Terminal and user parameters User ID . : ZIBM050
1 View Display source data or listings Time. . . : 14:04
2 Edit Create or change source data Terminal. : 3278
3 Utilities Perform utility functions Screen. . : 1
4 Foreground Interactive language processing Language. : ENGLISH
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OS OSHELL OpenEdition MVS ISPF Shell
BR READ BookManager READ/MVS
BB BUILD BookManager BUILD/MVS
BI READ INDEX BookManager Index Utility
DU MVS/DITTO MVS/DITTO Utility
IN INSPECT INSPECT for C/370 and PL/I
MQ MQSeries MQSeries 8.0.0
D2 DB2I Perform DB2 Interactive functions
DM DB2ADM DB2 Admin Tool
QM QMF Query Management Facility for DB2
CO CICS PD/MVS CICS PD/MVS Online Customization

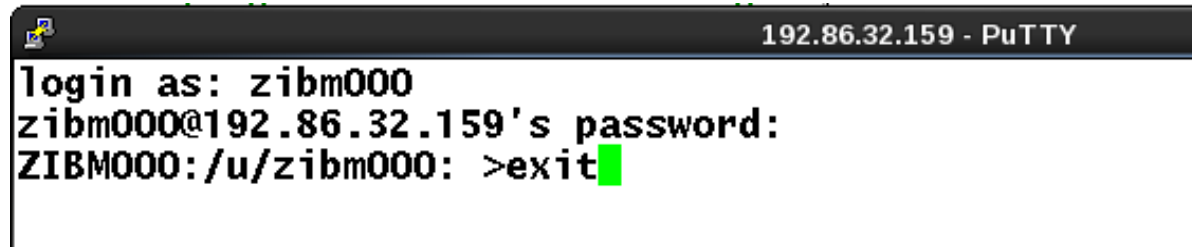
Enter X to Terminate using log/list defaults
READY
logoff
  
```

SSH connection



enter key is PC labeled enter key

use same TN3270 access assigned ID and your password



FTP connection

```
paulnewt@oc3806684886:~  
File Edit View Search Terminal Help  
[paulnewt@oc3806684886 ~]$ ftp 192.86.32.159  
Connected to 192.86.32.159 (192.86.32.159).  
220-FTPSERVE IBM FTP CS V2R2 at S0W1.DAL-EBIS.IHOST.COM, 16:38:51 on 2017-04-04.  
220 Connection will close if idle for more than 5 minutes.  
Name (192.86.32.159:paulnewt): zibm000  
331 Send password please.  
Password:  
230 ZIBM000 is logged on. Working directory is "ZIBM000."  
Remote system type is MVS.  
ftp> quit
```

enter key is PC labeled enter key

*use same TN3270 access
assigned ID and your password*

Unit Summary

Having completed this unit, you should be able to:

- ✓ Briefly describe 3270
- ✓ Access z/OS using TN3270 Emulator
- ✓ Access z/OS using SSH client (PuTTY)
- ✓ Access z/OS using FTP