

3270 Basics and Using with z/VM

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3270 is the console/terminal access for IBM Mainframes and operating systems that run on them (z/VM, z/OS, VSE, etc)

3270 minimizes the number of I/O interrupts required by transferring large blocks of data known as data streams

- Basically, that means you can type stuff then hit an interrupt key (i.e. enter) to send the data to the machine, unlike other terminal services that send/receive by each character typed



TN3270 is simply 3270 over TCP/IP (TELNET)

Software/Client options include (not limited to):

- **Vista TN3270 - Tom Brennan Software (Windows)**
 - <https://www.tombrennansoftware.com/>
 - 30-day free trial; very inexpensive
- wc3270 (Windows) or c3270 (*ix)
- x3270 (*ix X based)
- Other vendor options: IBM, Rocket Software, and others

You have your own training userid (VSITRnnn) and password

- If you want a demo userid in the future, go to

<https://demo.velocitysoftware.com/zpro/>

and follow the instructions on the page to create a demo ID and build your own userid(s)

Access the Velocity Software demo system with TN3270

- Host: demo.velocitysoftware.com or 184.105.60.17
 - Port: 992
 - Security: TLS V1.2

3270 Screen



3270 Screen

```
File Edit Font Transfer Macro Options Window Help
z/VM ONLINE

ZZZZZZZ / VV VVV MM MM
ZZ VV VVV MMM MMM
ZZ VV VVV MM MM MM MM
ZZ VV VVV MM M MM
ZZ VVV MM MM MM
ZZZZZZZ / V MM MM

built on IBM Virtualization Technology

Fill in your USERID and PASSWORD and press ENTER
(Your password will not appear when you type it)
USERID ===>
PASSWORD ===>
COMMAND ===>

RUNNING RKS2LV
MA Friday 06/26/2026.177 08:58AM 192.168.5.48 a 44,17
```

3270 Screen

```
File Edit Font Transfer Macro Options Window Help
z/VM ONLINE - Velocity Software

      VV      VV EEEEEEEE LL      0000      CCCC      IIIIII TTTTTTTT YY      YY
      VV      VV EEEEEEEE LL      00 00      CC  CC      IIIIII TTTTTTTT YY      YY
      VV      VV EE      LL      00 00      CC  CC      II      TT      YY      YY
      VV      VV EE      LL      00 00      CC  CC      II      TT      YYY      YY
      VV      VV EEEEE      LL      00 00      CC  CC      II      TT      YY
      VV      VV EEEEE      LL      00 00      CC  CC      II      TT      YY
      VV VV      EE      LL      00 00      CC  CC      II      TT      YY
      VVV      EEEEEEEE LLLLLL      00 00      CC  CC      IIIIII      TT      YY
      V      EEEEEEEE LLLLLL      0000      CCCC      IIIIII      TT      YY

      ***
      *****
      *O*O*
      WWW
      *WWW*
      *WWW*
      *WWW*
      Y*WWW*Y
      YYY*WWW*YYY
      YYY**YYY
      YY      YY

Velocity Software, Inc.
HTTP://WWW.VELOCITYSOFTWARE.COM

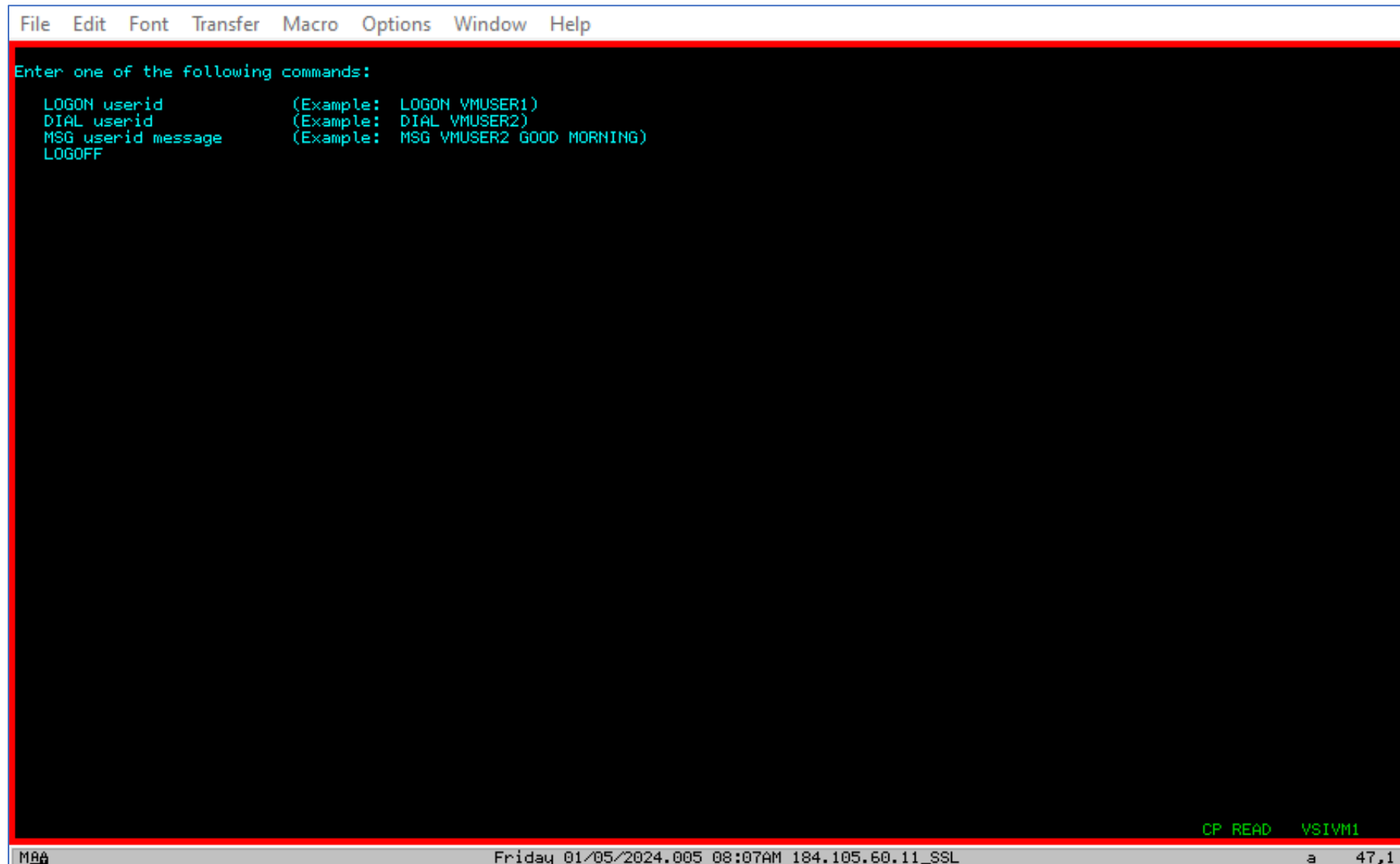
Fill in your USERID and PASSWORD and press ENTER
(Your password will not appear when you type it)
USERID   ==>
PASSWORD ==>

COMMAND  ==>

RUNNING  VSIVM1

MBA Friday 01/05/2024.005 08:07AM 184.105.60.11_SSL a 44,17
```

3270 Screen



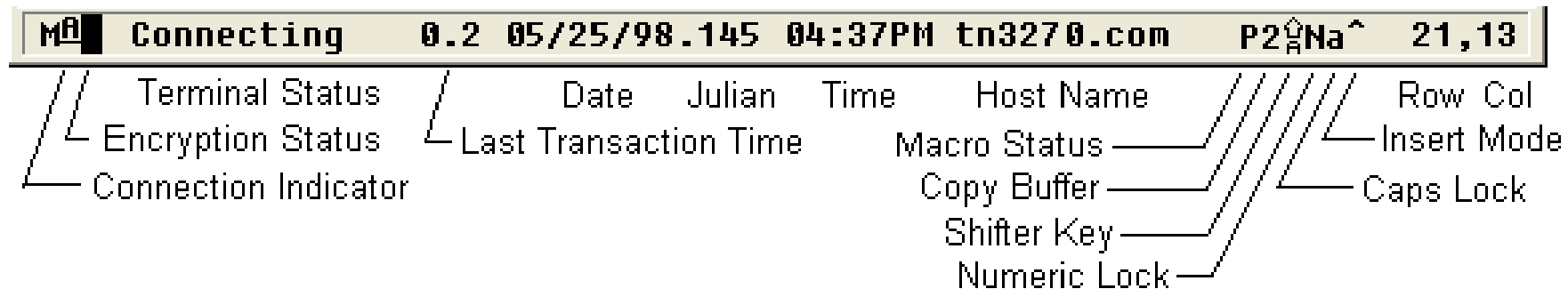
The screenshot shows a 3270 terminal window with a menu bar at the top containing: File, Edit, Font, Transfer, Macro, Options, Window, Help. The main area is black with green text. It prompts the user to "Enter one of the following commands:" and lists four commands with examples:

- LOGON userid (Example: LOGON VMUSER1)
- DIAL userid (Example: DIAL VMUSER2)
- MSG userid message (Example: MSG VMUSER2 GOOD MORNING)
- LOGOFF

At the bottom right of the terminal area, the text "CP READ VSIVM1" is displayed in green. The status bar at the very bottom shows "MBA" on the left, "Friday 01/05/2024.005 08:07AM 184.105.60.11_SSL" in the center, and "a 47,1" on the right.

Status Bar

The Status Bar is the text at the bottom of the Vista TN3270 window that looks something like this:



Also, if the session is SSL/TLS encrypted, a lock indicator appears at the lower left of the status bar, such as:

Ma

Terminal Status Descriptions:

Disconnect	Terminal is not currently connected
Start	Connection is ready to start
Connecting	Terminal is attempting connection. When the attempt is near the end of the specified timeout, this status field counts down the number of remaining seconds.
Connected	Terminal has just been connected
X 	Terminal is waiting for a host response
X SYSTEM	Terminal is waiting for a host response
+&+	Input is inhibited at the current cursor location
&>	Input is inhibited because insert mode is active, and inserting more characters would result in a loss of data at the right of field
\$ Ready \$ Data \$ Message \$ Done	These show status during a data transfer, mostly these are only useful if the transfer fails and you need to know where it was at.

Screen Dimensions

Mod 2, 3 ,4 and 5 are “standard” sizes for 3270

- 24 x 80, 32 x 80, 43 x 80 and 27 x 132

TN3270 allows you to define your own dimensions! Best for wide-screen monitors

The screenshot shows the 'Vista TN3270 Options' dialog box with the 'Display' tab selected. The 'Terminal Model' section has 'User' selected with input fields for '48' (Height) and '140' (Width). The 'Sound' section has 'Alarm', 'Keyclick on Error', and 'Update Notification' unchecked, with a 'Set Sounds' button and a '0' second delay. The 'Blinking Text' section has 'Blink' selected. The 'Display Options' section contains a grid of checkboxes: 'Auto Keyboard Unlock', 'Reset Insert on Action Key', 'Toggle Insert Key', 'Row/Col on Status Line', 'Modify Col in ISPF Edit', 'Prefix Input with Spaces', 'Convert Nulls to Blanks', 'Enable Auto Skip', 'Skip at End of Field', 'Move Cursor on Activate', 'All Upper Case', 'Type Ahead', 'Numeric Field Lock', 'Toggle Shift/Caps', and 'Host Initiated Printing'. The 'Defaults' button is at the bottom right.

Terminal Model	Sound	Blinking Text
☐ Mod 2	☐ Alarm	☒ Blink
☐ Mod 3	☐ Keyclick on Error	☐ Normal Text
☒ User	☐ Update Notification	
Height: 48	After 0 Seconds	
Width: 140		

Display Options
☒ Auto Keyboard Unlock
☒ Reset Insert on Action Key
☒ Toggle Insert Key
☒ Row/Col on Status Line
☒ Modify Col in ISPF Edit
☒ Prefix Input with Spaces
☐ Convert Nulls to Blanks
☒ Enable Auto Skip
☒ Skip at End of Field
☒ Move Cursor on Activate
☐ All Upper Case
☒ Type Ahead
☒ Numeric Field Lock
☒ Toggle Shift/Caps
☐ Host Initiated Printing

Once you are logged on to z/VM, the Status Area can help determine the state of the console/display

- **RUNNING** Good; program is running
- **HOLDING** Console held
- **MORE...** More to see; clear pending
- **VM READ** Need input (CMS)
- **CP READ** Need input (CP)
- **NOT ACCEPTED** Exactly; console busy

Logging on *your* VM userid

- From logo panel, enter in the Userid/Password fields
- Or on the Command line: **LOGON** userid (tap enter, then enter password)

Logging on when your ID is someplace else

- Use Command line or tap enter, then enter the logon command
- **LOGON** userid **HERE**

Logging on to another userid (not yours)

- Use Command line or tap enter, then enter the logon command
- **LOGON** otheruid **BY** youruserid
 - *logon zvps by james*
- After Enter key, you will be asked for *your* pw

Case *normally* does NOT matter in Z systems for logon / commands

- Userid and Password can be entered in any case
- For Passphrases, case is a factor; passphrases need to match exactly

For example, things to try on your VM userid

- q disk or Q Disk
- filelist or FILEL
 - Function keys vs command line
- help
 - help cms –or- help xedit menu
- xedit fn ft fm or X fn ft fm
 - xedit profile exec OR x PROFILE exec
 - PF3 or qq on command line

All TN3270 clients have a way to map keys to functions

- There are specific functions you will want to find and know about
- You can remap them if you want to
 - PA1 – breaks into CP mode
 - PA2 – clears the main output area; retains any command line data
 - CLEAR – clears the entire screen, including the command line
 - RESET – resets the emulator; helps to clear issues when input is inhibited
 - ENTER – the key used to submit commands/changes to content
- Vista TN3270's floating Keypad has all of these important functions as buttons in case you forget what key is needed

Clearing the console (defaults are for Vista TN3270)

- CTRL+HOME Default mapping for PA2
- PAUSE Default mapping for CLEAR
- Left CTRL Default mapping for RESET (Consider ESC key!)
- Right CTRL, Enter Default mapping for ENTER

Ways to “break out” of loops, etc:

- ALT+INS Default mapping for PA1
Usually followed with a CP cmd like IPL
- hx then enter Halt eXecution (CMS program)
- hi then enter Halt Interpreter (stops REXX)
- #CP IPL Immediately IPL your virtual machine
- #CP LOGOFF Immediately terminate everything, logoff the system

Control your console message “scrolling”

- CP TERM MORE secs secs HOLD ON|OFF
- HELP CP TERM for details; PF11 and select TERMINAL MORE

Try this:

- Enter: CP Q TERM
- Enter: LISTFILE * * P
 - See how many times clear or PA2 is needed
- Enter: CP TERM MORE 0 0 HOLD OFF
- Repeat the LISTFILE command and note difference!

Use TERM MORE|HOLD to manage how long you want messages to stick around when the screen fills up

If you want to temporarily disconnect your userid from the 3270 session:

- disc or CP DISC or #cp disc (*disc* is short for DISCONNECT)

Reconnecting – just log back on. You will see:

RECONNECTED AT 07:23:13 EDT WEDNESDAY 03/29/26

If you were in XEDIT, tap ENTER and the status will change to MORE... Clear the screen (PA2 or CLEAR) and you will be in XEDIT again

Ending the Session

When you are done with *your* VM session, logoff (best done at the “Ready;” prompt)

– logoff or cp logoff or #cp logoff (*log* is the short version)

Closing your TN3270 window without logging off or disconnecting is generally *not* a good idea and only suggested for “short term” use. It isn't a clean logoff.

A quick quiz to test what we've learned so far...

- Finding important keys
- z/VM console status

Most TN3270 clients support IND\$FILE transfer which works well for small to medium sized files

- IND\$FILE uses your CMS userid as a “server” and the current TN3270 window as a “client”. This means that your userid and the TN3270 session are both unavailable for other work during the file transfer process
- IND\$FILE transfer is if you have no better option available. It is recommended to get an FTP client such as WS_FTP or one of the many others available, that support FTPS (secure FTP) – if your z/VM system has FTP/FTPS set up and available for use

Preparing files

- If it is a plain text file, there is usually nothing needed
- For binary files or very large files to download
 - Pack the file first: COPYFILE fn ft fm (PACK
 - When transferring, specify BINARY
 - When uploading, specify BINARY
- For binary files to upload that are COPYFILE PACKed
 - When uploading, specify BINARY
 - Set Options for IND\$FILE Send to RECFM F LRECL 1024
 - To unpack the file: COPYFILE fn ft fm (UNPACK

To begin a file transfer

- Be sure you are in CMS at the Ready; prompt
- Clear your screen (CLEAR key) – including the command line
- Select Transfer on the menu
 - Send to Host (upload a file from your PC)
 - Receive from Host (download a file to your PC)

File Transfer

Receive File from Host

Source - Host File

List level

List

zvmclass packed a

\$tmp\$\$\$ exec a1
a a a1
a b a1
a file a1
a filelist a1
a hits a1
acctools exec a1
adduid exec a1
all2move rest a1
another file a1
auth file a1
authdasd datadvh a1
badracf exec a1
bfssrvr pooldef a1
blast xedit a1
blockit exec a1
body file a1
bpn txt a1

Target - PC File

C:\Users\James\Downloads\

Browse

ZVMCLASS.PACKED

600-2.jpg
A Users Guide to CMS Multi
Ansible for IBM Z Presentati
Ansible for zPRO.pptx
AUTH.TXT
bug_demo.rex
ca.crt
Certmgr_Instructions.pdf
CHECKR background_repor
Chocolate & Date Bars .pdf
Class1 - attendee details.doc
ClientList.csv
cloudlib4zvm-readthedocs-ic
CMDBRPT.EXEC
CMSMAP.VMARC
Core Exercises.docx
Custom Terraform Provider M
data.send

Help

Receive

Options

Exit

Data

☐ Text

☒ Binary

☐ Append

Host

☐ TSO

☒ CMS

Code Conversion

☐ ASCII ☐ CRLF

Additional Parameters

View Log

Receive File from Host

Source - Host File

List level

List

acctools exec a1

\$tmp\$\$\$ exec a1
a a a1
a b a1
a file a1
a filelist a1
a hits a1
acctools exec a1
adduid exec a1
all2move rest a1
another file a1
auth file a1
authdasd datadvh a1
badracf exec a1
bfssrvr pooldef a1
blast xedit a1
blockit exec a1
body file a1
bpn txt a1

Target - PC File

C:\Users\James\Downloads\

Browse

acctools.exec

600-2.jpg
A Users Guide to CMS Multi
Ansible for IBM Z Presentati
Ansible for zPRO.pptx
AUTH.TXT
bug_demo.rex
ca.crt
Certmgr_Instructions.pdf
CHECKR background_repor
Chocolate & Date Bars .pdf
Class1 - attendee details.doc
ClientList.csv
cloudlib4zvm-readthedocs-ic
CMDBRPT.EXEC
CMSMAP.VMARC
Core Exercises.docx
Custom Terraform Provider M
data.send

Help

Receive

Options

Exit

Data

☒ Text

☐ Binary

☐ Append

Host

☐ TSO

☒ CMS

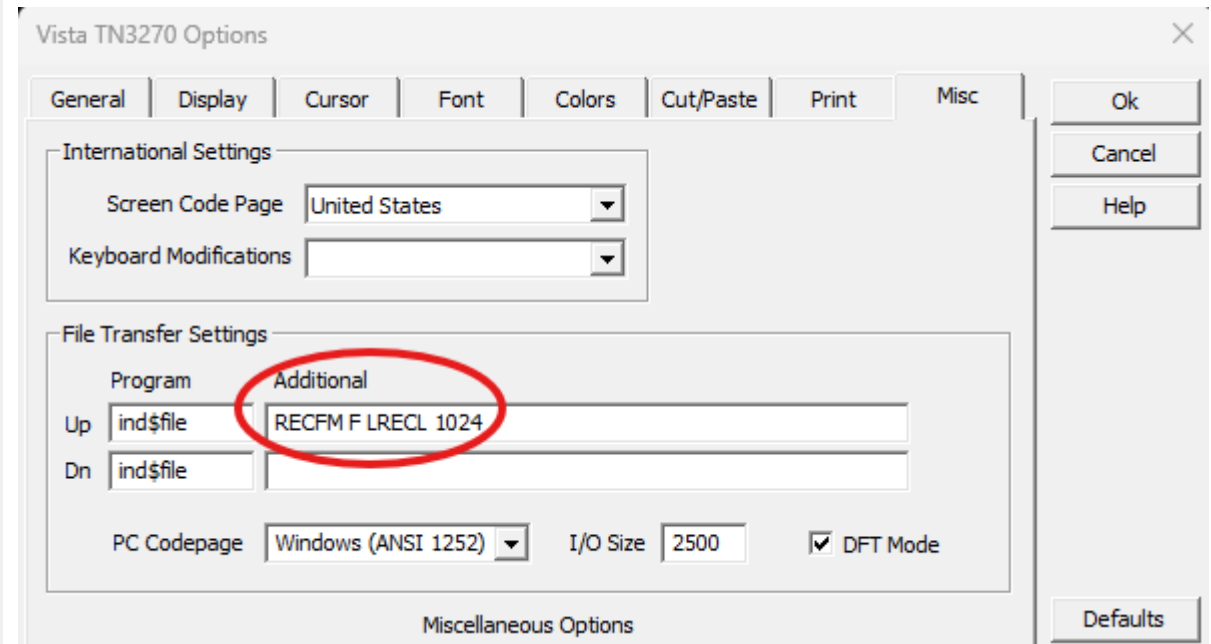
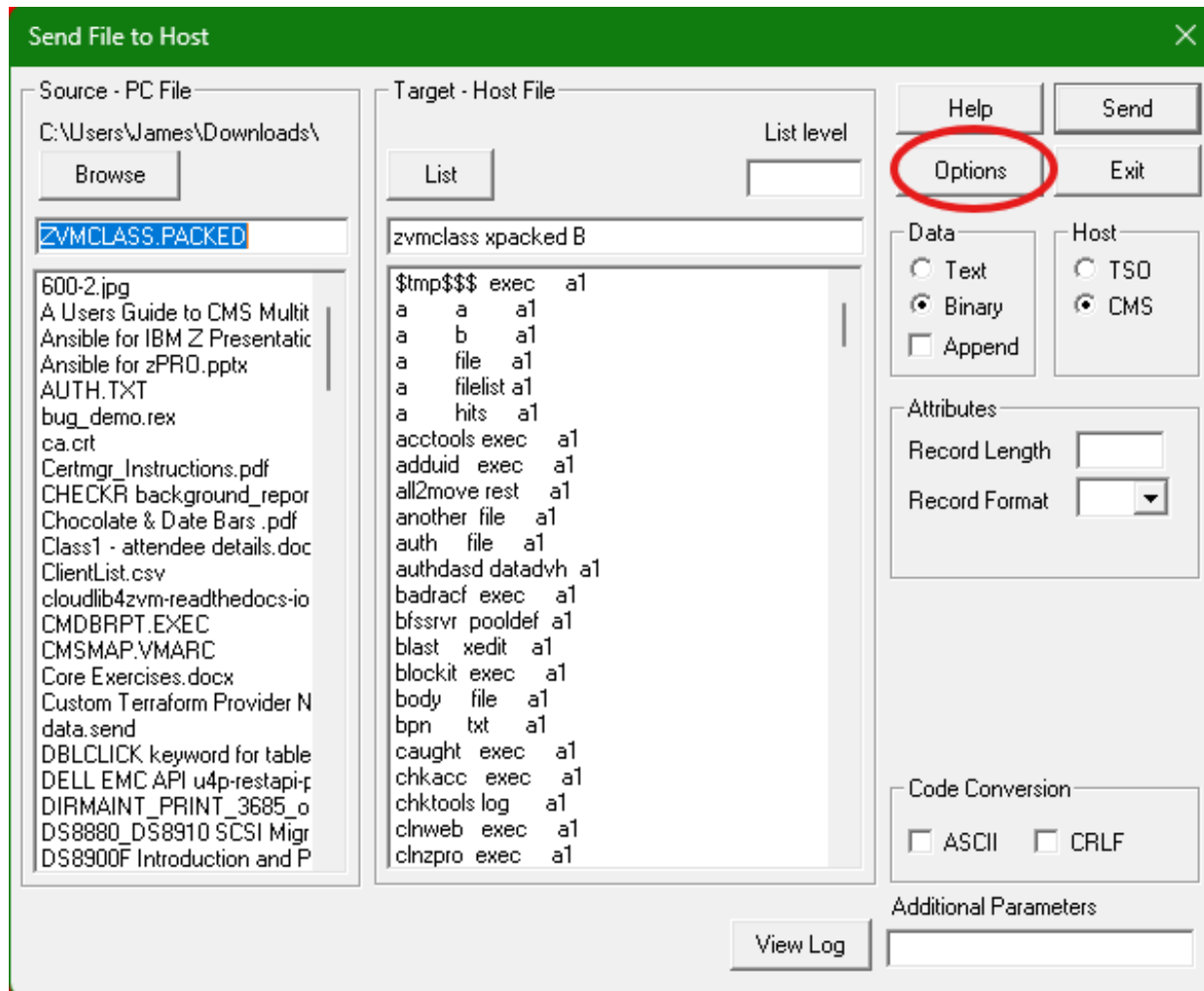
Code Conversion

☒ ASCII ☒ CRLF

Additional Parameters

View Log

File Transfer



You have some homework to do! Homework will be checked before the completion certificates are sent out after the end of the class.

Your task:

- Set up your TN3270 client
- Define a session to the Velocity Software Demo system
- Logon to your class userid provided to you
- Feel free to look around if you'd like. When done, CP LOGOFF

That's it!

Thank you for attending!

More questions? Send to: questions@velocitysoftware.com

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<https://velocitysoftware.com/pdfs/>

