

# How to manage your multiple 3270 application sessions in the 21st Century

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Session EE



# What's happening

- August 2016 announcement: All versions of IBM Session Manager to be withdrawn from service effective December 31, 2018.
- February 2017 announcement: All versions of NetView Access Services (NVAS) to be withdrawn from service effective September 10, 2018.
- IBM CL/SuperSession for z/OS V2.1, 5601-B28, announced as the replacement for both Session Manager and NVAS.
- Session Manager and NVAS clients need to start planning **now** for the upgrade and migration to CL/SuperSession.

## What you need to know

- IBM is consolidating its three session management offerings onto a single offering: CL/SuperSession.
- CL/SuperSession compares favorably to ISV session management offerings.
- Everything clients can do today with Session Manager and NVAS, they will be able to do tomorrow with CL/SuperSession. They just need to switch.
- CL/SuperSession is roughly equivalent to Session Manager; and is a functional upgrade to NVAS.
- Clients who have an IBM Session Manager for z/OS license with active S&S are eligible for a no-charge trade-up to an IBM CL/SuperSession V2.1 license.
- Find ordering information for the trade-up in the CL/SuperSession V2.1 announcement here: <https://ibm.biz/BdjsP5>

## CL/SuperSession key functions (1 of 3)

CL/SuperSession has many capabilities that make it the session manager of choice for many clients. Popular key capabilities include the following:

- A High Availability Option (HAO) that enhances the availability, performance, and manageability of CL/SuperSession sessions across all connected systems and sysplexes with a multi-point Help-Desk and profile synchronization.
  - HelpDesk provides a single point of control for multiple CL/SuperSession instances, empowering the HelpDesk user on any connected system to manage the users of, and issue commands to, all connected systems.
    - Allows HelpDesk user to view all users and the details of each, such as each user's active sessions, and perform appropriate actions.
    - Enables the Help Desk on each CL/SS instance to operate autonomously for maximum availability.

## CL/SuperSession key functions (2 of 3)

- Profile synchronization maximizes application availability.
  - Automatically propagates user profile updates to linked CL/SuperSession instances, eliminating single point of failure and increasing availability of the applications accessed through CL/SuperSession.
  - Exploits VTAM generic resources for automatic load balancing, improving performance and reducing system contention.
- Allows multiple network entry points, or gateways, each with a unique configuration of sessions and security access.
- Saves changes dynamically; no need to log off and log back on again for changes to take effect.
- Allows authorized users to maintain their own personalized menus, enabling them to reorder, modify, delete sessions on the menu; or add sessions to the menu.

## CL/SuperSession key functions (3 of 3)

- Facilitates customization with a REXX-like programming language for customizing screens, and with user exits for interoperating with user-written and ISV programs.
- Exploits passphrase and passticket support in security products such as RACF and ACF2 for enhanced security.
- Allows users to easily integrate applications and create new front ends for them without modifying the source code, thus extending the value of applications that run on Z.
- Additional functional advantages of CL/SuperSession:
  - CUA Operator provides an interface for operator commands and functions.
  - VPO interface to VTAM can be used for automation, such as activating and deactivating nodes.
  - Printer support

# Migration process

- Client completes the migration questionnaire to enable IBM migration team to understand client environment and any unique look-and-feel or behavioral characteristics that may require additional customizations.
- IBM migration team works with the client on migration plan, taking into account technical and organizational requirements. See “Best Practices Migrating to CL/SuperSession for z/OS.”
- Client installs CL/SS and, preferably, provides IBM remote access to system to customize the environment according to client’s needs.
- IBM migration team performs the migration and any customizations required to provide the look-and-feel and behaviour end users expect.
- Client validates the migration.

# Typical Migration to CL/SS

Activities (IBM Service hours)	Base Offering	Optional Extras
Assessment (pre project activity to confirm complexity)	-	
Discovery Phase- decide Signon and Menu screen image gather script source, application, user, profile lists gather virtual terminals & VTAM ACB requirements	16 (2 days)	
Installation Phase- CL/SS base installation Setup with KLS0CUST and KLS9CUST to create Runtimes Including HAO and profile sync Apply all PTFs Install security exit Create test application entries and test	16 (2 days)	>Non standard Modifications to exits.
Customization Phase- Build signon screen Build menu screen build application, profile and user entries using Migration Tools translate scripts	56-80 (6-10 days)	>Translation of in depth application scripts. >Passticket /single signon implementation
System Test- test all applications test all features make required adjustments	32 (4 days)	as required
User Test- Distribute User doc and training as needed start testing with screen scrapping applications and BU leads make required adjustments	32-80 (4-10 days)	as required
Production Phase – allocate & populate production data sets Setup Prod STC Provide Administrator doc and training .	32-48 (4-6 days)	as required
Go-live support	24-80 (3-10 days)	as required
<b>Total Days</b>	<b>200 (25-44 days)</b>	<b>to 100 days as required.</b>
Additional migrations will need less IBM Service days	56 (6 days each)	as required



## Why Migration Services?

- IBM consultants can provide guidance on how best to use the available tools and given specific requirements.
  - More automation as opposed to manual conversion
- IBM consultants are highly skilled with vast migration and deep technical experience, broad architectural knowledge, and access to IBM lead Developers and Support.
  - Migrations are complex: Same "Look and feel" not guaranteed if done by the Client
- Clients migrating to CL/SuperSession will have the confidence and comfort that comes with having an IBM contract.
- Employing IBM migration services means migration to CL/SuperSession is complete upon Client validation that CL/SuperSession meets Client expectations per the terms of the migration services SOW.

# IBM CL/SuperSession

- **What does it do?**

- Provides secure and user-friendly access to multiple z/OS systems from a single 3270 terminal
- Simultaneous connection to and navigation between multiple VTAM sessions
- Real time management of resources across LPAR boundaries
- Synchronization of profile tables when running in parallel sysplex environments
- Uses VTAM Generic Resources for load balancing and reconnection

- **Benefits**

- Increased productivity
- Reduced hardware costs
- Common gateway to z/OS applications
- Centralized administration and monitoring

# IBM CL/SuperSession

- **Key features**

- Users access multiple z/OS systems from single 3270 terminal
- Centralized administration
- Dialogs provided in REXX-like scripting language (SSPL)
  - Logon and logoff procedures
  - Security checking
  - Complex transaction and application interaction processing
- Audit logging
- Helpdesk and operations
  - Storage and resource monitoring
  - Spy function
  - Broadcast messages
  - User alerts for changes to profiles and application lists

# End User – Application Access

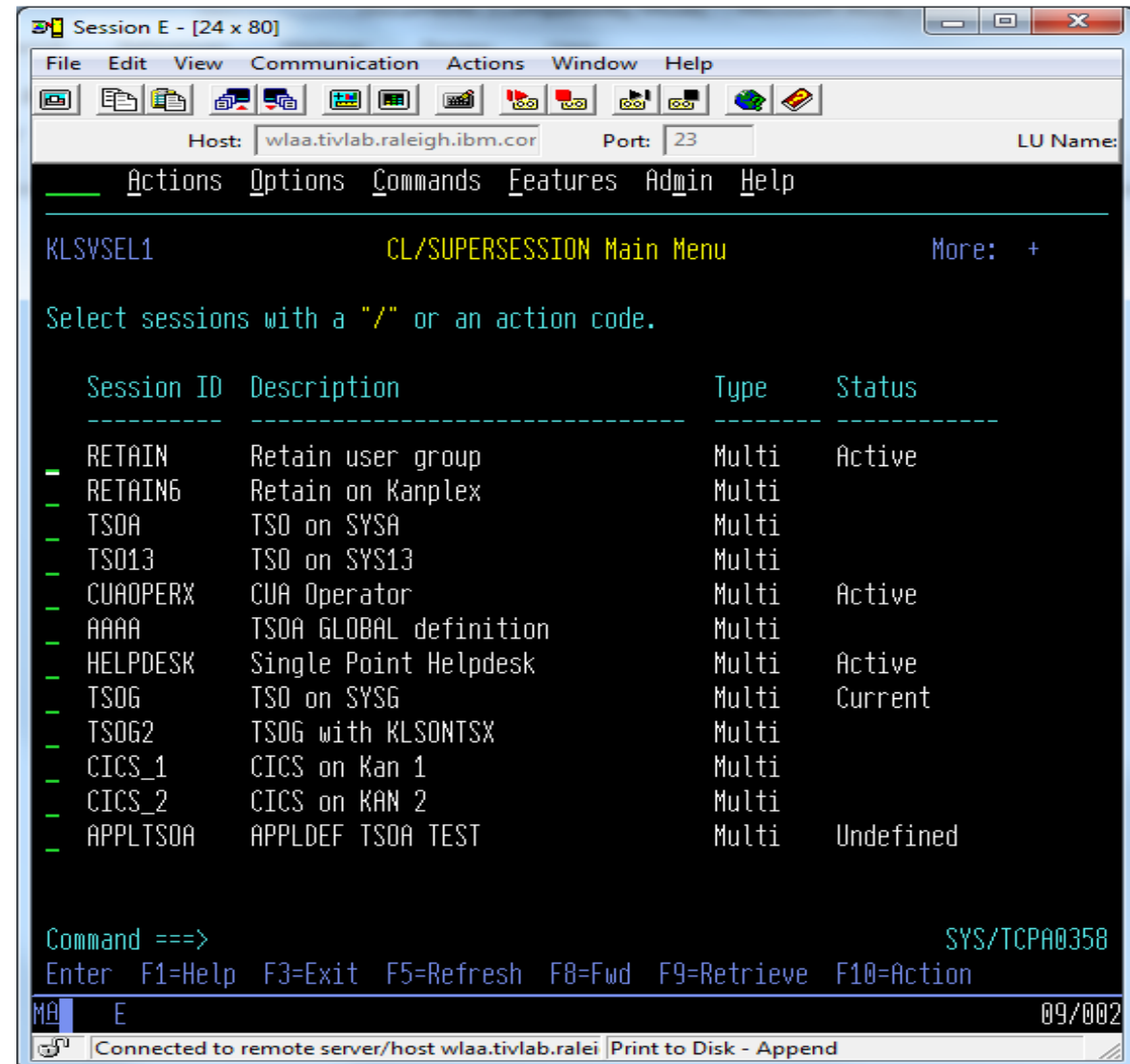
- **CL/SuperSession Signon**
  - Multiple configurable gateways for initially presenting:
    - A signon screen
    - A default menu
    - Single application access
  - Entry of user ID and Password/Pass Phrase can be automated to access VTAM applications quickly, reducing repetitive keystrokes
  - Applications selectable with minimal keystrokes from the menu screen
  - Signon and application menu screens highly customizable
  - Trigger keys provided for:
    - Switching between application sessions
    - Moving to the CL/SuperSession Main Menu
    - Moving between session windows
    - Starting new application sessions
  - Help panels

# CL/SuperSession Main Menu

Users are presented with a concise application list.

The applications can be statically defined at a GLOBAL level, for users based on their functional GROUP, or highly customized per USER.

Alternately, the application list can be determined dynamically based on the user's security profile in the External Security Manager, so the user only sees authorized applications.



```

Session E - [24 x 80]
File Edit View Communication Actions Window Help
Host: wlaa.tivlab.raleigh.ibm.cor Port: 23 LU Name:
Actions Options Commands Features Admin Help
KLSVSEL1 CL/SUPERSESSION Main Menu More: +
Select sessions with a "/" or an action code.

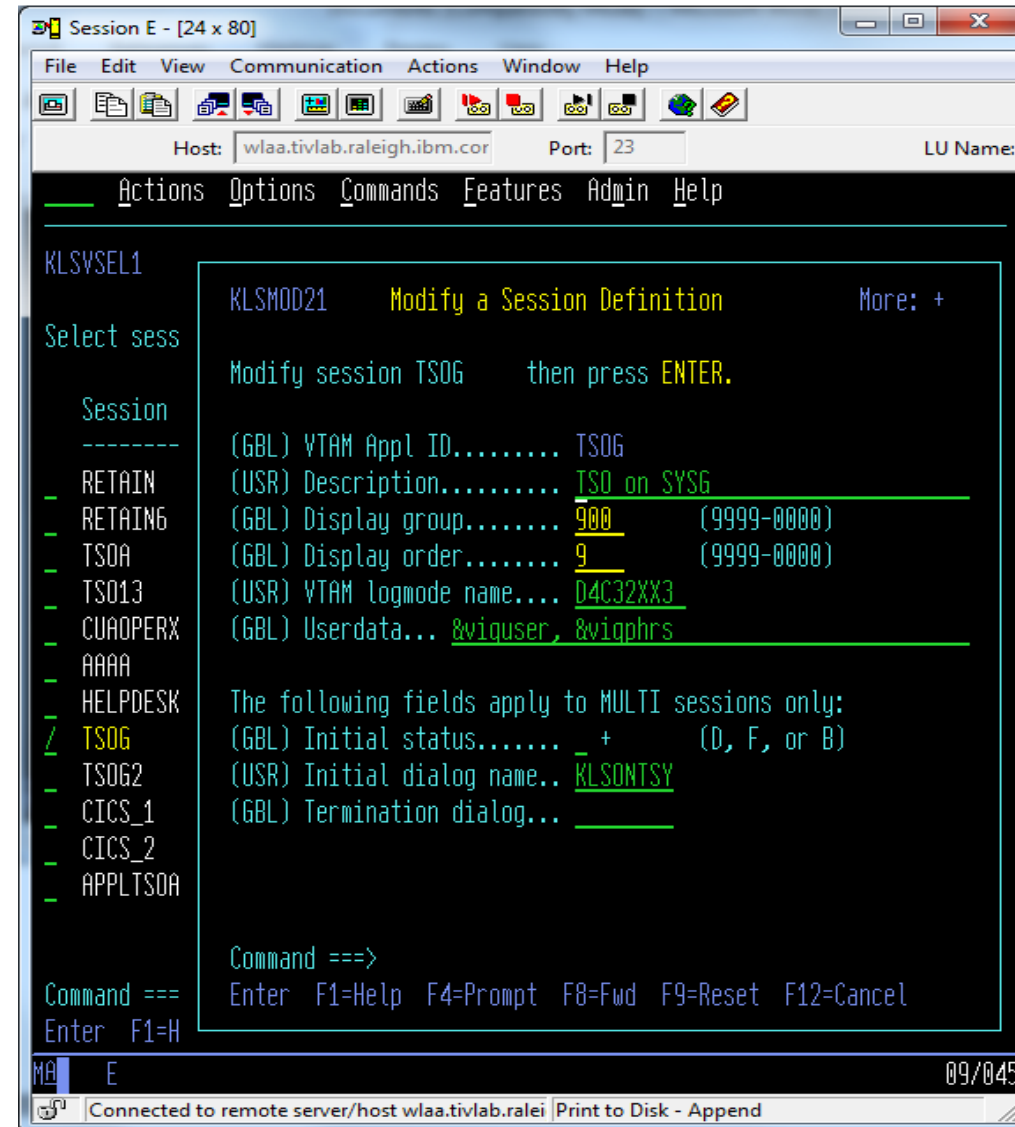
Session ID Description Type Status
-----
- RETAIN Retain user group Multi Active
- RETAIN6 Retain on Kanplex Multi
- TSOA TSO on SYSA Multi
- TSO13 TSO on SYS13 Multi
- CUAOPERX CUA Operator Multi Active
- AAAA TSOA GLOBAL definition Multi
- HELPDESK Single Point Helpdesk Multi Active
- TSO6 TSO on SYSG Multi Current
- TSO62 TSO6 with KLSONTSX Multi
- CICS_1 CICS on Kan 1 Multi
- CICS_2 CICS on KAN 2 Multi
- APPLTSOA APPLDEF TSOA TEST Multi Undefined

Command ==> SYS/TCPA0358
Enter F1=Help F3=Exit F5=Refresh F8=Fwd F9=Retrieve F10=Action
MA E 09/002
Connected to remote server/host wlaa.tivlab.ralei Print to Disk - Append
  
```

# Application session definition

In the session definition, the administrator can set the application identifiers, logmode, display order, as well as any dialogs used for an automated logon or logoff.

Although we ship a number of sample initial dialogs, these can be highly customized to meet specific needs.

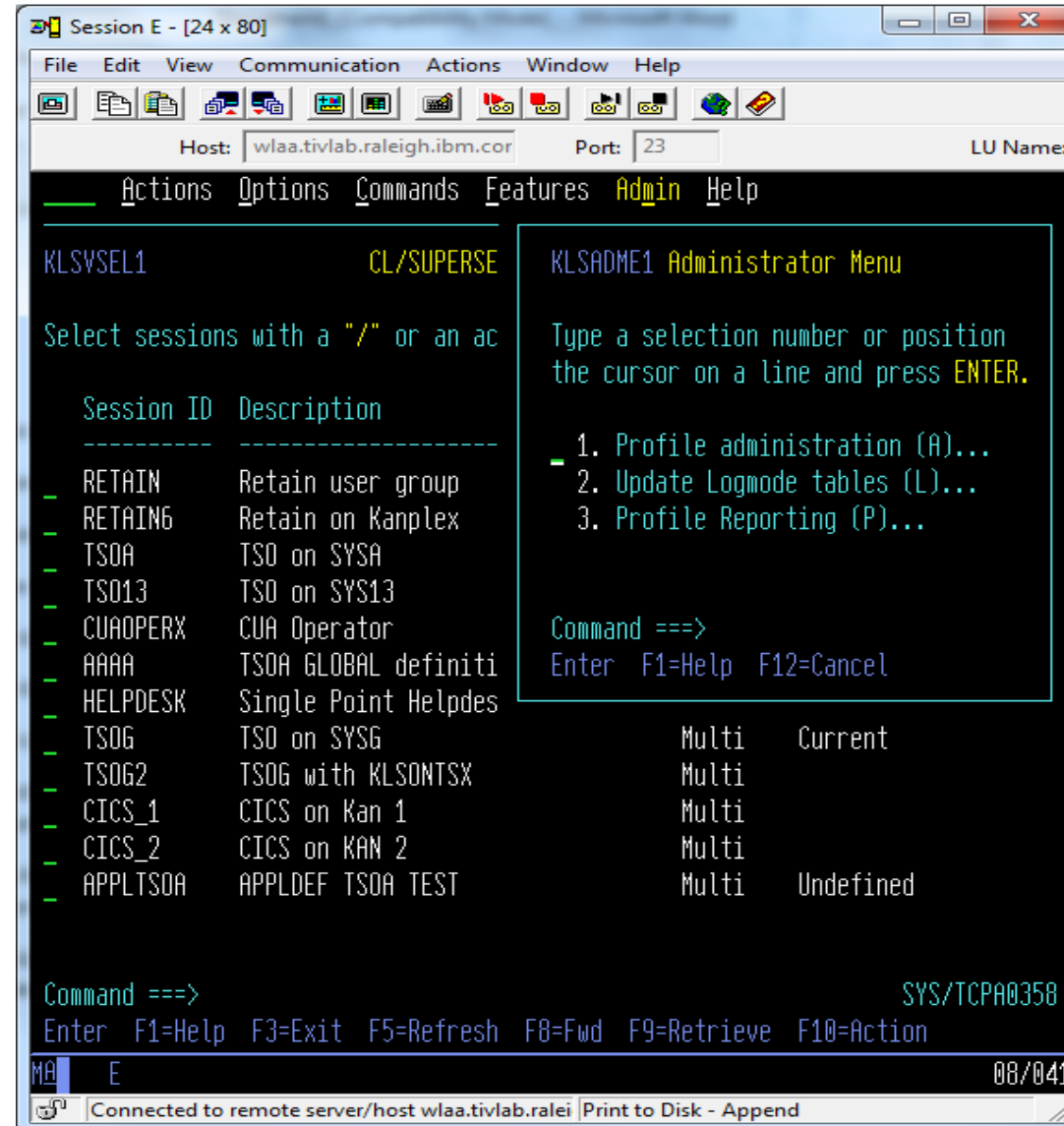


# Overview - Security

- End-User authentication
  - RACF, CA-ACF2, CA-Top Secret External Security Managers all supported
  - Basic end-user authentication with userID and stored encrypted password
  - Sample userexits provided for assembly
    - KLVNAMX – command authority validation
    - KLVA2NEV – command validation for ACF2 users
    - KLSNFPTX – SAF exit for use with passtickets and dynamic or static APPLISTS
    - KLSSFPTX – For ACF2 environments with passtickets and dynamic or static APPLISTS
    - KLSTSPTX – For Top Secret environments which pass status and error messages back to the user's screen\*
- Two factor Authentication support
  - Using the Express Logon Feature available with z/OS\*
  - Client authentication via an x.509 certificate and emulator-recorded macro
  - Can be implemented along with any of the above user exits
- Network Accounting Facility provides accounting and audit records:
  - User
  - Terminal
  - Application
  - Session
- Now includes support for Password Phrases, Passtickets

# Online Administration

- Online Administration Allows:
  - Profile Administration
  - Profile Reporting
  - Logmode table updates



```

Session E - [24 x 80]
File Edit View Communication Actions Window Help
Host: wlaa.tivlab.raleigh.ibm.cor Port: 23 LU Name:
Actions Options Commands Features Admin Help
KLSVSEL1 CL/SUPERSE
Select sessions with a "/" or an ac

Session ID Description
-----
RETAIN Retain user group
- RETAIN6 Retain on Kanplex
- TSOA TSO on SYSA
- TSO13 TSO on SYS13
- CUAOPERX CUA Operator
- AAAA TSOA GLOBAL definiti
- HELPDESK Single Point Helpdes
- TSO6 TSO on SYSG Multi Current
- TSO62 TSO6 with KLSONTSX Multi
- CICS_1 CICS on Kan 1 Multi
- CICS_2 CICS on KAN 2 Multi
- APPLTSOA APPLDEF TSOA TEST Multi Undefined

Command ==>
Enter F1=Help F12=Cancel

KLSADME1 Administrator Menu
Type a selection number or position
the cursor on a line and press ENTER.

1. Profile administration (A)...
2. Update Logmode tables (L)...
3. Profile Reporting (P)...

Command ==>
Enter F1=Help F3=Exit F5=Refresh F8=Fwd F9=Retrieve F10=Action
SYS/TCPA0358
MA E 08/041
Connected to remote server/host wlaa.tivlab.ralei Print to Disk - Append
  
```

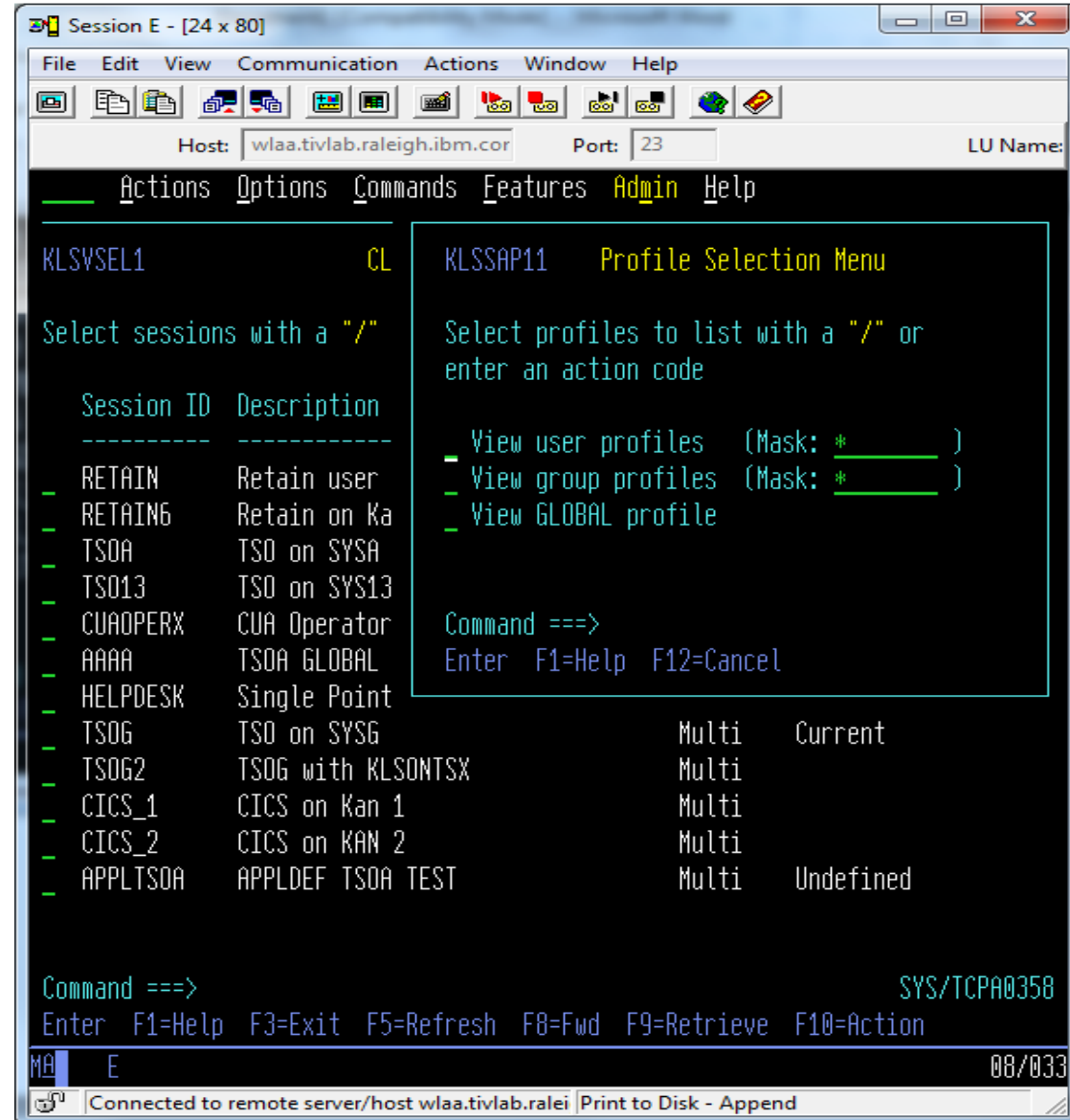


- Profile Administration allows centralized access
  - View, Modify, Delete, Update three profile levels:
    - GLOBAL
    - GROUP
    - USER
- Profile 'segments' at each level include settings grouped by function
  - Common – administrator authority, timeout values, allowed customization
  - SuperSession – user's authority to modify triggers, preserve sessions on exit, print
  - Session – accessible application definitions
  - Triggers – keystroke abbreviation definitions
  - Window – PF key definitions and window spitting settings

## Profile level selection

Profile hierarchy is resolved by the USER profile settings overriding GROUP settings, which override the GLOBAL setting.

The masking and wildcard usage allow filtering of viewed profiles.



The screenshot shows a terminal window titled "Session E - [24 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar, there is a status bar showing "Host: wlaa.tivlab.raleigh.ibm.com", "Port: 23", and "LU Name:". The main content area displays a "Profile Selection Menu" for "KLSSAP11". The menu includes options to view user profiles, group profiles, and the GLOBAL profile. A list of sessions is shown with columns for Session ID, Description, Multi, and Current. The sessions listed are: RETAIN, RETAIN6, TSOA, TSO13, CUAOPERX, AAAA, HELPDISK, TSO6, TSO62, CICS\_1, CICS\_2, and APPLTSOA. The terminal also shows a command prompt "Command ==>" and a status bar at the bottom with "MA E" and "08/033".

```

Session E - [24 x 80]
File Edit View Communication Actions Window Help
Host: wlaa.tivlab.raleigh.ibm.com Port: 23 LU Name:

Actions Options Commands Features Admin Help

KLSSAP11 Profile Selection Menu

Select profiles to list with a "/" or
enter an action code

View user profiles (Mask: *)
View group profiles (Mask: *)
View GLOBAL profile

Command ==>
Enter F1=Help F12=Cancel

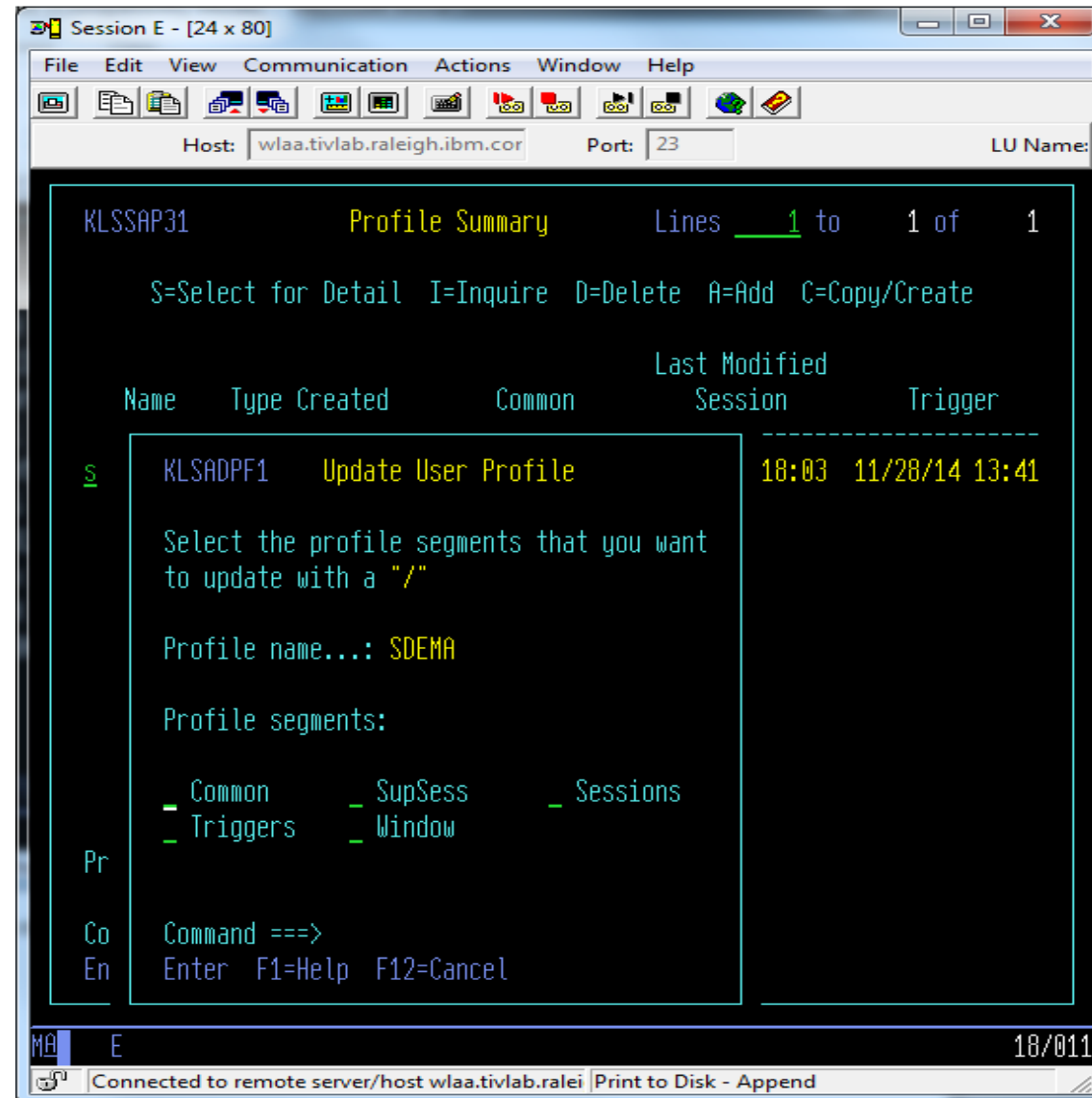
Session ID Description Multi Current
-----
- RETAIN Retain user
- RETAIN6 Retain on Ka
- TSOA TSO on SYSA
- TSO13 TSO on SYS13
- CUAOPERX CUA Operator
- AAAA TSOA GLOBAL
- HELPDISK Single Point
- TSO6 TSO on SYSG Multi Current
- TSO62 TSO6 with KLSONTSX Multi
- CICS_1 CICS on Kan 1 Multi
- CICS_2 CICS on KAN 2 Multi
- APPLTSOA APPLDEF TSOA TEST Multi Undefined

Command ==> SYS/TCPA0358
Enter F1=Help F3=Exit F5=Refresh F8=Fwd F9=Retrieve F10=Action

MA E 08/033
Connected to remote server/host wlaa.tivlab.ralei Print to Disk - Append
  
```

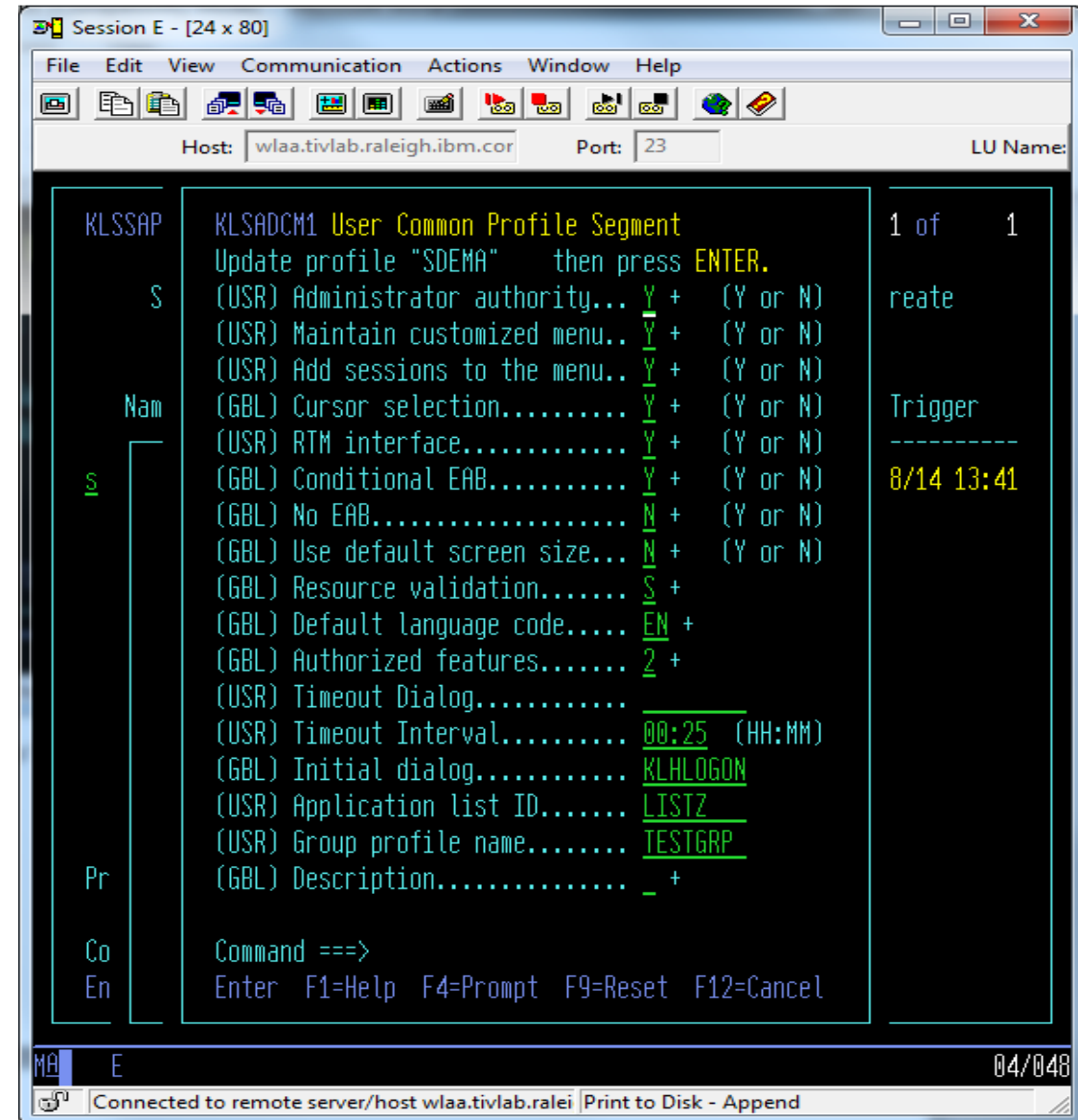
# Profile segment selection

Profile segments are grouped by function



## Common segment settings

Includes a user's authority as an administrator, his ability to customize his own menu, a default application list setting, language preference, and timeout values, among other settings.



```

Session E - [24 x 80]
File Edit View Communication Actions Window Help
Host: wlaa.tivlab.raleigh.ibm.cor Port: 23 LU Name:

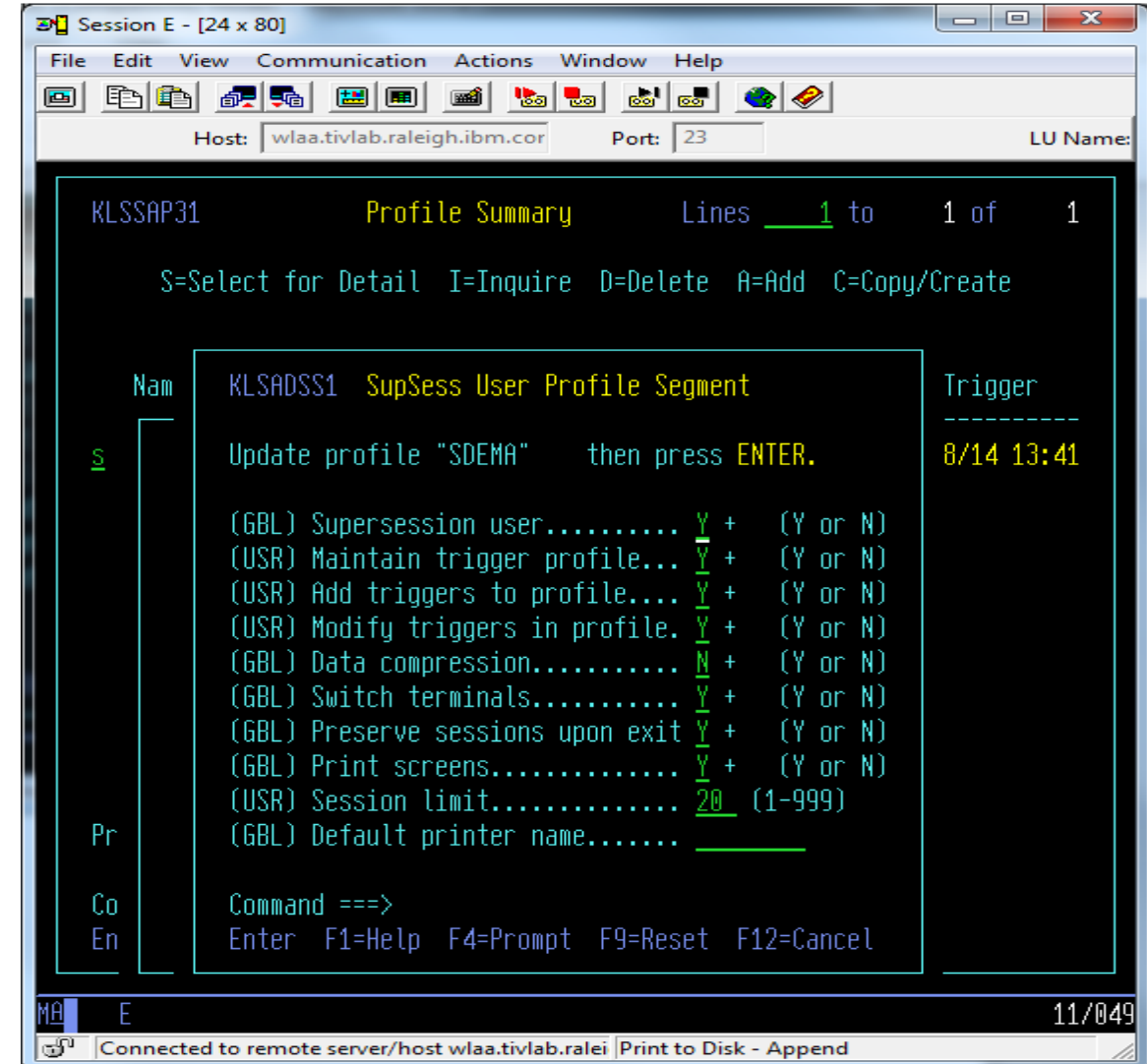
KLSSAP KLSADCM1 User Common Profile Segment 1 of 1
Update profile "SDEMA" then press ENTER.
S (USR) Administrator authority... Y + (Y or N) reate
(USR) Maintain customized menu.. Y + (Y or N)
(USR) Add sessions to the menu.. Y + (Y or N)
Nam (GBL) Cursor selection..... Y + (Y or N) Trigger
(USR) RTM interface..... Y + (Y or N) -----
S (GBL) Conditional EAB..... Y + (Y or N) 8/14 13:41
(GBL) No EAB..... N + (Y or N)
(GBL) Use default screen size... N + (Y or N)
(GBL) Resource validation..... S +
(GBL) Default language code.... EN +
(GBL) Authorized features..... 2 +
Pr (USR) Timeout Dialog.....
(USR) Timeout Interval..... 00:25 (HH:MM)
(GBL) Initial dialog..... KLHLOGON
(USR) Application list ID..... LISTZ
(USR) Group profile name..... TESTGRP
En (GBL) Description..... _ +

Command ==>
Enter F1=Help F4=Prompt F9=Reset F12=Cancel

MA E 04/048
Connected to remote server/host wlaa.tivlab.ralei Print to Disk - Append
  
```

## CL/SuperSession segment settings

Sets trigger-related values, print authority, session limits, and the ability to save sessions upon exiting CL/SuperSession.



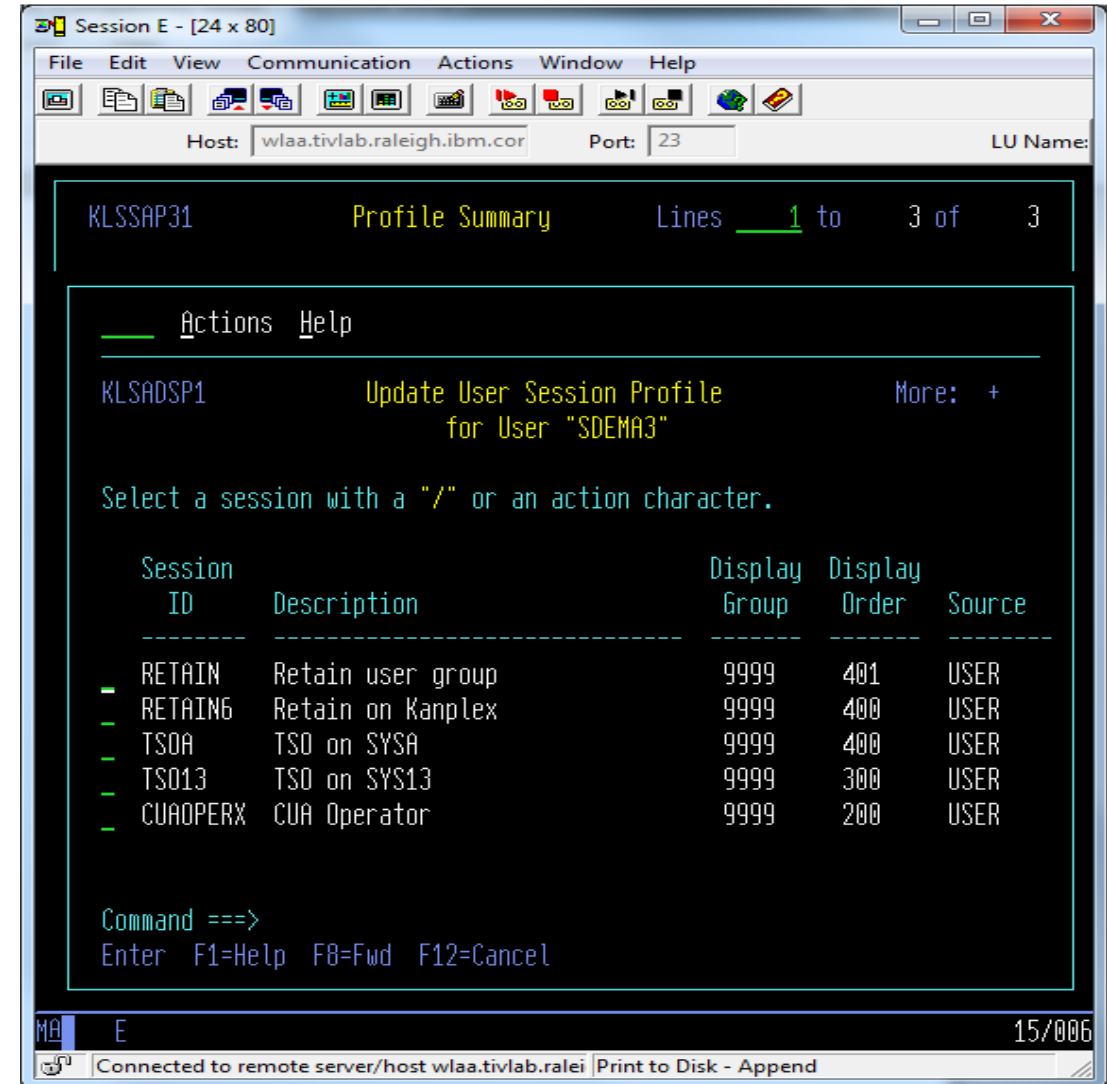
The screenshot shows a terminal window titled "Session E - [24 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The main area displays the "Profile Summary" for "KLSSAP31". The summary includes a table of settings for the "KLSADSS1 SupSess User Profile Segment". The settings are as follows:

Nam	Value	Trigger
S	Update profile "SDEMA" then press ENTER.	8/14 13:41
Pr	(GBL) Supersession user..... Y + (Y or N)	
	(USR) Maintain trigger profile... Y + (Y or N)	
	(USR) Add triggers to profile... Y + (Y or N)	
	(USR) Modify triggers in profile. Y + (Y or N)	
	(GBL) Data compression..... N + (Y or N)	
	(GBL) Switch terminals..... Y + (Y or N)	
	(GBL) Preserve sessions upon exit Y + (Y or N)	
	(GBL) Print screens..... Y + (Y or N)	
	(USR) Session limit..... 20 (1-999)	
	(GBL) Default printer name.....	
Co	Command ==>	
En	Enter F1=Help F4=Prompt F9=Reset F12=Cancel	

The bottom of the window shows a status bar with "Connected to remote server/host wlaa.tivlab.ralei" and "Print to Disk - Append". The bottom right corner displays "11/049".

## Session segment settings

Allows adding, deleting, modifying, blocking, and viewing application definitions in the selected profile.

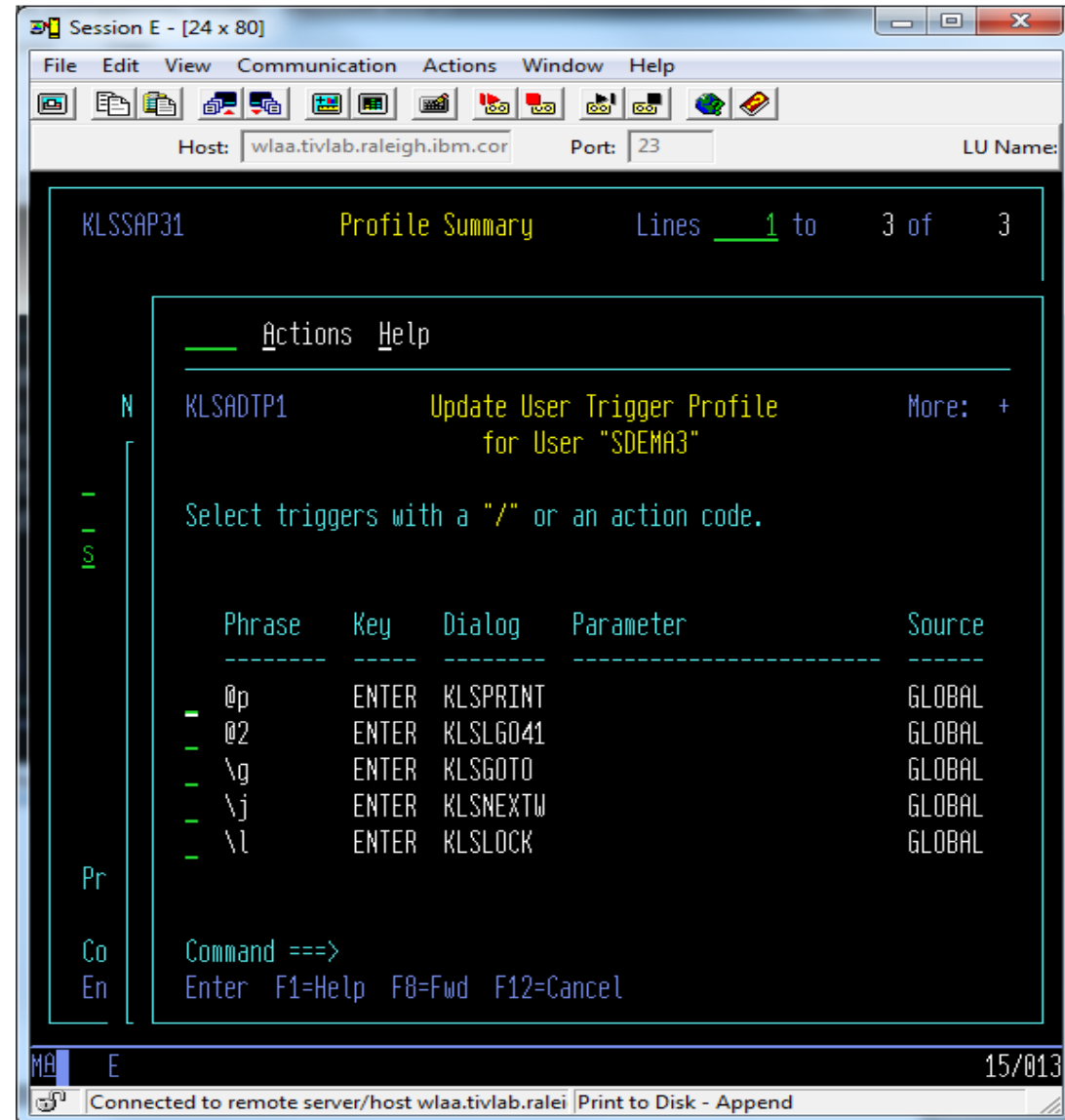


## Trigger segment settings

Triggers allow users to complete oft-used tasks with minimal keystrokes.

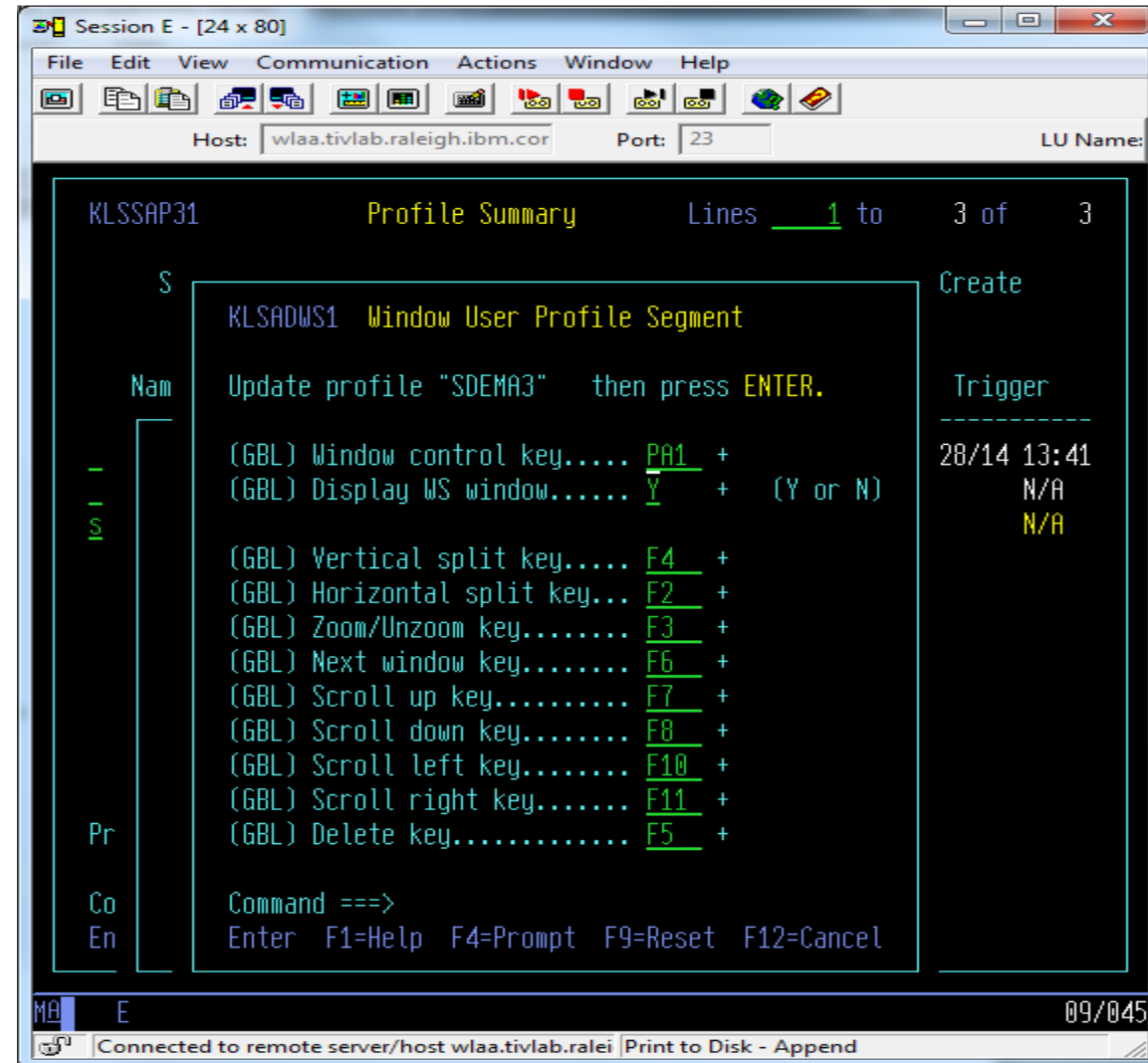
The triggers are invoked with a keystroke or two, plus an Fkey or ENTER.

Commonly, these are used for jumping between sessions or going directly to a specific application.



# Window segment settings

The window segment allows setting preset function keys within the profile.





# SSPL and user-written dialogs

- **Structured Session Procedure Language**

Allows creation of highly customized dialogs that can:

- Simulate 3270 keyboard entry and manipulation of inbound and outbound datastreams
- Access all 3270 buffer images
- Perform application integration - e.g., combine images or data from multiple applications and present to user on a single panel - or - distribute data from a single screen to multiple applications
- Utilize VSAM database read and write functions
- Read and write to a PDS
- Dynamically generate and manipulate string variables
- Perform compound conditional flow control
- Use arithmetic, algebraic, and Boolean expressions

## User-written non-terminal dialogs

- **Structured Session Procedure Language**

In addition to dialogs that run against the user's session, such as filling in parameters for faster logon, Non-terminal dialogs can be initiated from the CUA Operator in CL/SuperSession.

Such dialogs might be used to:

- Go through the Table database (TDB), where all profiles are stored, and write to the log (or an output file) all users with a certain application defined in their USER.SESSION.PROFILE
- Modify one application name to another for all USER.SESSION.PROFILEs
- List all users of a particular VIRTUAL TERMINAL POOL
- Change a deprecated user ID to a new value based on a table containing both

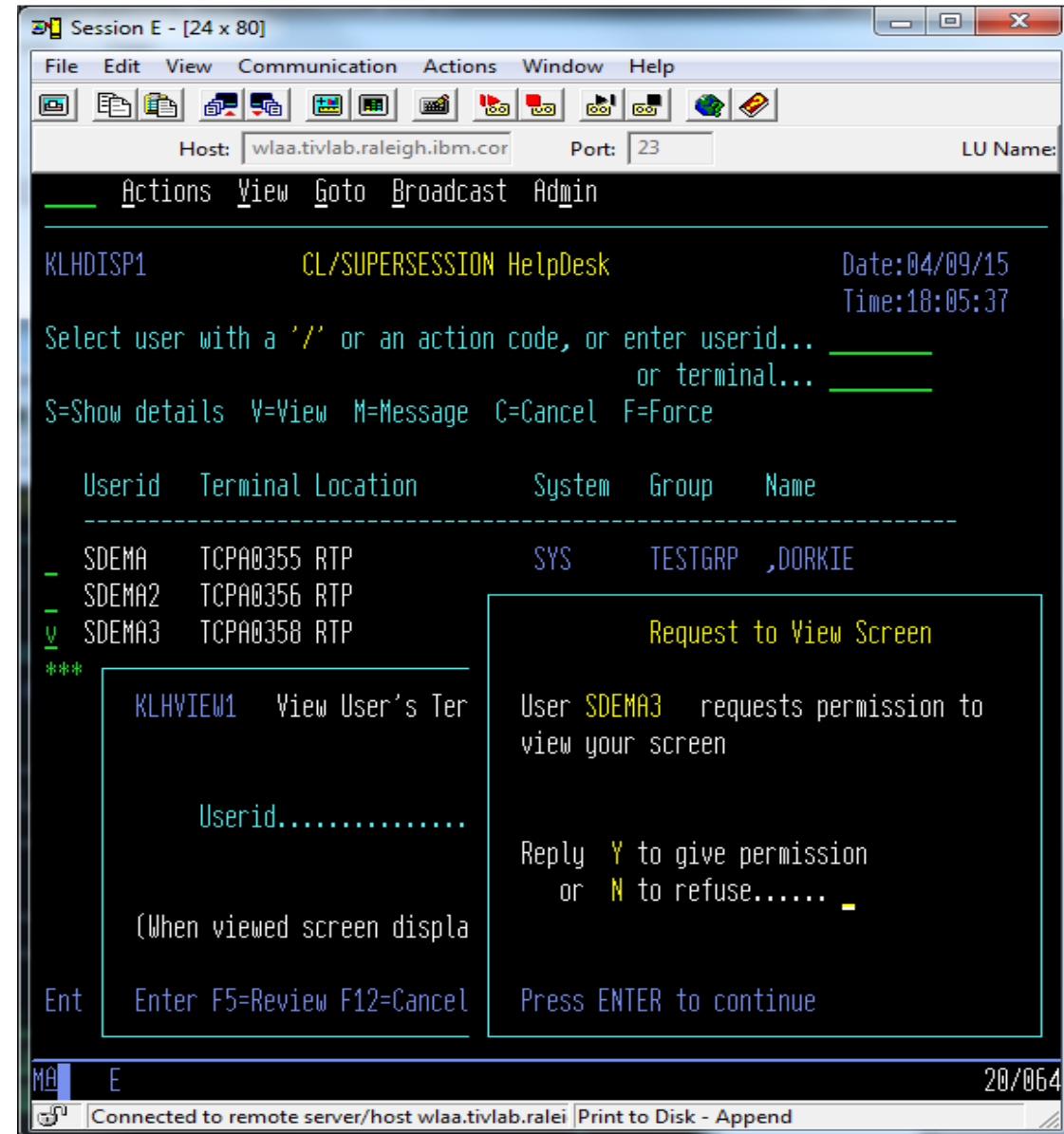
There are many possibilities for defining one's own custom dialogs

# HelpDesk and Monitor functions

- HelpDesk operators can
  - View user screens
  - Send broadcast or individual messages
  - Monitor critical resources
    - Storage
    - Terminal pools
    - Users
    - Sessions
- For High Availability Option (HAO) users, a multipoint HelpDesk can service users on any connected system

# HelpDesk user assistance

The Helpdesk Operator can view the application screens of other users to assist in problem-solving.

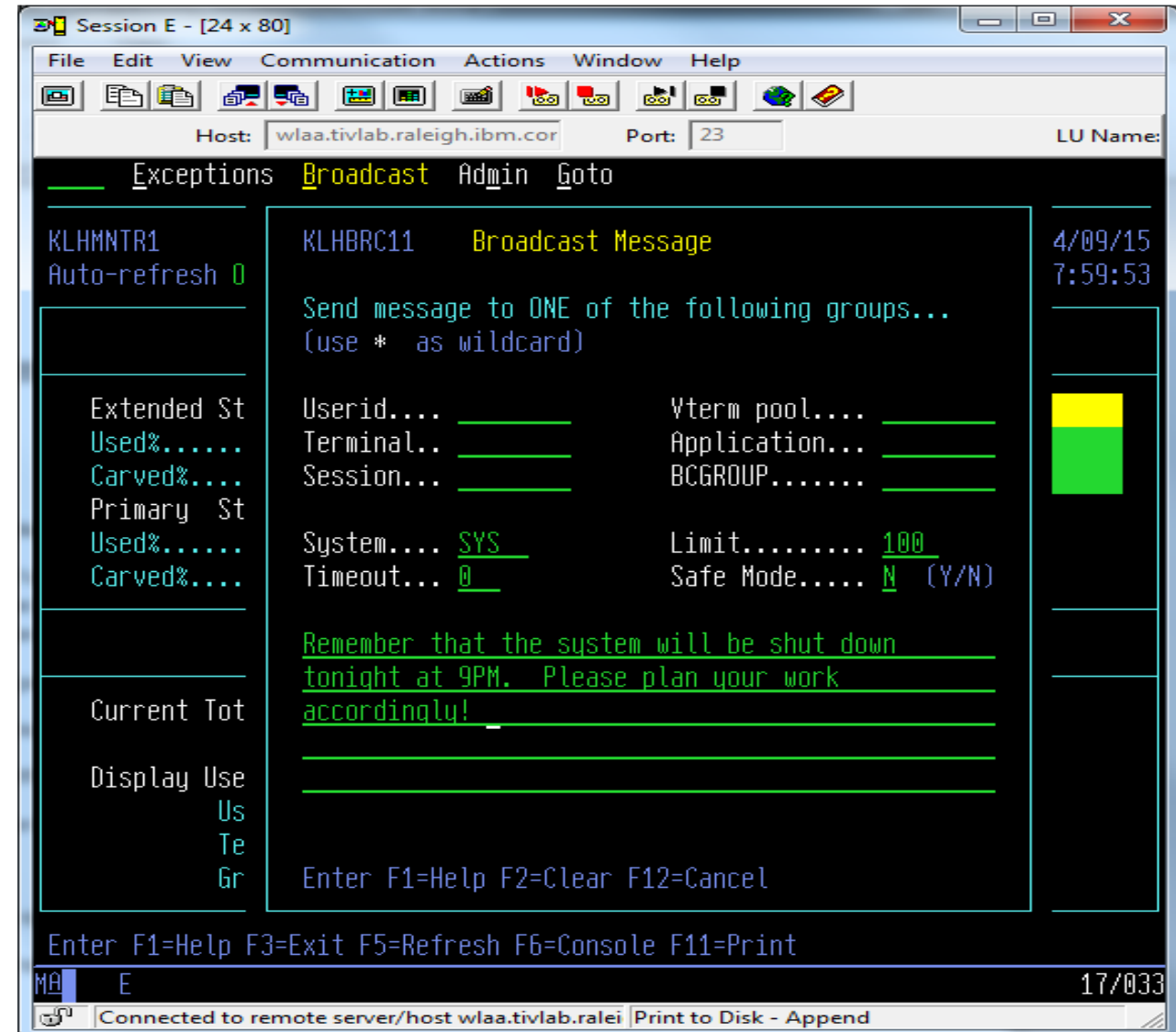


The screenshot shows a terminal window titled "Session E - [24 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The main area of the window displays a HelpDesk interface. At the top, it shows "Host: wlaa.tivlab.raleigh.ibm.cor" and "Port: 23". Below this, there is a section for "Actions View Goto Broadcast Admin". The main display area shows a list of users with columns "Userid", "Terminal Location", "System", "Group", and "Name". The users listed are SDEMA, SDEMA2, and SDEMA3. SDEMA3 is highlighted with a green cursor. To the right of the user list, there is a "Request to View Screen" dialog box. The dialog box contains the text "User SDEMA3 requests permission to view your screen" and "Reply Y to give permission or N to refuse.....". At the bottom of the dialog box, it says "Press ENTER to continue". The status bar at the bottom of the window shows "MA E" and "20/064".

```
Session E - [24 x 80]
File Edit View Communication Actions Window Help
Host: wlaa.tivlab.raleigh.ibm.cor Port: 23 LU Name:
Actions View Goto Broadcast Admin
KLHDISP1 CL/SUPERSESSION HelpDesk Date:04/09/15 Time:18:05:37
Select user with a '/' or an action code, or enter userid...
or terminal...
S=Show details V=View M=Message C=Cancel F=Force
-----
Userid Terminal Location System Group Name
-----
- SDEMA TCPA0355 RTP SYS TESTGRP ,DORKIE
- SDEMA2 TCPA0356 RTP
V SDEMA3 TCPA0358 RTP
***
KLHVIEW1 View User's Ter
Userid.....
(When viewed screen displa
Ent Enter F5=Review F12=Cancel
Request to View Screen
User SDEMA3 requests permission to
view your screen
Reply Y to give permission
or N to refuse.....
Press ENTER to continue
MA E 20/064
Connected to remote server/host wlaa.tivlab.ralei Print to Disk - Append
```

# Messaging services

Broadcast and direct messaging is available through the HelpDesk



# Monitor features

The monitor provides a quick summary of primary and extended storage usage, numbers of users, numbers of active sessions, and terminal pools in use.

Interactive fields allow displaying subsets of users, terminals, pools, and applications.

The screenshot shows a terminal window titled "Session E - [24 x 80]" with a menu bar (File, Edit, View, Communication, Actions, Window, Help) and a toolbar. The main display area shows the following information:

Host: wlaa.tivlab.raleigh.ibm.cor Port: 23 LU Name:

Exceptions Broadcast Admin Goto

KLHMNTR1 CL/SUPERSESSION Monitor Date:04/09/15  
Auto-refresh ON Monitor Status ACTIVE Interval 3 mins Time:18:07:59

STORAGE	VTERM POOLS
Extended Storage : TOTAL(413026K) Used%..... 1 Carved%..... 1	MODEL2 Vterms 10 Sessions 6 MODEL5 Vterms 10 Sessions 0 VIRT3270 Vterms 60 Sessions 2
Primary Storage : TOTAL(3562K) Used%..... 6 Carved%..... 9	

USERS	SESSIONS
Current Total..... 6 Display Users by : Userid.. _____ Termid.. _____ Group... _____	Current Total..... 9 Display Sessions by : Vterm... _____ Applid.. _____ Vpool... _____

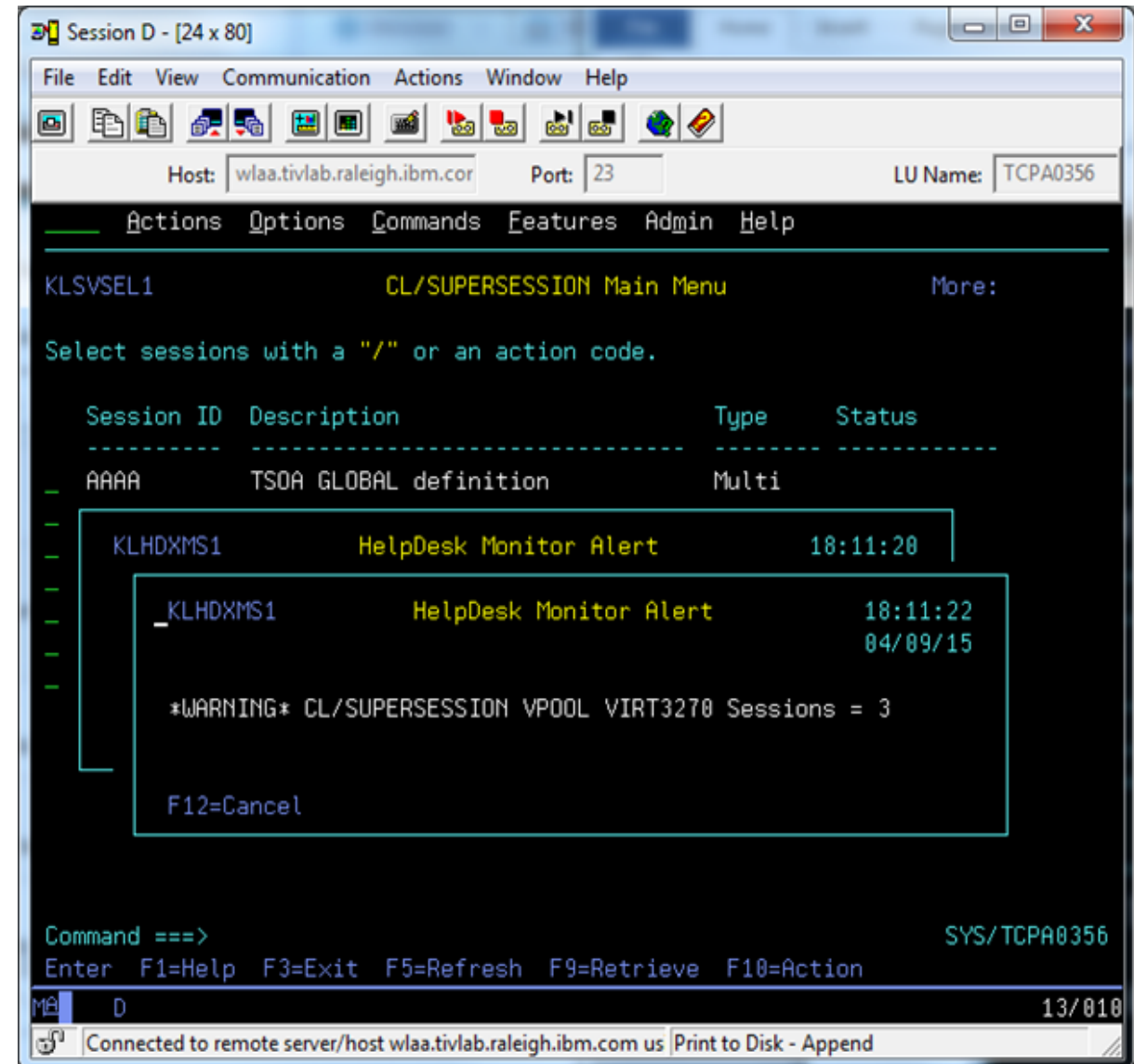
Enter F1=Help F3=Exit F5=Refresh F6=Console F11=Print

MA E 01/002

Connected to remote server/host wlaa.tivlab.ralei Print to Disk - Append

# Monitor alerts

The monitor function also allows for alerts to selected users if there are any resources reaching their set thresholds, even if the user is not viewing the Monitor.



# Session Recoverability

- **Basic Level**

Preserving user sessions on exit (or unintended disconnection) allows a user to log back onto SuperSession and resume their applications. Users stopping at the end of the day can logoff SuperSession and continue where they left off the following day.

- **High Availability Option**

Allows two or more copies of CL/SUPERSESSION to automatically maintain synchronized profile databases.

- Profile Updates are propagated to linked copies of CL/SUPERSESSION automatically at a user-specified interval (e.g. hourly).
- If a remote CL/SUPERSESSION is not available or an update does not complete successfully, it will be automatically retried until successful.
- Requires only a simple VTAM connection between CL/SUPERSESSION address spaces.
- Reconnects the user to the HelpDesk when logging onto another CL/SuperSession
- In a SYSplex environment, facilitates the use of VTAM Generic Resources for automatic load-balancing and enhanced availability



## Additional features

- A VPO (VTAM Program Operator) interface for issuing commands
  - VPO commands can also be incorporated into SSPL written dialogs to perform MVS commands automatically
- VSSTRACE capability for gathering VTAM-buffer type trace data, and limiting collection to a user or set of users
- A dialog trace facility
- A CUA Engine operator interface for altering trace settings, refreshing modified dialogs, showing storage, displaying variable settings, running non-terminal dialogs, and more.

# CL/SuperSession Summary

- Provides secure concurrent access to multiple applications from a single terminal
  - z/OS and OS/390 VTAM applications
  - Multiple Windows supported
  - Unlimited concurrent sessions
- Supports VTAM-SNA based terminal sessions
  - 3270 terminals, 3270 emulators, Telnet TN3270 clients through VTAM
- Provides features for customization including...
  - Panels, Dialogs, and Structured Session Procedure Language (SSPL)
  - User Exits
- Provides features for management and support including...
  - Centralized Profile Administration
  - Spy
  - Help Desk
  - Datastream Optimization
  - Performance Monitoring

## CL/SuperSession further information

- Program Number: 5601-B28
- Requires z/OS V1.13 or higher
- Product information
  - <https://www.ibm.com/us-en/marketplace/clsupersession>
- CL/SuperSession publications:
  - <http://www-01.ibm.com/software/http/cics/clss/library/>


# References

- CL/SuperSession V2.1 announcement: <https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?infotype=an&subtype=ca&appname=gplateam&supplier=897&letternum=ENUS215-356>
- Session Manager all versions end-of-service announcement, Aug 2, 2016: <http://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=ca&infotype=an&appname=iSource&supplier=897&letternum=ENUS916-121>
- NVAS all versions end-of-service announcement, Feb 7, 2017: [http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep\\_ca/8/897/ENUS917-008/index.html&lang=en&request\\_locale=en#wprodx](http://www-01.ibm.com/common/ssi/ShowDoc.wss?docURL=/common/ssi/rep_ca/8/897/ENUS917-008/index.html&lang=en&request_locale=en#wprodx)
- Best Practices Migrating to CL/SuperSession: <https://www-01.ibm.com/software/http/cics/clss/library/>

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