

# Print Serving and VM



October  
2000

A world map is visible in the background, rendered in a light blue color against the dark blue background of the slide. The map shows the outlines of continents and countries.

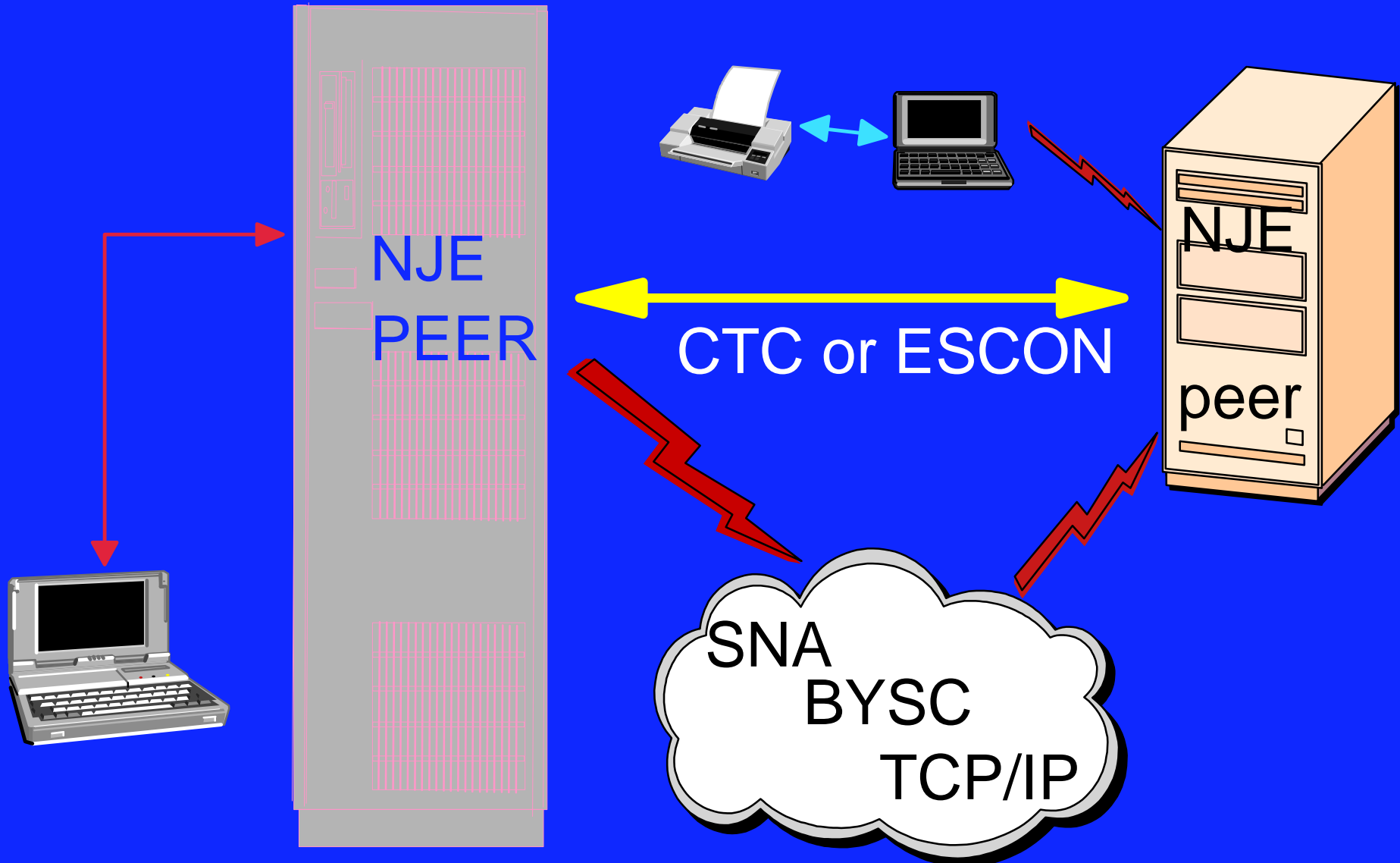
## Agenda

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- **RSCS Printing Support Overview**
- **TCP/IP Printing Support Overview**
- **Interaction with VM TCP/IP**
- **LPR Support**
- **LPD Support**
- **TN3270E Support**
- **RSCS TCPASCII Support**
- **VTAM Printer Support**
- **Additional Resources**

# RSCS Server

## General Information



# What is RSCS?

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- **Uses VM spooling facilities to:**
  - Store and retrieve data
  - Send files, mail, status
  - Guaranteed delivery
- **To users and systems within:**
  - TCP/IP networks
  - SNA networks
  - Non-SNA networks



# What is RSCS?

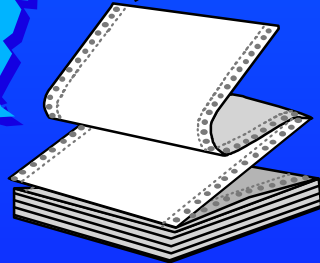
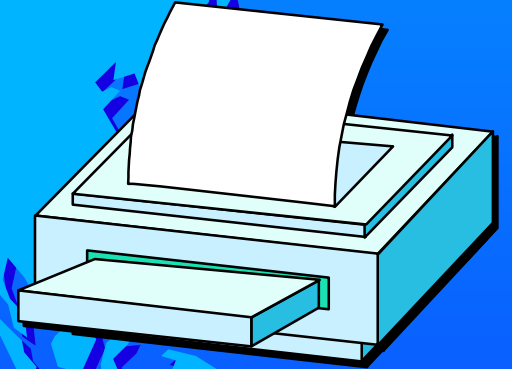
- Any store and forward system supporting Network Job Entry (NJE) such as:
  - z/VM or VM/ESA
  - z/OS or OS/390
  - OS/400
  - VSE/ESA
  - UNIX or AIX
  - LINUX



# What Is RSCS?

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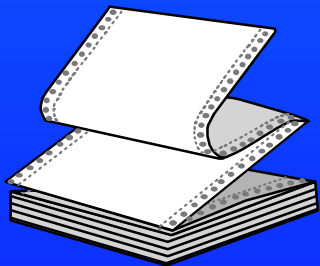
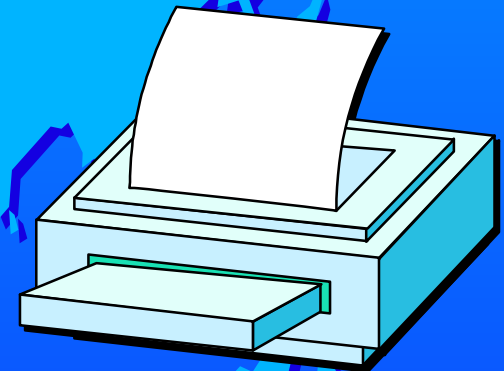
- **A Print Server for printing:**
  - Text
  - Graphics
  - Postscript
- **On 3270 or ASCII printers**
- **Channel, SNA, IP attached**



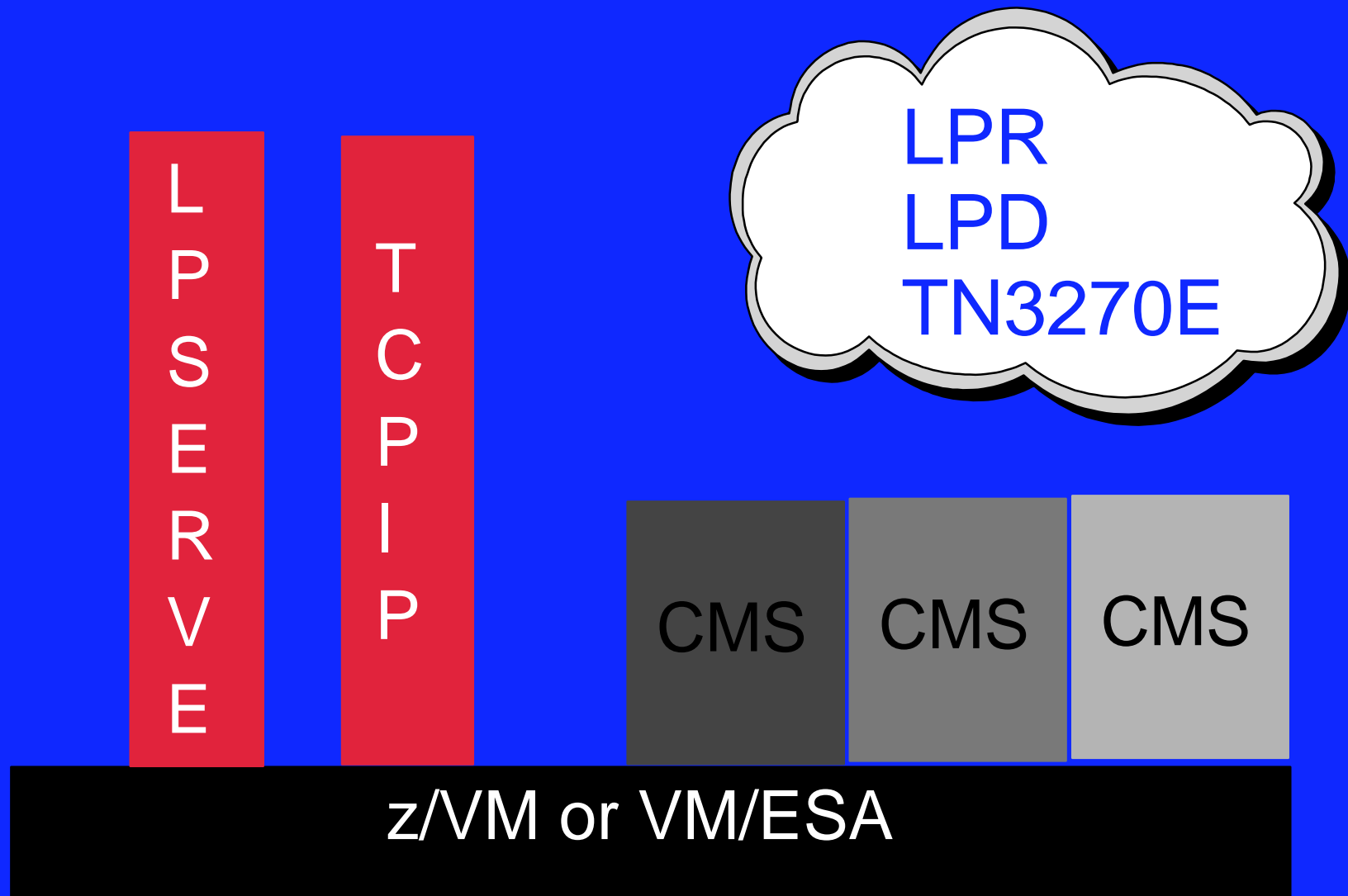
# What Is RSCS?

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- **Local printer links can be accessed via:**
  - Local users via spool
  - Remote users via LPR
  - Remote users via NJE
- **Send and accept internet print jobs**
- **Send files to remote hosts for printing**



# VM TCP/IP Print Support





# TCP/IP Print Services

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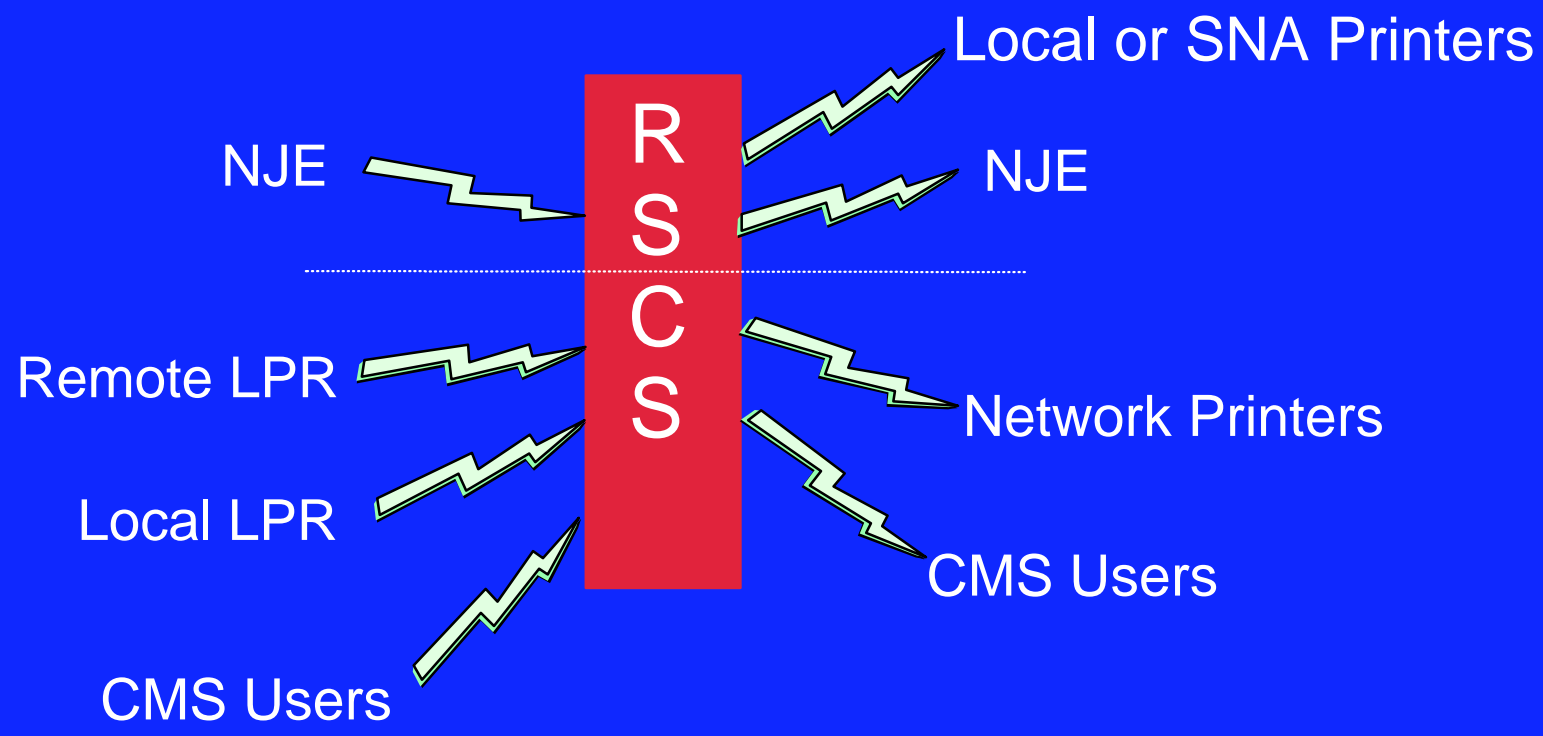
- Synchronous LPR

- LPD Server

  - ▶ LPSERVE

- TN3270E

# Interaction with VM TCP/IP



# z/VM and VM/ESA

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- **RSCS 3.2.0 and VM TCP/IP**
  - part of z/VM
  - part of VM/ESA 2.3.0 and higher
  - Installed disabled
- **RSCS LPR, LPD, TN3270E**
  - Available when disabled
- **SCONFIG files on TCPMAINT 198**
  - 5 for RSCS

# LPR Support



# Why Use RSCS LPR?

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- **Deferred printing**
  - End users not left blocked on delivery
- **Guaranteed deliver**
- **Enhanced error recovery**
  - Hold file when errors occur
  - Periodic retransmit attempts
- **VM print spooler**
  - Addressable from NJE network or LPD
- **Postscript and non-postscript printing**
  - Can format plain text for postscript printers

# Supplying LPR Information to RSCS

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- Options supplied to LPR links via:
  - Administrator defined
    - defined in RSCS SVM
      - ▶ RSCS CONFIG
      - ▶ LPRXFORM exit
  - User supplied
    - TCP/IP LPR EXEC
      - ▶ When using the ASynchronous option
    - RSCS PPS EXEC
    - Using form names

# Supplying Options To PPS/LPR EXECs

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- Options for PPS/LPR supplied as:
  - Permanent
  - Nicknames
  - User supplied
  - Defaults
- overriding:
  - User supplied overrides nicknames
  - permanent overrides defaults

# Supplying LPR Information

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- Fully qualified / dotted decimal host names
- Printer queue name
- Printer set and reset specific commands
  - Can be part of print file
  - Can be split around separator page
  - Are PCL or Postscript commands
- Font control capabilities
- ASCII translation options
- Filter
- Separator pages
- Port usage (721-731 vs 1024-2048)



# PPS/LPR EXECs

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- Also provide the following information:
  - Number of copies
  - Carriage control
  - Form name
  - Job name
    - ✓ PPS only
  - RSCS node name
  - RSCS SVM name
  - Additional TAG information
    - ✓ PPS only

# Synchronous LPR

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- **Send directly to printer**
  - ▶ From a CMS user ID
- **Does not depend on RSCS**
- **Options not available with RSCS**
  - ✓ LPR options Noack, Class, Header, Indent,
  - ✓ Linecount, Mail, Name, Title, Width

# VM TCPIP

## Queue Management commands

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- **LPQ command**
  - ✓ Query remote printer queue
  
- **LPRM command**
  - ✓ Remove print job from remote queue

# LPRXFORM

## Config Example

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- **FORM=MYFORM**  
**HOSTNAME=ABC.END.IBM.COM**  
**FILTER=F**  
**SEP=2P**  
**PREFIX=25215053**  
**PREFIX=2D41646F**  
**PRINTER=ptq1**
- **Uses Exit's 0/1**  
**EXIT 0 ON LPRXFM00**  
**EXIT 1 ON LPRXFM01**

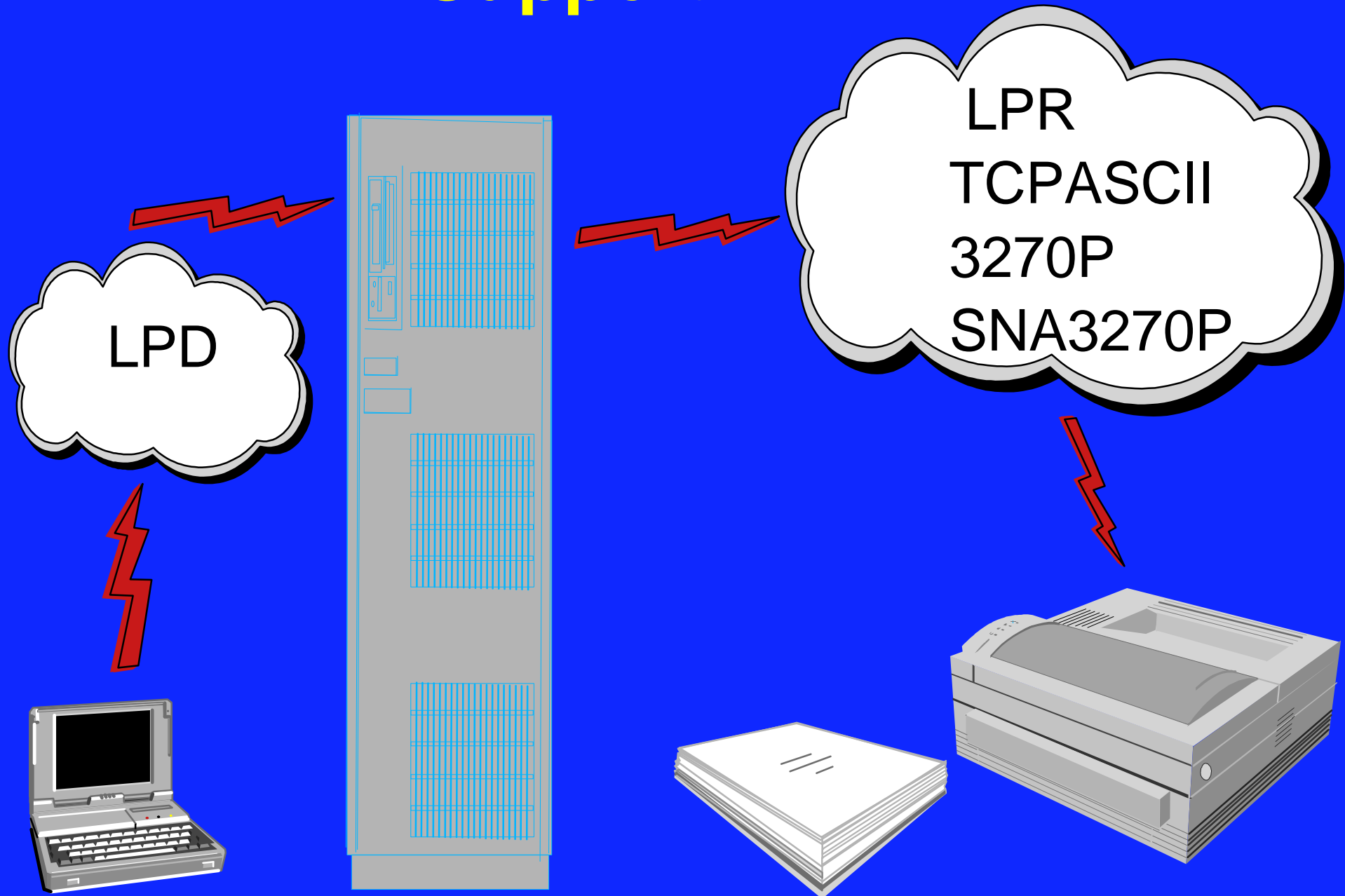
# RSCS NAMES

## File Example

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**— :NICK.myname**  
**:HOSTNAME.abc.end.ibm.com**  
**:FILTER.f**  
**:SEP.2p**  
**:PREFIX.25215053**  
**:PREFIX.2D41646F**  
**:PRINTER.ptq1**  
**:LA.**

# LPD Support



# RSCS LPD

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- Receive files from remote LPR
- Optional translation to EBCDIC
- Forward to any RSCS destination
  - Local printer or user
  - Remote NJE printer or user
  - Print 3270P, SNA3270P, LPR, etc.
- Obtain RSCS guaranteed delivery
- Printer queue name options controlled via
  - ▶ device driver exit

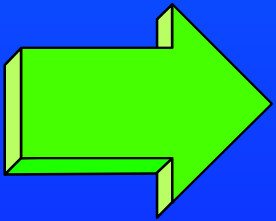
# TCP/IP LPSERVE

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- **Another print daemon for VM**
  - Original daemon predates RSCS
  - Not as robust as RSCS
- **Some functions not available in RSCS**
  - Support for FORTRAN CC
  - Create punch files
  - Failed job mail
  - User authentication
- **New support only in RSCS**
- **Customer usually chooses only one**



# TN3270E Support



# TCP/IP TN3270E

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- Provides printing to workstation printers
- Provide print capabilities without LPD
  - on workstation
- Requires TN3270E emulator support
- Exits allow for dynamic definition by administrators

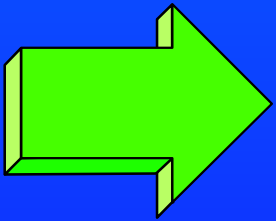
# TN3270E

## Configuring

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- TN3270E statement PROFILE TCPIP
- Printer Management exit enabled by TN3270EEXIT parameter
  - of INTERNALCLIENTPARMS statement
- LINKDEFINE in RSCS configuration
  - TN3270E-type link
- "LU name" configured in emulator

# RSCS TCPASCII Support

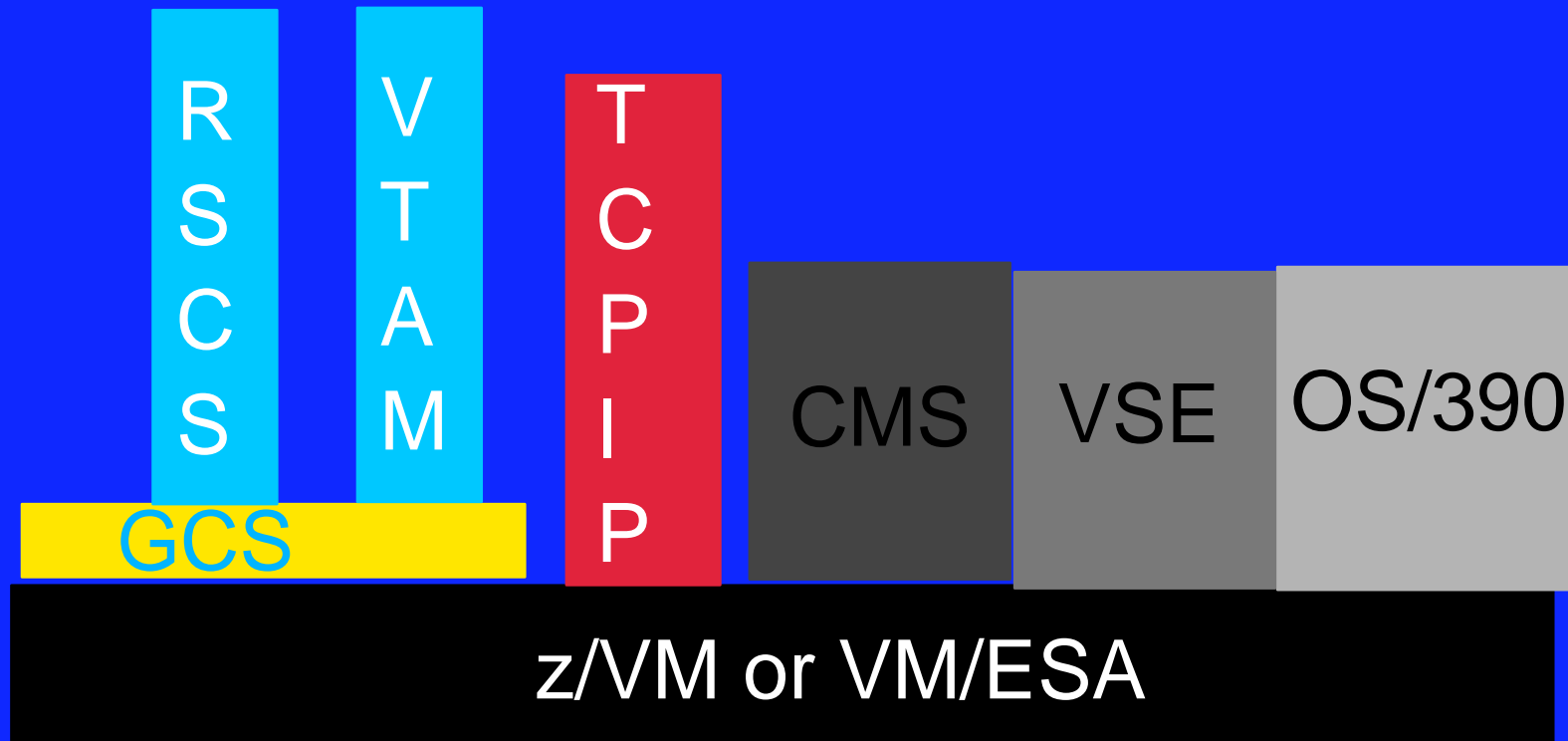


# TCPASCII

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- ASCII printing to an IP attached appliance
- Used where LP daemon or TN3270E emulator are unavailable
- Postscript and non-postscript support

# Interaction with VTAM



# VTAM Printing

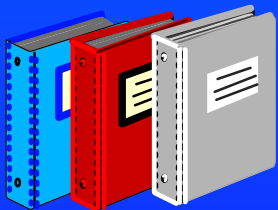
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- LU0, LU1, LU3 Printing
- Some applications must print to an LU
  - Cannot print directly via LPR
  - Shareware available that helps
    - ▶ Print to psuedo 'LU' then print anywhere
      - ✓ SNAPRISM



# Additional Help

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# WEB Resources

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- <http://www.ibm.com/s390/vm/related/rscs>
  - RSCS Main page with links for:
    - ▶ RSCS LPR set up link
    - ▶ RSCS LPD set up link
    - ▶ Comparison between RSCS and TCP/IP LPR link
    - ▶ RSCS Common problems and solutions link
  
- <http://www.ibm.com/s390/vm/printing>
  - PCL reference links
  - Postscript reference links
  - redbook links
  - Printing tips

# WEB Resources

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- <http://www.ibm.com/s390/vm/related/tcpip>
  - TCPIP Main page with links for:
    - ▶ VM TCP/IP TN3270E information link
    - ▶ VM TCP/IP and VTAM information link
    - ▶ TCP/IP frequently asked questions link
  
- <http://www.ibm.com/software/network/vtam/>
  - VTAM for VM and VSE Main page

# RSCS V3 Library

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- General Information
  - Planning and Installation
  - Operation and Use
  - Messages and Codes
  - Exit Customization
  - Reference Summary
  - Diagnosis Reference
  - Data Interchange Manager
  - NJE Formats and Protocols
  - HELP RSCS MENU
- GH24-5218
  - SH24-5219
  - SH24-5220
  - SH24-5221
  - SH24-5222
  - SX24-5257
  - LY24-5248
  - SH24-5248
  - SC23-0070

# VM TCP/IP Library

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- Planning and Administration ■ SC24-5847
- User's Guide ■ SC24-5848
- Programmer's Guide ■ SC24-5849
- Messages and Codes ■ GC24-5850
- TCP/IP Solutions for VM/ESA ■ SG24-5459

# Additional Resources

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- **VM Collection kit**
  - SK2T-2067
  - Current version of books
- **Les Geer**
  - [lesgeer@us.ibm.com](mailto:lesgeer@us.ibm.com)
- **Alan Altmark**
  - [Alan\\_Altmark@us.ibm.com](mailto:Alan_Altmark@us.ibm.com)