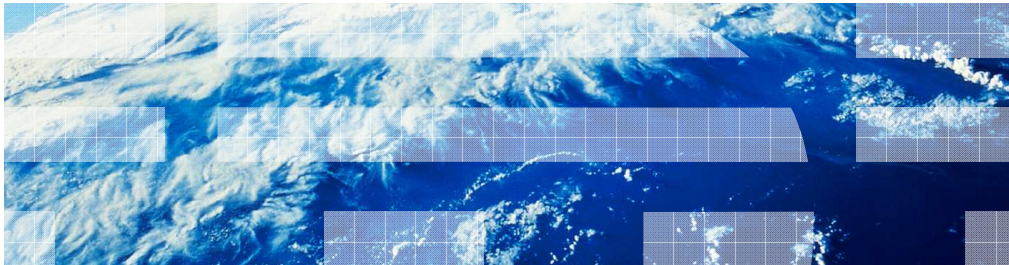


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## z/OS Communications Server – Application overview

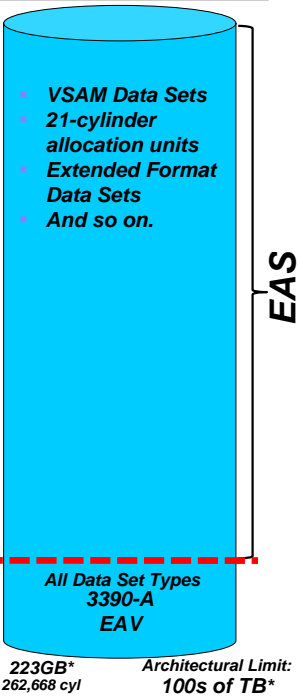


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This presentation provides an overview of the new functions in z/OS V1R13 Communications Server for applications.

## z/OS FTP's journey to extended address volumes

- **z/OS V1R10**
  - DFSMS added support for VSAM data sets in EAS
- **z/OS V1R11**
  - DFSMS added support for sequential data sets in EAS
  - FTP added toleration mode support
    - Reading/writing existing EAS data sets
    - No support for data set creation
- **z/OS V1R13**
  - Full FTP support for extended address volumes



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Application overview

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In z/OS V1R10, DFSMS added support for VSAM data sets in the extended addressing space (EAS). FTP does not support VSAM data sets, so there was no impact. In z/OS V1R11, DFSMS added support for extended format sequential data sets eligible to reside in the EAS. FTP added support for reading and writing existing EAS data sets, but not for creating them (toleration mode).

In z/OS V1R13, FTP provides full support for extended address volumes (EAV) without requiring use of an SMS data class. Currently, you can use an EAV for SMS managed datasets if set up properly in an SMS data class.

## FTP support for large format datasets

	BASIC FORMAT	LARGE FORMAT	EXTENDED FORMAT
<b>DSNTYPE parameter value</b>	BASIC	LARGE	EXTPREF EXTREQ
<b>Maximum tracks per volume</b>	65,535	16,777,215	Larger than 16,777,215
<b>Maximum extents per volume</b>	16	16	123
<b>Why choose this format?</b>	Maximum compatibility	Can be much larger than basic format	Can be much larger than basic format. Can be striped, compressed format or any combination.

- **z/OS V1R7**
  - DFSMS added support for large format data sets
- **z/OS V1R13**
  - LE support for large format data sets completed
  - FTP added support for large format data sets
    - Reading/Writing/Creating/Restarting large format datasets
    - Reading/Writing/Creating/Restarting z/OS UNIX system services files > 2G

Large format physical sequential datasets can have more than 64K tracks per volume. They do not have to. They can have fewer than 64K tracks per volume and still be large **format**. DFSMS has offered large format physical sequential datasets since z/OS V1R7. The access methods supported are BSAM, QSAM, and EXCP. Language Environment (LE) Runtime Library large format dataset support completed in z/OS V1R13 now enables z/OS FTP support for these datasets.

FTP support means sending from large format data sets and allocating and storing into large format data sets. In block mode, you can use the restart subcommand to resume the failed file transfer to and from large format data sets. Support is also added for transfers to and from z/OS UNIX system services files larger than two gigabytes.

## Password phrase support in selected servers

- Password
  - One to eight characters
  - Limited range of characters allowed
- Password phrase
  - Nine to one hundred characters
  - Can contain most of the characters in the EBCDIC 1047code page
- Every user ID with a password phrase also has a password (since V1R10)
- Support for password phrases added to FTP and TN3270E in z/OS V1R13
  - TN3270E support is for solicitor screen only
  - Application password controls not affected



The FTP and TN3270E servers have been updated to support password phrases. Passwords are one to eight characters in length and have a limited range of characters allowed. For example, a space is not allowed in a password. Password phrases extend the length to 100 characters and support most of the characters in the 1047 code page.

## Command to display all TN3270 servers

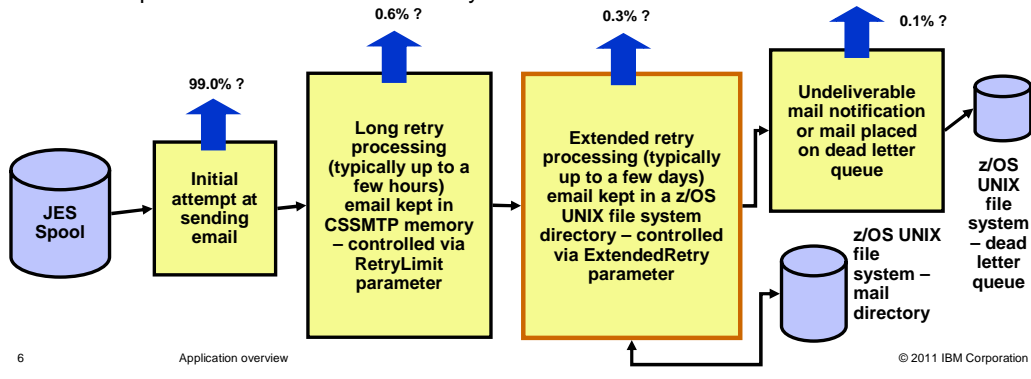
- New D TCPIP,TELNET console command
  - Displays the list of TN3270E servers
  - Display example:

```
D TCPIP,TELNET
EZAOP60I TELNET STATUS REPORT
TELNET NAME  VERSION  STATUS
-----
TELNET       CS V1R13  ACTIVE
TELNET5      CS V1R13  INACTIVE (STOP CMD)
TELNET4      CS V1R13  INACTIVE (STOP CMD)
*** END TELNET STATUS REPORT ***
```

A new D TCPIP,TELNET console command has been added to display the list of TN3270E servers that are or have been active on the system. This can be a starting point for performing automation on TN3270E servers. After all, you have to know what's there before you can operate on it!

## CSSMTP enhanced send error recovery

- CSSMTP sends batch email to the internet from z/OS JES spool files
  - For example, paperless customer statements
- Messages retried if target relays fail to acknowledge mail
  - JES spool files and CSSMTP memory retained until retries completed
- z/OS V1R13 provides file system storage of messages being retried
  - JES spool files and CSSMTP memory can now be released



CSSMTP sends batch email to the internet from z/OS JES spool files. If the target relays fail to acknowledge mail, CSSMTP will retry for the configured interval up to five days then drop the message, and return an undeliverable notice. However, spool files cannot be deleted until all messages in the spool are delivered. A spool file can contain thousands of messages but only a few are being retried. Messages being retried are retained in CSSMTP memory.

z/OS V1R13 provides file system storage of messages being retried for an extended interval (beyond initial retry limit), so that JES spool files and CSSMTP memory can be released. It will continue to retry from memory and spool until the initial retry limit is reached. A new parameter can be configured to indicate how long beyond the existing interval to retry from the file system.

## CSSMTP translate code page support enhanced

- '@' character in SMTP mail messages MUST be translated correctly!
- CSSMTP currently supports only a fixed set of single byte code pages
- In V1R13, TRANSLATE statement allows additional code pages
  - Must be an EBCDIC code page
  - Code page must support roundtrip translations between IBM-1047 and ISO-8859-1 code pages

Code Page	CCSID	@	\$
IBM-1047 (EBCDIC)	1047	0x7C	0xB5
ISO-8859-1 (ASCII)	819	0x40	0xA7
IBM-273	273	0xB5	0x7C

The '@' character has special meaning in SMTP mail messages. It must be translated correctly. CSSMTP currently supports only a fixed set of single byte code pages. Some installations use a code page that is not supported by the CSSMTP TRANSLATE statement.

In z/OS V1R13, Communications Server has been enhanced to allow the TRANSLATE statement to define additional code pages.

In z/OS V1R13, Communications Server has been enhanced to allow the specification of a code page by its CCSID. Currently code pages must be a character string "IBM-XXXX", where XXXX is a subset of possible code pages.

In z/OS V1R13, Communications Server has been enhanced to expand the list of supported code pages. Also, CSSMTP will now allow a user defined code page to be used. The code page must be an EBCDIC code page. The target ASCII code page is always ISO-8859-1 (actually, the US-ASCII subset of that code page). The code page must support roundtrip translations between the IBM-1047(EBCDIC) and the ISO-8859-1 (ASCII) code pages. The carriage return and line feed characters (CRLF), which are used to end the lines of commands and mail messages, must translate properly to ISO-8859-1 (x'0D0A').

## Retrieving system resolver configuration data through NMI

- MODIFY RESOLVER,DISPLAY command displays contents of resolver setup file
- Currently no command to display contents of global TCPIP.DATA file
- New resolver autonomics for unresponsive name servers function in z/OS V1R13 requires global TCPIP.DATA file
- z/OS V1R13 Communications Server implements a resolver callable NMI (EZBREIFR)
  - Single request type:
    - GetResolverConfig
  - Returns:
    - The contents of the resolver configuration file and
    - The contents of the global TCPIPDATA file, if it's in use

You can use the MODIFY RESOLVER,DISPLAY command to display the contents of the resolver setup file. However, there is no resolver command available to display the contents of the global TCPIP.DATA file. Currently, you must collect Trace Resolver output to see the global TCPIP.DATA settings dynamically. The new resolver function in z/OS V1R13 to monitor and quiesce unresponsive name servers, depends on a global TCPIP.DATA file. Only name servers specified in this global TCPIP.DATA file are monitored. z/OS V1R13 Communications Server implements a resolver callable NMI (Network Management Interface) (EZBREIFR). The NMI provides a high-speed, low-overhead callable programming interface for network management applications to access data related to the resolver. There is a single request type (GetResolverConfig) which returns the contents of the resolver configuration file and the contents of the global TCPIP.DATA file, if it is in use.



## TMI copy buffer interface improvement

- Currently TMI copy buffer interfaces require the caller to be APF authorized
  - Causes problems for applications that want to fork()
  - APF authorization gives application broad range of authority
- In z/OS V1R13, applications that use the TMI copy buffer interfaces will no longer have to be APF authorized
  - Permit application to SAF resource EZB.NETMGMT.systemname.tcpprocname.interface where *interface* can be:
    - SYSTCPDA, Real-time TCP/IP packet and data trace NMI
    - SYSTPCPN, Real-time TCP connection SMF NMI
    - SYSTCPOT, Real-time OSAENTA packet trace NMI
    - SYSTCPSM, Real-time SMF NMI

The TCP/IP Management Interface (TMI) copy buffer interfaces currently require the caller to be APF authorized. The interfaces are EZBTMIC1, EZBTMIC4, and TMI\_Copybuffer(). This causes problems for applications that want to fork() as APF authorization is not inherited. In addition, APF authorization gives applications a broad range of authority.

In z/OS V1R13, network management applications that use these TMI copy buffer interfaces will no longer have to be APF authorized. As an alternative to APF authorization, the user ID that the application is running under can be authorized to the appropriate SAF resource EZB.NETMGMT.systemname.tcpprocname.interface. The interface can be SYSTCPDA, SYSTPCPN, SYSTCPOT, or SYSTCPSM.

## PORTRANGE wildcard option

- z/OS V1R5 added wildcard support for the job name on a PORT statement
  - PORT statement allows job name to end in asterisk (\*)
  - Characters before the asterisk define a prefix
  - Any applications with a job name matching the prefix can access the specified port
- In z/OS V1R13, wildcard support is added for the job name on a PORTRANGE statement
  - Only applications with job names that match the prefix have access to the specified port range
- TCP callable NMI GetProfile request can now include a wildcard value for PORTRANGE statement entries

PORTRANGE				
111	1	UDP	PORTMAP	
111	1	TCP	PORTMAP	
500	5	UDP	USER1	
500	5	TCP	USER2	
700	4	TCP	ABCD*	

A wildcard option has been allowed for the job name value specified on a PORT statement since z/OS V1R5. The PORT statement allows a job name to end in an asterisk. The characters before the asterisk define a prefix. Any applications with a job name matching the prefix can access the specified port. Similar wildcard support was not provided for the PORTRANGE statement. The PORTRANGE statement in z/OS V1R13 allows a wildcard job name. As with the PORT statement, the job name can end in an asterisk. The characters before the asterisk define a prefix. Only applications with job names that match the prefix have access to the specified port range. As a result of this, the GetProfile request of the TCP callable NMI (EZBNMIFR) can now include a wildcard value in the NMTP\_PORTJobName field for entries that represent a PORTRANGE statement.

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