VS05 - z/VSE 5.1 Neuigkeiten

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Agenda

- Roadmap
- z/VSE 5.1 key functions
- z/VSE 5.1 additional enhancements
- CICS Explorer

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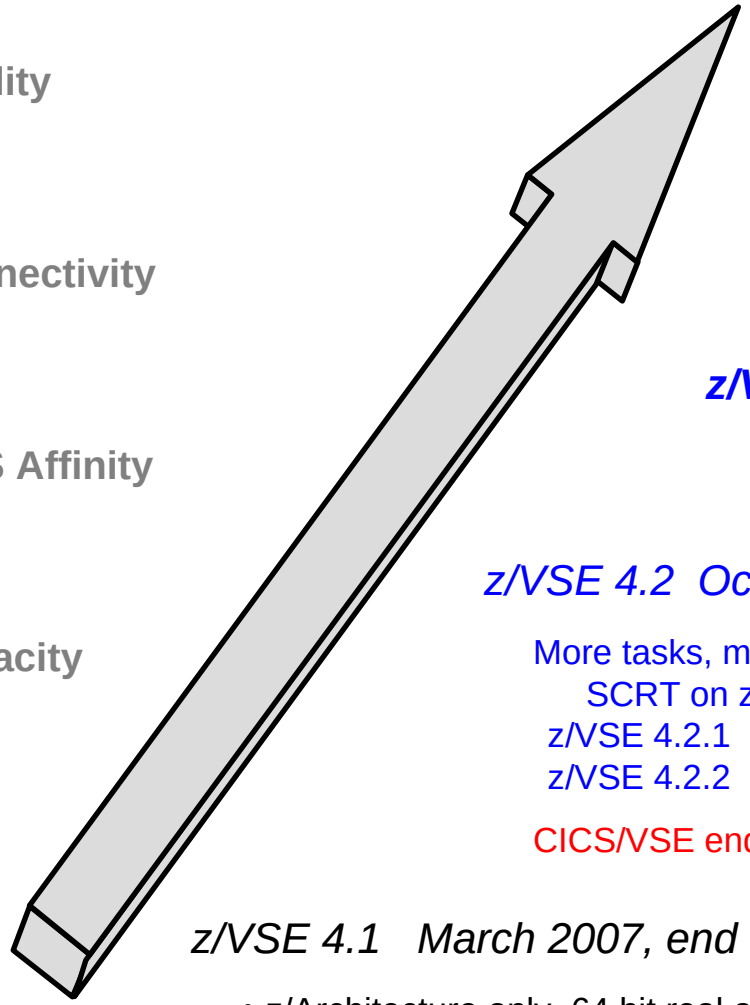
VSE Roadmap



z/VSE 5.1 Enhancments GA 06/15/2012

- **CICS Explorer, LFP in LPAR, database connector**

z/VSE 5.1 GA 11/25/2011

- **64 bit virtual, zEnterprise exploitation**
- **SOD: CICS Explorer, ALS: z9 or higher**

z/VSE 4.3 11/2010

Virtual storage constraint relief, 4 digit cuus
z/VSE 4.3.1 08/2011, *end of marketing 06/25/2012*

z/VSE 4.2 October 2008, ***end of service 10/31/2012***

More tasks, more memory, EF for z/VSE 1.1, CPU balancing,
SCRT on z/VSE, SoD for CICS/VSE
z/VSE 4.2.1 07/2009 - PAV, EF for z/VSE 1.2
z/VSE 4.2.2 04/2010 - IPv6/VSE 05/2010

CICS/VSE end of service 10/31/2012

z/VSE 4.1 March 2007, end of service 04/30/2011

- z/Architecture only, 64 bit real addressing,
  MWLC – full and sub-capacity pricing

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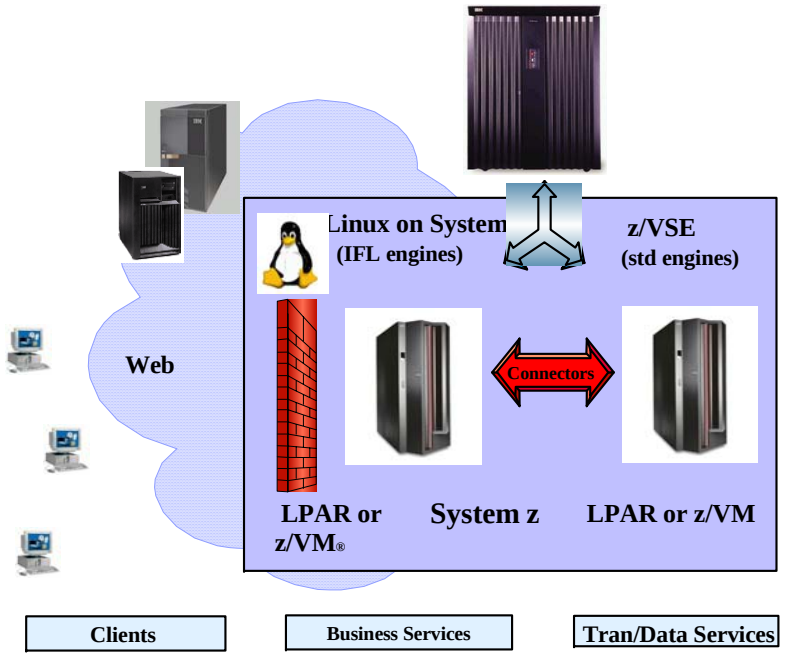
VSE Strategy

- Helps **Protect** your existing investments in core VSE programs, data, equipment, IT skills, *plus* business processes, end user training, etc.
  - modernize, i.e. extend VSE resources to Web
  - exploit IBM servers, storage, and software
- **Integrate** VSE with the rest of your IT based on open and industry standards
  - (IBM) middleware
  - VSE connectors and web services
- **Extend** with Linux on System z
  - infrastructure consolidation/simplification
  - add new infrastructure and/or line-of-business applications

Why Not Think Inside the Box?



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z/VSE V5.1

- Preview: 04/12/2011, Announcement: 10/12/2011, GA 11/25/2011
- 64-bit virtual addressing
- Introduces Architectural Level Set (ALS) that requires System z9 or later
- IBM zEnterprise 196 (z196) and IBM zEnterprise 114 (z114) exploitation
  - Support Static Power Save Mode for MWLC clients with subcapacity option (z196 only)
  - 4096-bit RSA keys with Crypto Express3 for enhanced security
  - Support of OSA-Express for zBX (CHPID OSX) to participate in an Intra Ensemble Data Network (IEDN) in z/VM guest or LPAR
- Exploitation of IBM System Storage options
  - Copy Export function of TS7700 Virtualization Engine for disaster recovery
  - Multi-Cluster Grid support of the TS7700 Virtualization Engine Series (TS7700)
  - IBM Storwize V7000 Midrange Disk System (z/VSE 4.2 and later)
  - IBM XIV (z/VSE 4.2 and later)
- Fast Service Upgrade (FSU) from z/VSE 4.2 and z/VSE 4.3
- Pricing
  - Midrange Workload License Charge (MWLC) pricing with sub-capacity option
  - z114: Advanced Entry Workload License Charge (AEWLC) pricing with sub-capacity option

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z/VSE V5.1

- Networking enhancements
  - IPv6 support for Linux Fast Path
  - z/VSE z/VM IP Assist (VIA) exploitation
  - TCP/IP communication using Layer 2 (Data Link Layer)
  - Virtual Local Area Network (VLAN) support for OSA Express and Hipersockets
    - Global VLAN supported by TCP/IP for VSE/ESA and IPv6/VSE
    - General VLAN supported by IPv6/VSE

- IPv6/VSE
  - Large TCP window support, can increase throughput
  - 64 bit virtual exploitation, large TCP window storage allocated above the bar
  - Layer 2 support (OSA Express, IPv6 only)
  - VLAN support

- System management enhancements
  - SNMP Trap Client Extension monitoring – API

- High availability and disaster recovery enhancements
  - Copy Export function of TS7700 Virtualization Engine for disaster recovery
  - Multi-Cluster Grid support of the TS7700 Virtualization Engine Series (TS7700)
  - GDPS (Geographically Dispersed Parallel Sysplex) client (in a z/VM guest)
    - z/VSE supports heartbeat only
    - GDPS K-system can only monitor z/VSE
    - GDPS K-system can manage z/VM and therefore can manage z/VSE indirectly

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z/VSE V5.1 …

- System enhancements
  - Language Environment enhancements
    - PL/I multitasking enhancements
    - C run-time socket API to include IPv6 related functions
    - Callable service sample for programs
    - Additions to system programmer C samples
    - Updated LE/C support for Librarian Members, and updates to the CEETRACE utility.
  - E-business connector enhancements
    - VSE Script Connector to support LIBR access
  - VSE/POWER
    - Token as new job attribute to address spooled output
  - VTAPE enhancements
    - VTAPE Auto Close at EOJ dependent on new SCOPE keyword
    - SCOPE= SYSTEM or JOB
  - TAPE UNLOAD at EOJ (TAPE UNL=EOJ)

- CICS - Statement of general direction (SOD):
  - IBM intends to provide CICS Explorer capabilities for CICS TS for VSE/ESA, to deliver additional value.

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z/VSE 5.1 Announcement (04/03/2012)

- IBM z/VSE V5.1 - Additional enhancements available
- Announcement content for
  - GA on June 15, 2012:
    - CICS Explorer for z/VSE
    - Linux Fast Path in LPAR
    - Linux Fast Path via z/VSE z/VM IP Assist (z/VSE VIA)
    - z/VSE database connector
    - VSE/POWER enhancement to ease job output handling
    - IBM System Storage Tape Controller 3592 Model C07
    - (new symbolic parameter IJBVMID containg the z/VM userid if running on z/VM)
  - Later PTFs (after June 15, 2012)
    - 64-bit input/output (I/O) processing for applications
    - IPv6/VSE V1.1 enhancements
      - Secure Sockets Layer (SSL) for secure data transmission
      - Layer 2 support for OSA Express devices for IPv4 links

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VSE Support for System z

VSE Release	z800 / z900	z890 / z990	System z9 / z10 / z196 / z114	VSE EoS
z/VSE V5.1	No	No	Yes	tbd
z/VSE V4.3	Yes	Yes	Yes	tbd
z/VSE V4.2	Yes	Yes	Yes	10/31/2012
z/VSE V4.1	Yes	Yes	Yes	04/30/2011
z/VSE V3.1	Yes	Yes	Yes	07/31/2009
VSE/ESA V2.7	Yes	Yes	Yes	02/28/2007
VSE/ESA V2.6	Yes	Yes	Yes	03/2006
VSE/ESA V2.5	Yes	No	No	12/2003
VSE/ESA V2.4	Yes	No	No	06/2002
VSE/ESA V2.3	No	No	No	12/2001

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IBM zEnterprise exploitation

- 64 bit real addressing - up to 32 GB (System z)
- 64 bit virtual virtual addressing – up to 90 GB (System z)
- Large page support (z10, zEnterprise)
- Dynamic add of logical CPs (z10, zEnterprise)
- Linux Fast Path (LFP) in z/VM mode LPAR (z10, zEnterprise)
- Exploitation of the z/VSE z/VM IP Assist (zEnterprise)

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IBM zEnterprise exploitation

- 4096-bit RSA key support with configurable Crypto Express3 (z10, zEnterprise)
- zEnterprise and zEnterprise BladeCenter Extension (zBX) support
  - "native" Intra Ensemble Data Network (IEDN)
  - Virtual LAN support
  - Layer 2 support
  - IEDN communication using the z/VM VSWITCH
- HiperSockets Completion Queue on z196 and z114 (available June 15, 2012)
- Static power save mode supported for SCRT (z196 only)
- Statement of general direction:
  - The IBM zEnterprise 196 and IBM zEnterprise 114 are the last System z servers to support ESCON channels.
  - See IBM Hardware Announcement 111-136, July 12, 2011

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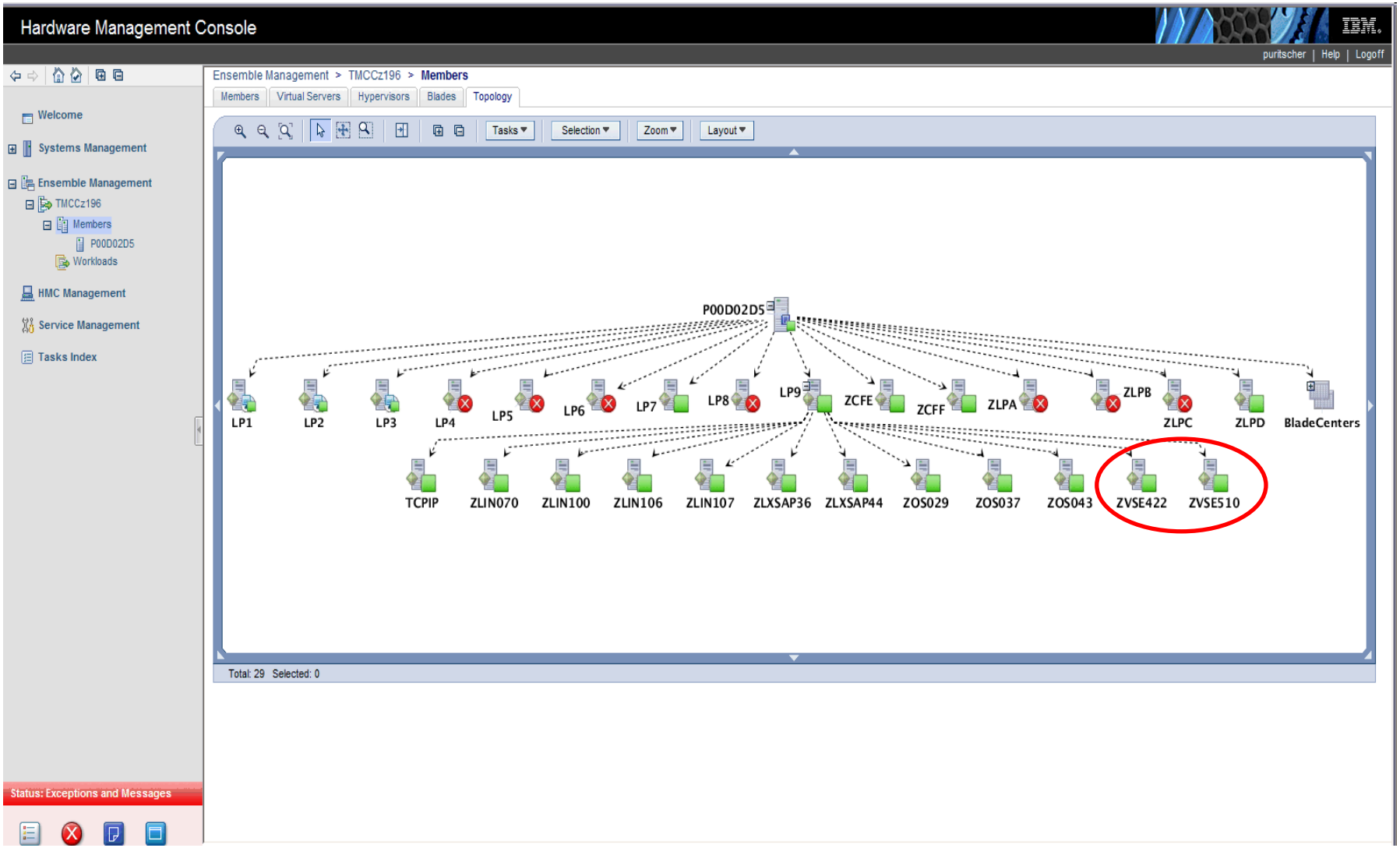
zEnterprise zManager (HMC) and z/VSE



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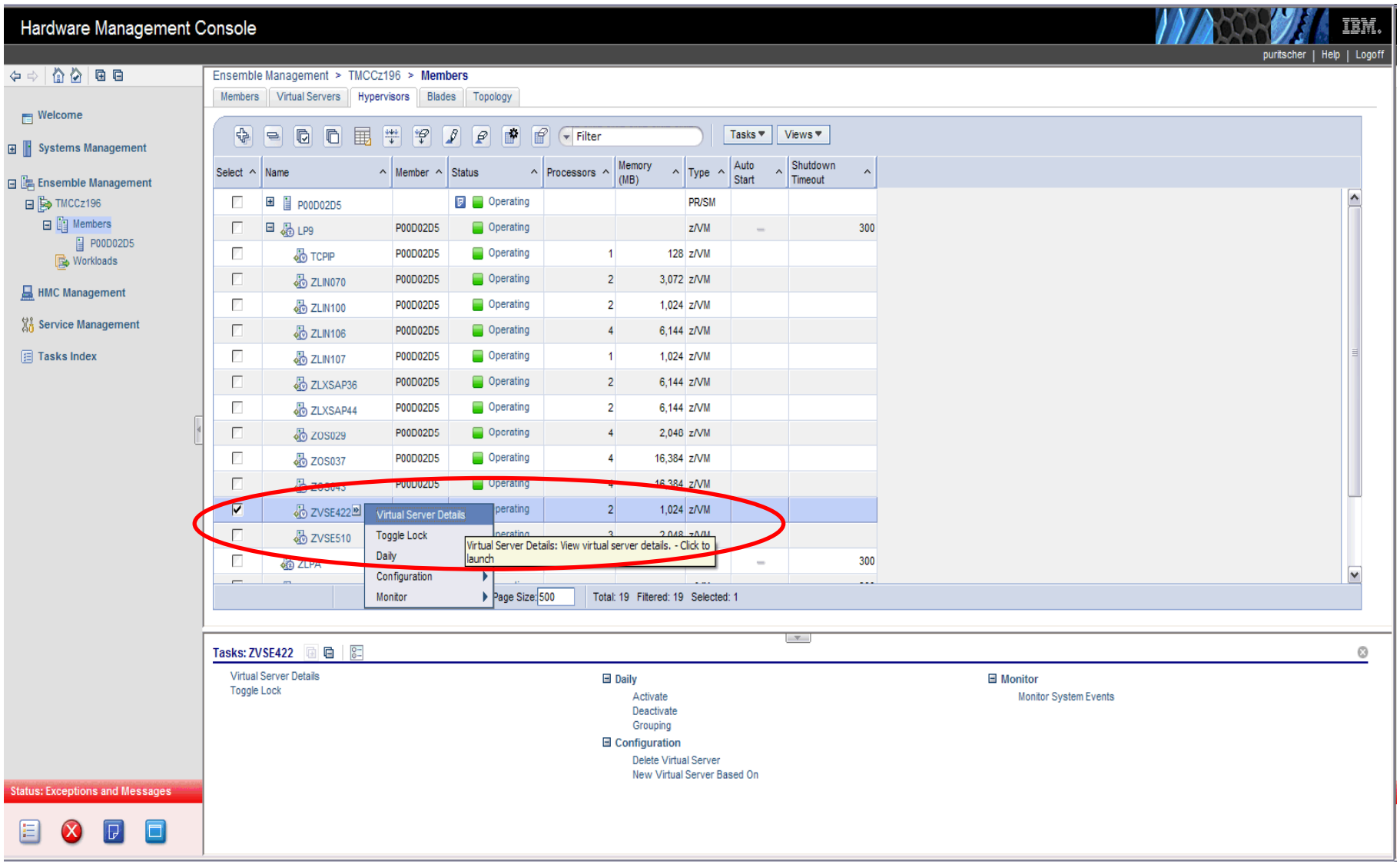
zEnterprise zManager (HMC) and z/VSE



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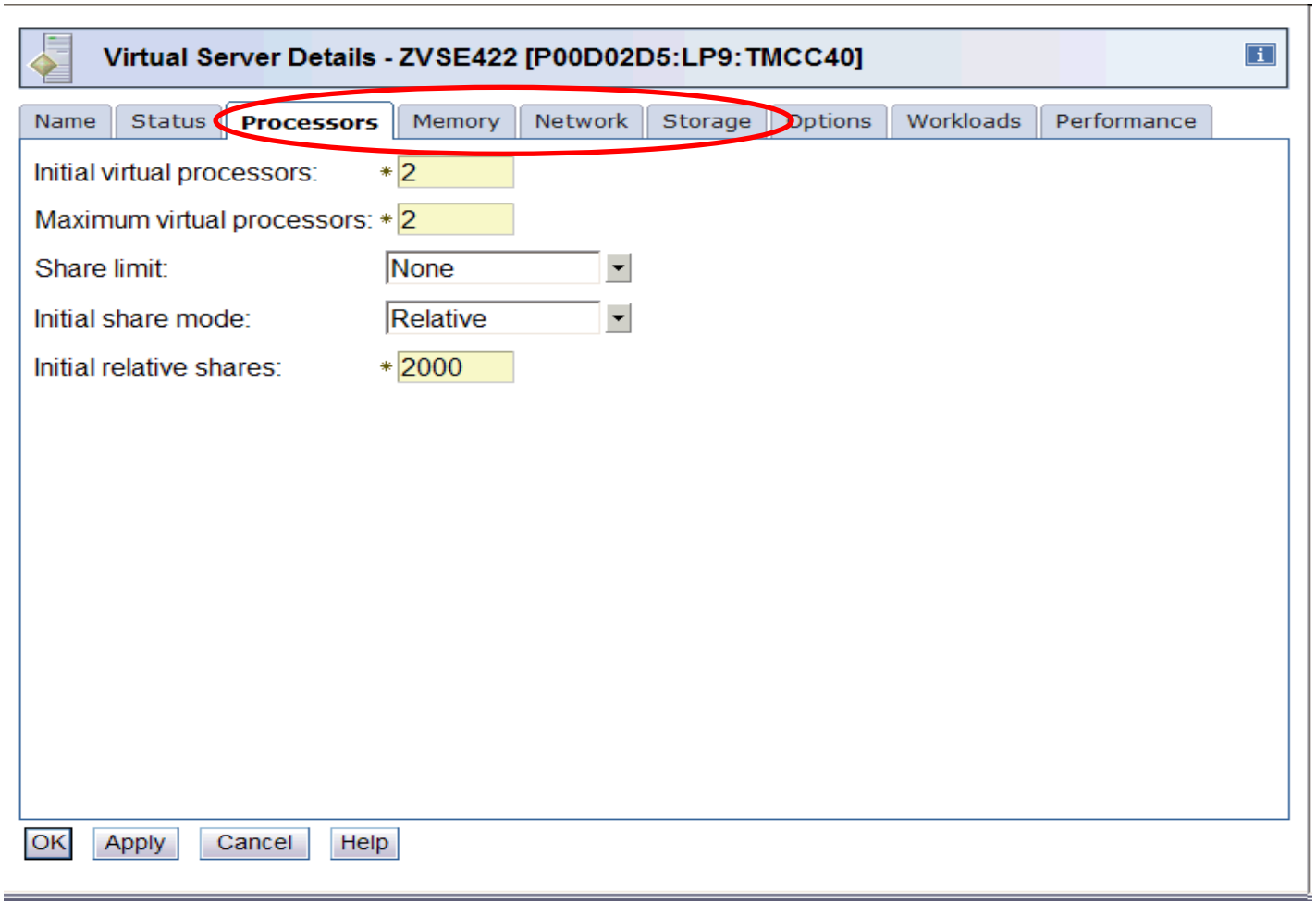
zEnterprise zManager (HMC) and z/VSE



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Encryption Facility for z/VSE

- Optional priced feature for VSE Central Functions
- Supports the use of SAM files, VSE/VSAM files, VSE library members, tapes, virtual tapes as input or output
- Requires CP Assist for Cryptographic Function (CPACF)
  - no charge feature, only on z890, z990, z9, z10, z114 and z196 servers
- Extends affinity between z/VSE and z/OS
  - Function roughly equivalent to EF for z/OS 1.1
  - Compatible with EF for z/OS V1.1 (Encryption Facility System z format)
    - EF for z/VSE tapes can be read by EF for z/VSE, EF for z/OS, EF for z/OS Java Client, and Decryption Client for z/OS,
    - EF for z/OS V1.1 and EF for z/OS Java client tapes can be read by EF for z/VSE
- EF for z/VSE 1.2
  - Supports z/VSE 4.2 and later
  - Supports openPGP standard
  - OpenPGP exploits 4096-bit RSA keys (z10, zEnterprise)

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TCP/IP Connectivity for z/VSE

- TCP/IP connectivity for IPv4 communication
  - TCP/IP for VSE/ESA 1.5 – licensed from CSI International
  - IPv6/VSE – licensed from Barnard Software, Inc. (BSI)
  - Linux fast path (LFP)
  - EZA socket interface, new function calls
  - LE/C socket API
- TCP/IP connectivity for IPv6 communication
  - IPv6/VSE
  - EZA socket interface, new function calls
  - Linux Fast Path (z/VSE 5.1)
- All TCP/IP stacks can run concurrently within one z/VSE system
- z/VM queue-I/O assist for real networking devices
  - Performance assist for OSA-Express adapters and HiperSockets

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IPv6/VSE

- Announced: 04/06/2010, GA 05/28/2010, updated
- Full function IPv4 and IPv6 stack with applications
  - MWLC with sub-capacity option for IPv6/VSE product
  - Supported releases: z/VSE 4.2 plus PTFs, z/VSE 4.3 or z/VSE 5.1
  - Optional Product of z/VSE 4.3 and z/VSE 5.1
- IPv6 solution for z/VSE
  - Includes the IPv6 stack, IPv6 APIs and IPv6-enabled applications
    - IBM's EZA Assembler interfaces support IPv4 and IPv6 communication
  - Extends 32 bit addresses (used in IPv4) to 128 bit addresses
  - To meet requirements of governmental agencies for products
- z/VSE 5.1 enhancements
  - Large TCP window support, can increase throughput
  - 64 bit virtual exploitation, large TCP window storage allocated above the bar
  - Layer 2 (data link layer, OSA Express devices for IPv6 only) and Layer 3 (IP layer) support
  - VLAN support
  - On extended base tape
- z/VSE 5.1 additional enhancements (after June 15, 2012)
  - Secure Sockets Layer (SSL) for secure data transmission
  - Layer 2 support for OSA Express devices for IPv4 links

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z/VSE 5.1 Networking Enhancements

- Layer 3 (IP layer)
  - TCP/IP stack uses IP packets that include IP addresses
  - Default mode for OSA Express and HiperSockets
  - Supported by TCP/IP for VSE/ESA and IPv6/VSE
  - Used on z/VSE 5.1 and prior releases

- Layer 2 (data link layer) support
  - TCP/IP stack uses Ethernet frames with MAC addresses
  - Device driver supports IPv4 and IPv6 communication, Hipersocks and OSA Express devices
  - Required for IPv6 communication through the z/VM VMSWITCH
  - Supported by IPv6/VSE (OSA Express only)
  - Can be used on z/VSE 5.1 only

- Virtual LAN (VLAN) support
  - Allows to divide a physical network into separate logical networks
  - For OSA Express and HiperSocket devices
  - Layer 3: VLANs can be transparently used by TCP/IP for VSE/ESA and IPv6/VSE
  - Layer 2: VLANs can be used by IPv6/VSE only

- Global VLAN support
  - One global VLAN per link
  - Global VLANs defined in IJBOCONF – to be used OSX devices
  - IEDN requires OSA Express for zBX devices (OSX)

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Linux Fast Path (LFP)

- Routes IPv4 or IPv6 socket request to Linux on System z
  - Without using the local TCP/IP stack
- LFP on z/VM (z/VSE 4.3 or higher)
  - Uses an IUCV connection between z/VSE and Linux on System z
  - Both – z/VSE and Linux – need to be z/VM guests of the same z/VM
  - LFP daemon on Linux forwards the socket request to the Linux TCP/IP stack
  - Will run best in **z/VM mode LPAR** (z/VM 5.4 or higher)
    - Available on z10, z114 and z196; Linux on System z on IFL, z/VSE on standard processors
  - System requirements: z/VM 5.4 or higher, Linux on System z distribution (RHEL, SLES)
- Linux Fast Path using z/VSE z/VM IP Assist (VIA – z/VSE 5.1)
  - Both – z/VSE and Linux – need to be z/VM guests of the same z/VM
  - System requrements: z114 or z196, z/VM 6.1 or later
- Linux Fast Path in LPAR (z/VSE 5.1 + enhancements – GA 06/15/2012)
  - LFP daemon on Linux forwards the socket request to the Linux TCP/IP stack
  - System requrements: z114 or z196, Linux on System z distribution (RHEL, SLES)
- LFP is transparent to IBM socket APIs
  - Supported APIs: LE/C socket API, EZA socket / EZASMI interface, …
  - Transparent to IBM applications (DB2 client, Connectors, Power PNET)
  - No standard TCP/IP applications (Telnet, FTP, …) provided
  - IPv6/VSE: TCP/IP applications can exploit LFP
- Provided with the z/VSE base product – no additional charge

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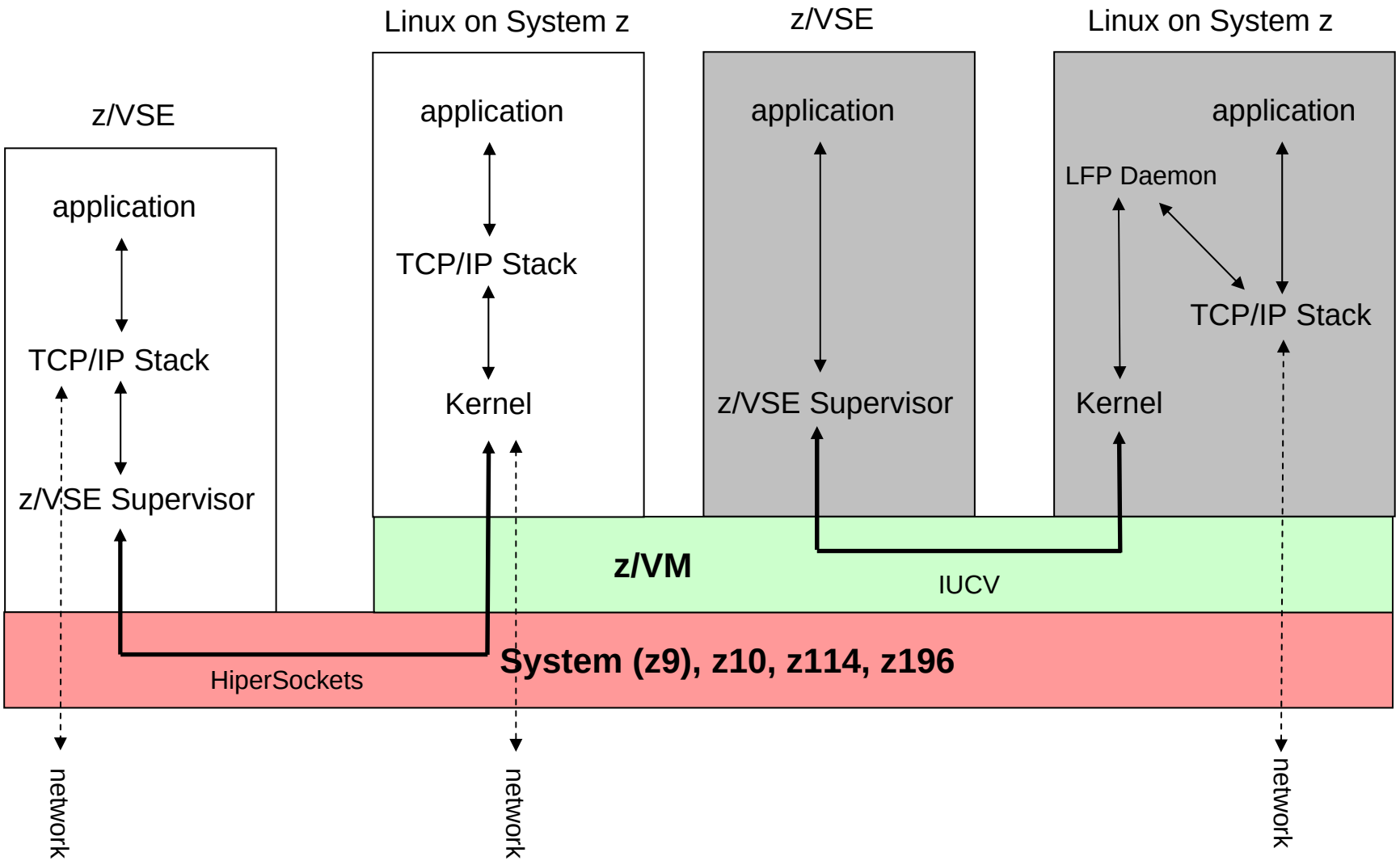
Linux Fast Path (LFP) - Linux Fast Path on z/VM



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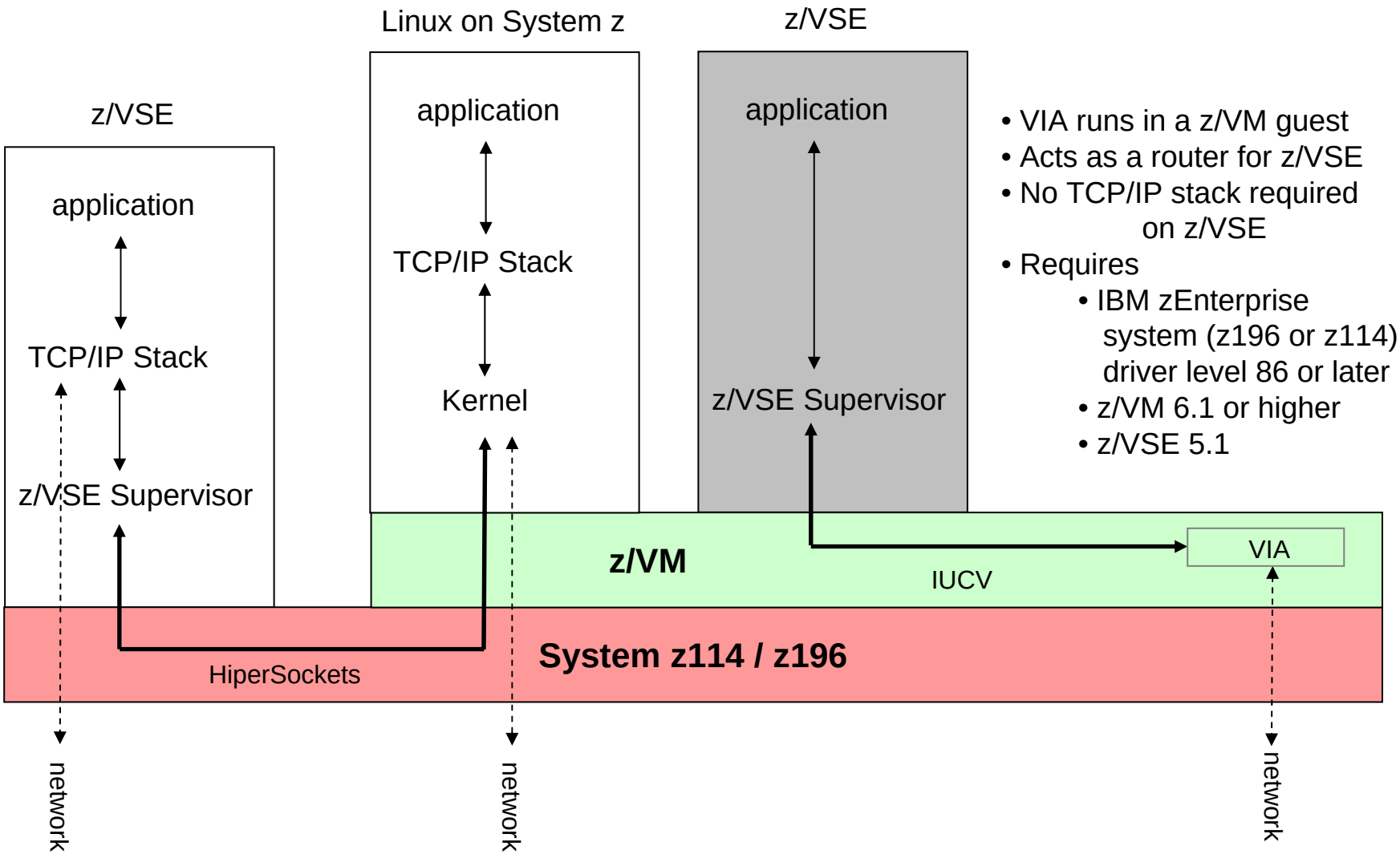
LFP - z/VSE z/VM IP Assist (VIA) – z/VSE 5.1



- VIA runs in a z/VM guest
- Acts as a router for z/VSE
- No TCP/IP stack required on z/VSE
- Requires
  - IBM zEnterprise system (z196 or z114) driver level 86 or later
  - z/VM 6.1 or higher
  - z/VSE 5.1

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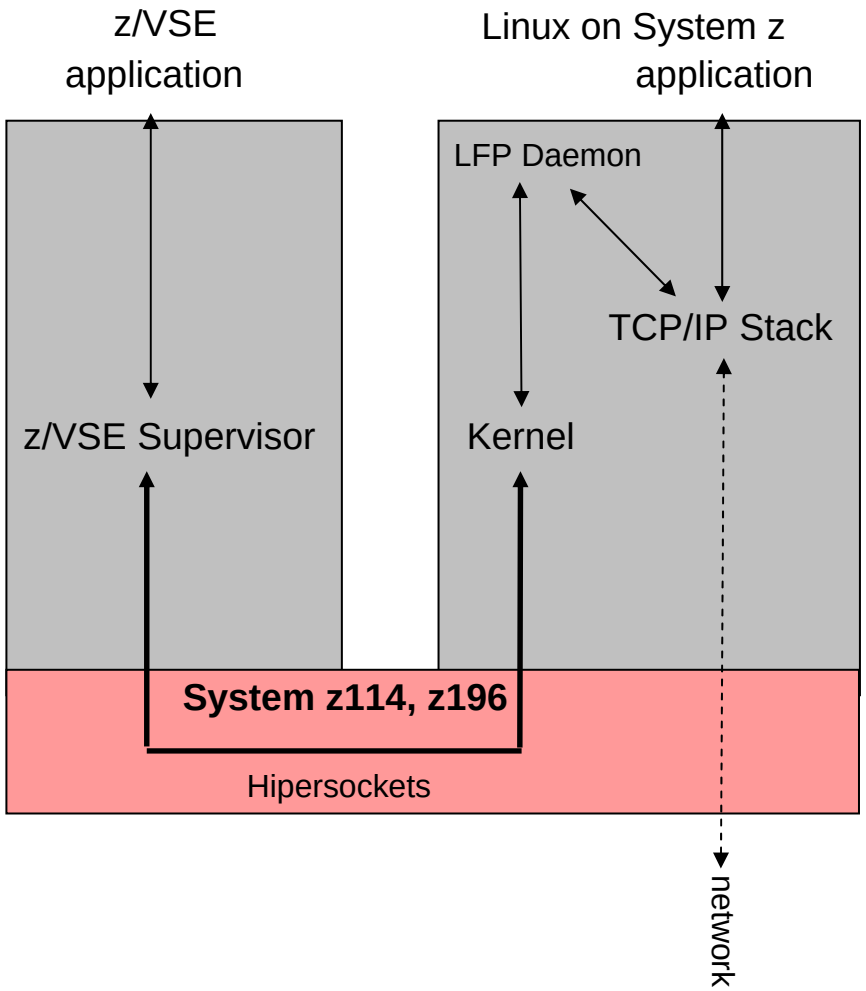
Linux Fast Path (LFP) – Linux Fast Path in LPAR

- No TCP/IP stack required on z/VSE
- System requirements
  - – Supported on z114 and z196
    - Exploits HiperSockets completion queue
  - – Linux on System z distribution (RHEL, SLES)
  - – z/VSE 5.1 + PTF
- Available June 15, 2012



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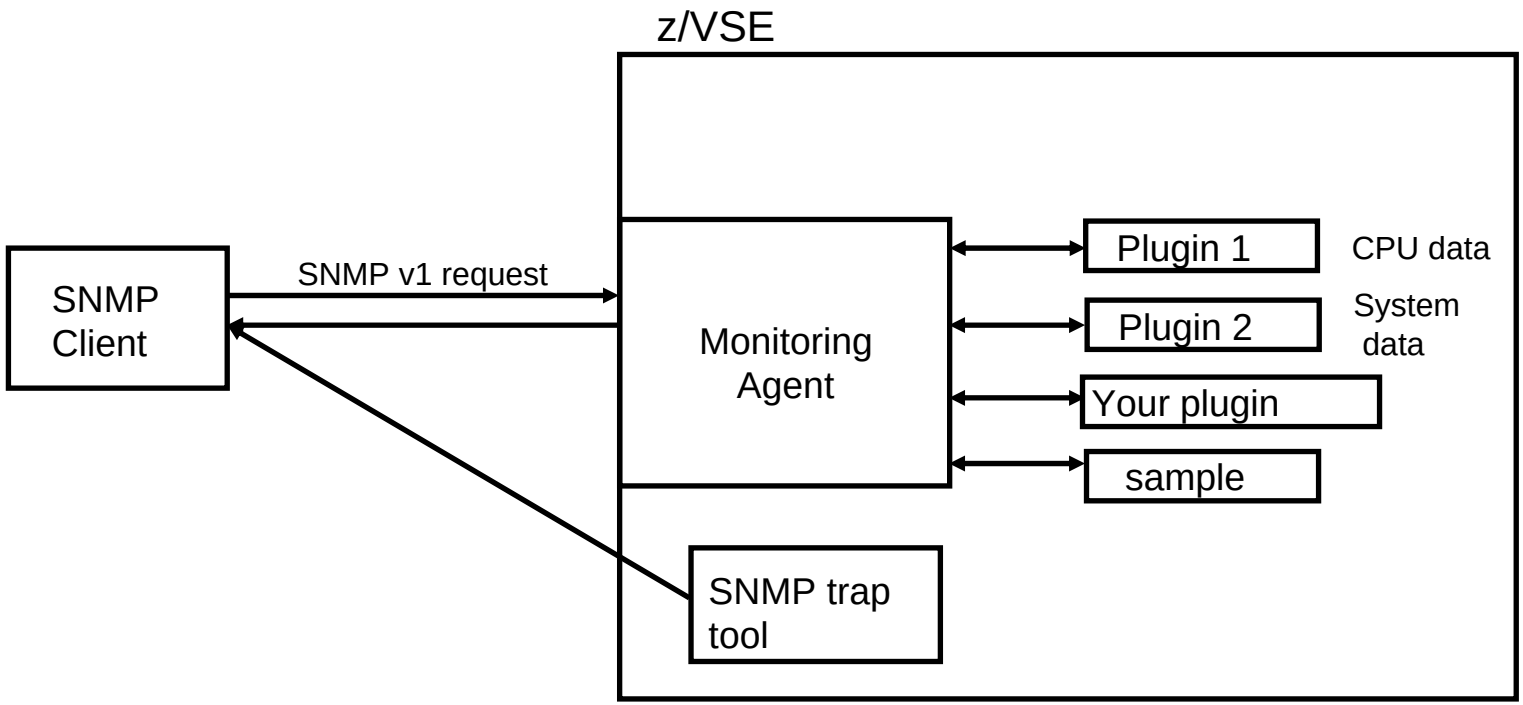
Connectors

- SNMP Connector
  - SNMP (Simple Network Management Protocol) V1 protocol
  - Allows to monitor system events on a network
  - Clients can retrieve z/VSE specific system and performance data
  - Performance monitors may collect the data for planning purposes
  - SNMP Trap Client Extension monitoring – API



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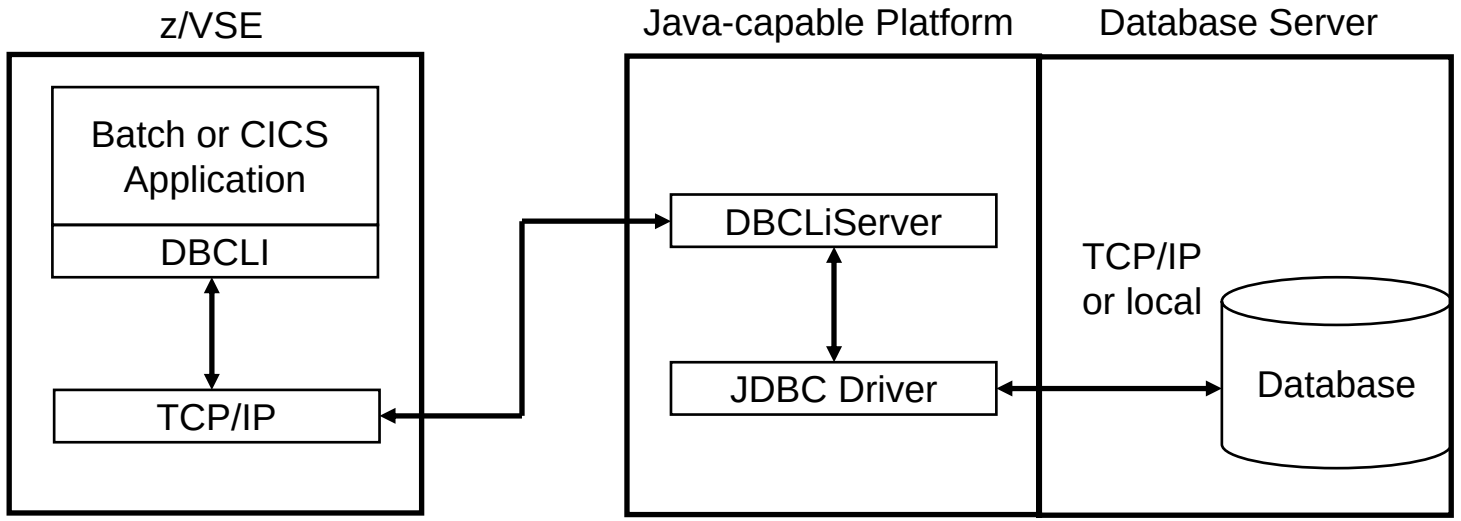
Data Base Connector

- Available June 15, 2012
- Provides a database call level interface (DBCLI)
  - For HLASM, COBOL, PL/I, C or REXX applications
- Connects to a remote database
- Consists of
  - DBCLI cient on z/VSE
  - DBCLiServer on any Java-capable platform



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64 bit virtual

- Support 64 bit virtual addressing
- 64 bit area can be used for **data only**
  - No instruction execution above the bar
- **z/OS affinity:** APIs (IARV64 services) - to manage memory objects – compatible with z/OS
  - Private memory objects for use in one address space
  - Shared memory objects to be shared among multiple address spaces
- Maximum VSIZE still limited to 90 GB
- Advantages:
  - Eases the access of large amounts of data
    - E.g. instead of using and managing data spaces
  - Reduces complexity of programs
    - Data contained in primary address space
  - Chosen design has no dependencies to existing APIs, minor impact on existing system code

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64 bit virtual – Define System Limits

SYSDEF statement to define the limits for memory objects

- Before IARV64 macro can be used.
- SYSDEF MEMOBJ,MEMLIMIT=,SHRLIMIT=,LFAREA=,LF64ONLY
  - MEMLIMIT – maximum virtual storage available for memory objects
    - Theoretical maximum value is VSIZE.
  - SHRLIMIT – maximum virtual storage available for shared memory objects
    - = size of extended area, included in MEMLIMIT
  - LFAREA – maximum real storage to fix private memory objects
  - LF64ONLY – YES|NO – memory objects are fixed in 64 bit frames only

- Example:

```
sysdef memobj,memlimit=1g,shrlimit=500m,lfarea=10m
AR 0015 1I40I  READY
```


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64 bit virtual – Display Memory Object Information

- QUERY command to retrieve memory object information
  - QUERY MEMOBJ displays
    - Effective settings of MEMLIMIT, SHRLIMIT; LFAREA, LF64ONLY
    - Summary information: virtual storage consumption of private / shared memory objects
  - QUERY MEMOBJ,ALL displays
    - Additional statistic information
    - Virtual storage consumption of shared memory objects
    - Virtual storage consumption of private memory objects per partition
  - Example

```
query memobj
AR 0015              LIMITS   USED        HWM
AR 0015 MEMLIMIT:   1024M      0M         1M
AR 0015 SHRLIMIT:    500M      0M         0M
AR 0015 LFAREA:       10M         0K         0K
AR 0015 LF64ONLY: NO
AR 0015 1I40I  READY
```


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64 bit virtual - IARV64 Macro

- IARV64 macro - ported from z/OS – provides services to
  - Creates and frees storage areas above the bar
  - Manage the physical frames behind the storage

- Programs use the IARV64 macro to obtain memory objects

- Services (IARV64 REQUEST=):
  - GETSTORE – create a private memory object
  - GETSHARED – create a memory object that can be shared across multiple address spaces
  - SHAREMEMOBJ – request that the specified address space be given access to a shared memory object
  - DETACH – free one or more memory objects
  - PAGEFIX – fix pages within one or more private memory objects
  - PAGEUNFIX – unfix pages within one or more private memory objects

  - GETSTORE / GETSHARED KEY parameter (default key = key of caller)
    - Unauthorized caller can set key 9 (all tasks can run in key 9)
    - Authorized callers can set any key

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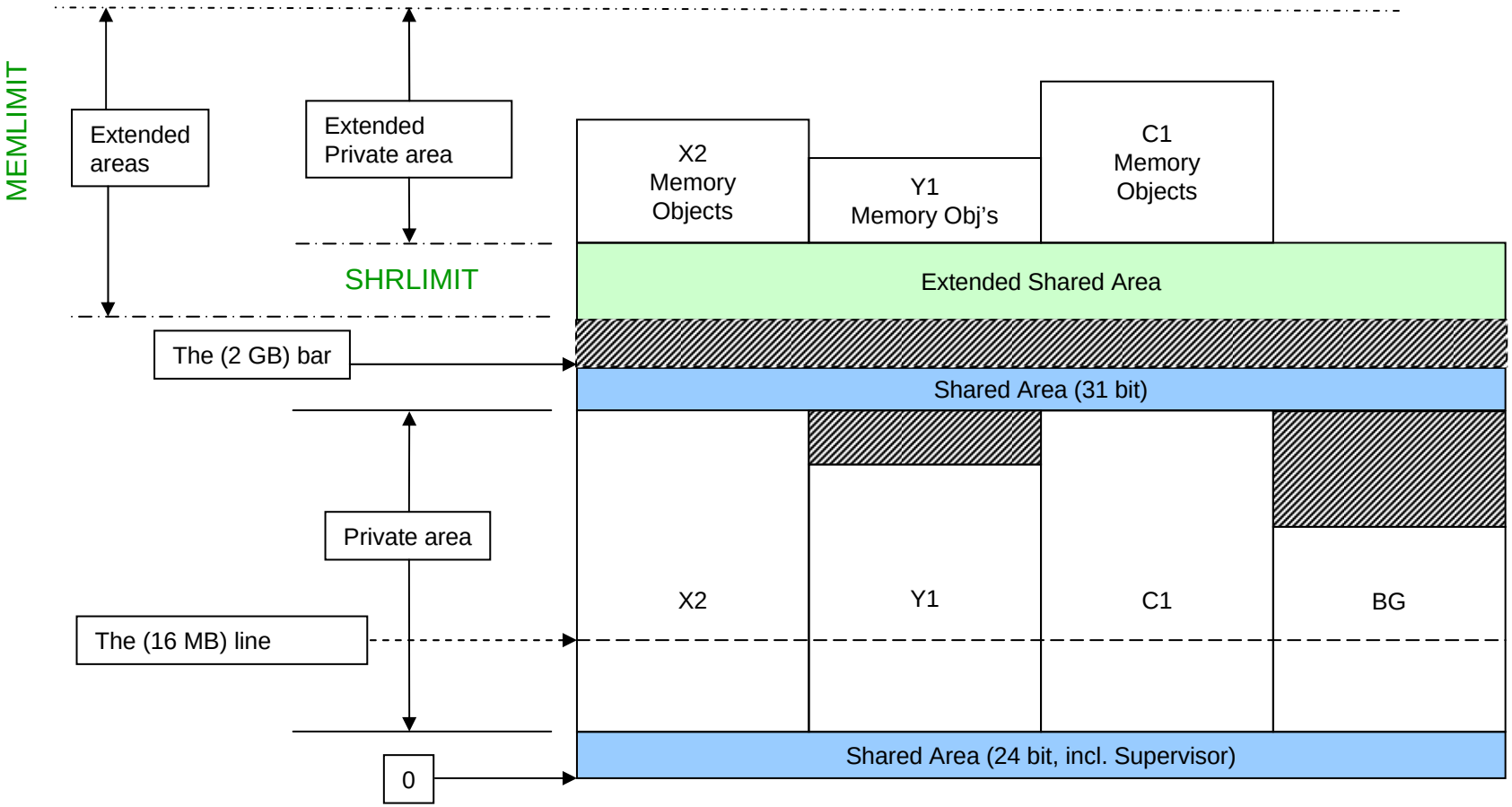
64 bit virtual - Address Space Layout



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64 bit virtual I/O

- Extend z/VSE‘s 64 bit virtual support to 64 bit virtual I/O
- Ensures z/OS compatibility for EXCP interfaces
- DASD (ECKD) support only
- I/O can only be done for private memory objects
- Format 0 and Format 1 CCW with Format 2 IDAWs
  - New CCB parameter
- Not supported by VSAM, BAM (LIOCS)
- Available via z/VSE 5.1 PTF some time after June 15, 2012

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CICS

- CICS/VSE 2.3
  - No longer in the z/VSE 4.3 base
  - Not supported on z/VSE 5.1
  - End of service: 10/31/2012
  - Recommendation: Migration to CICS TS on z/VSE 4.2 or earlier

- DOS/VS RPG II compiler support for CICS TS
  - Allows RPG programs implemented for CICS/VSE V2.3 to run with CICS TS
  - Will be available on z/VSE 4.2 (z/VSE 4.1) via PTF (see Info. APAR II4447)

- New DL/I VSE 1.12 release since z/VSE 4.3
  - Optional product of z/VSE 4.3 and z/VSE 5.1 (the only DL/I release)
  - Provides constraint release (DL/I resources moved above the 16 MB line)
  - Replaces DL/I VSE 1.11 and DL/I DOS/VS 1.10
  - Does not support CICS/VSE 2.3
  - No DL/I support for CICS/VSE on z/VSE 4.3

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CICS Explorer for z/VSE

- Fulfills statement of general direction (SOD):
  IBM intends to provide CICS Explorer capabilities for CICS TS for VSE/ESA, to deliver additional value.

- Announced 04/03/2012, planned availability 06/15/2012

- CICS Explorer – The new face to CICS
  - – New system management framework for CICS TS
  - – Consists of CICS Explorer client and a CICS TS server extension
  - – CICS Explorer client
    - Read-only capabilities
    - Eclipse-based user interface on workstation
    - Connects to CICS TS via TCP/IP
      - o Communication via HTTP requests
  - – CICS Explorer server extension
    - Delivered as PTF for CICS TS for VSE/ESA 1.1.1
    - z/VSE 5.1 only

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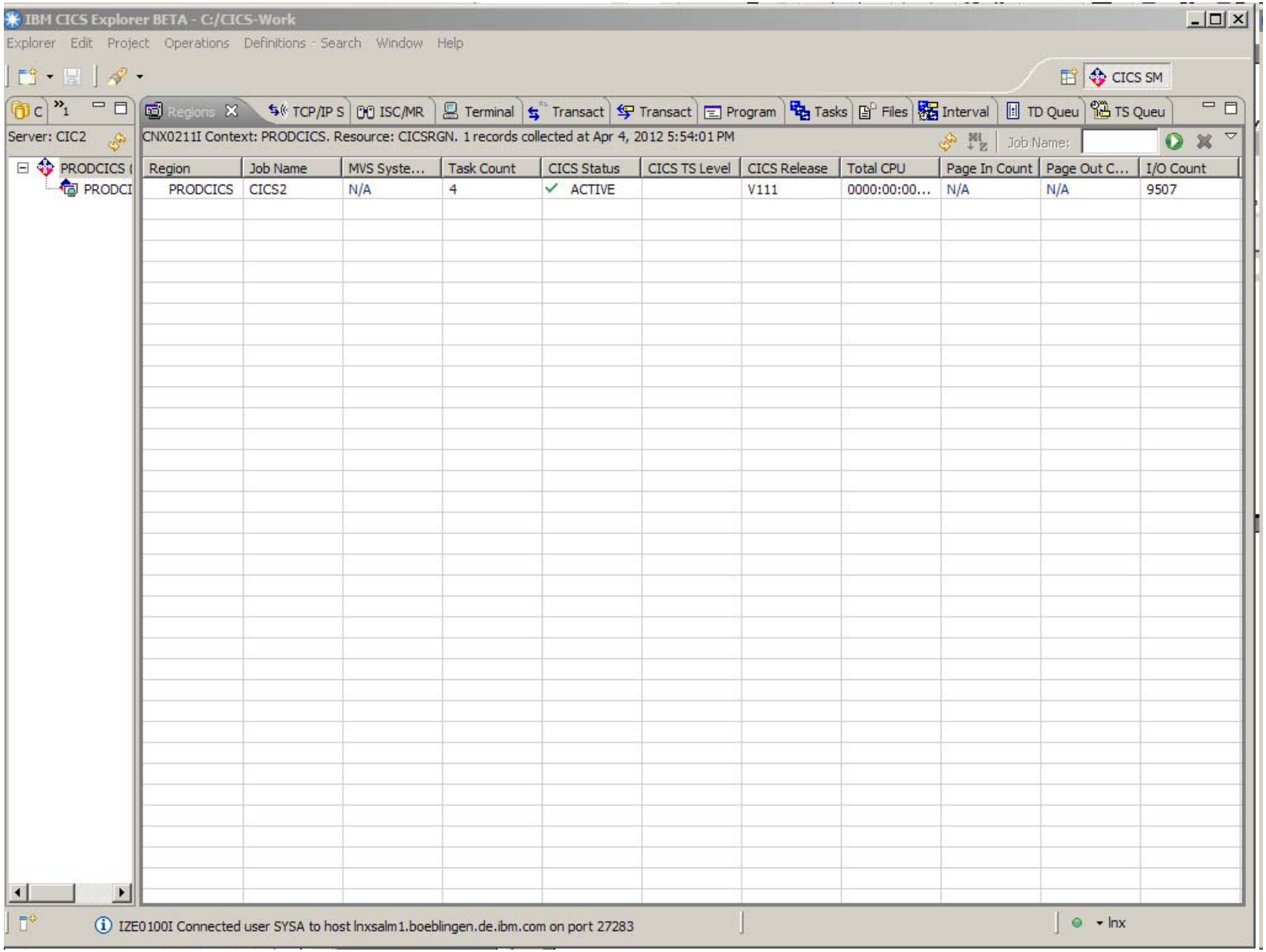

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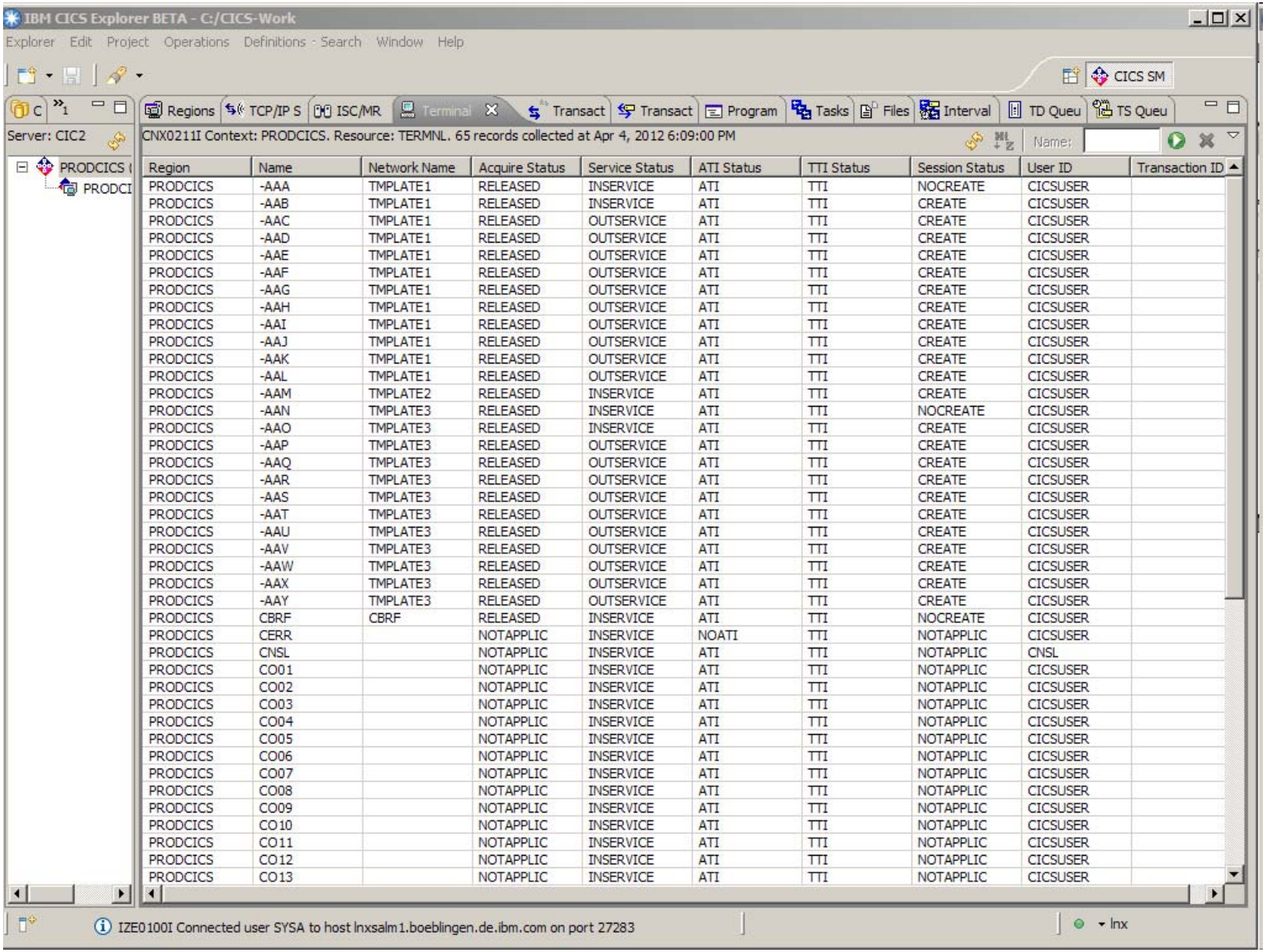

Region	Name	Network Name	Acquire Status	Service Status	ATI Status	TTI Status	Session Status	User ID	Transaction ID
PRODCICS	-AAA	TMPLATE1	RELEASED	INSERVICE	ATI	TTI	NOCREATE	CICSUSER	
PRODCICS	-AAB	TMPLATE1	RELEASED	INSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAC	TMPLATE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAD	TMPLATE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAE	TMPLATE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAF	TMPLATE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAG	TMPLATE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAH	TMPLATE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAI	TMPLATE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAJ	TMPLATE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAK	TMPLATE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAL	TMPLATE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAM	TMPLATE2	RELEASED	INSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAN	TMPLATE3	RELEASED	INSERVICE	ATI	TTI	NOCREATE	CICSUSER	
PRODCICS	-AAO	TMPLATE3	RELEASED	INSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAP	TMPLATE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAQ	TMPLATE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAR	TMPLATE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAS	TMPLATE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAT	TMPLATE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAU	TMPLATE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAV	TMPLATE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAW	TMPLATE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAX	TMPLATE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	-AAY	TMPLATE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCICS	CBRF	CBRF	RELEASED	INSERVICE	ATI	TTI	NOCREATE	CICSUSER	
PRODCICS	CERR		NOTAPPLIC	INSERVICE	NOATI	TTI	NOTAPPLIC	CICSUSER	
PRODCICS	CNSL		NOTAPPLIC	INSERVICE	ATI	TTI	NOTAPPLIC	CNSL	
PRODCICS	CO01		NOTAPPLIC	INSERVICE	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCICS	CO02		NOTAPPLIC	INSERVICE	ATI	TTI	NOTAPPLIC	CICSUSER	
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PRODCICS	CO04		NOTAPPLIC	INSERVICE	ATI	TTI	NOTAPPLIC	CICSUSER	
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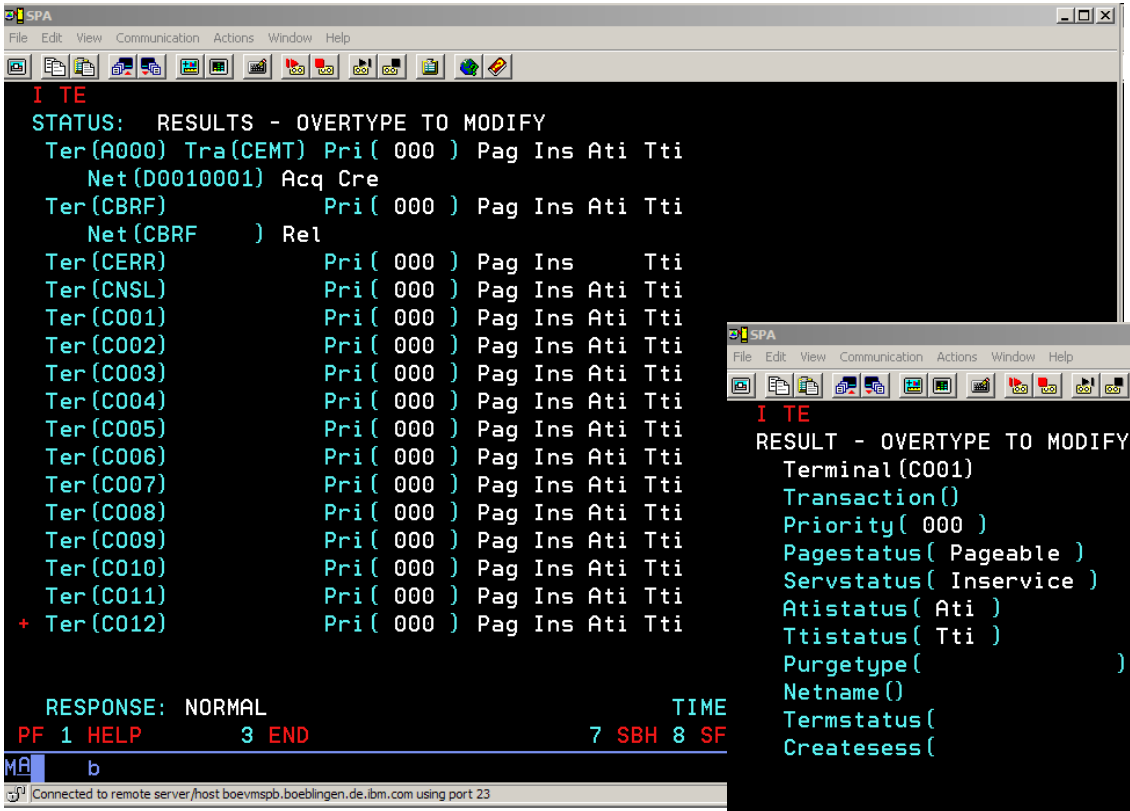
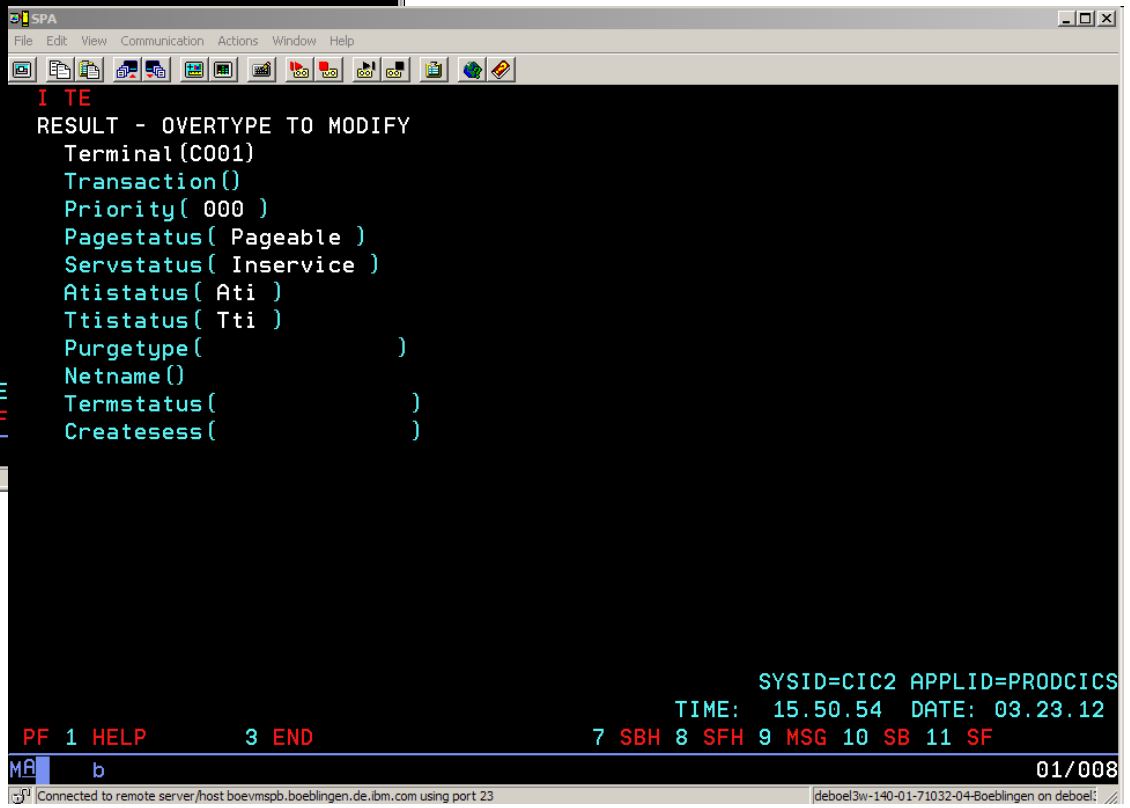
The 3270 Interface





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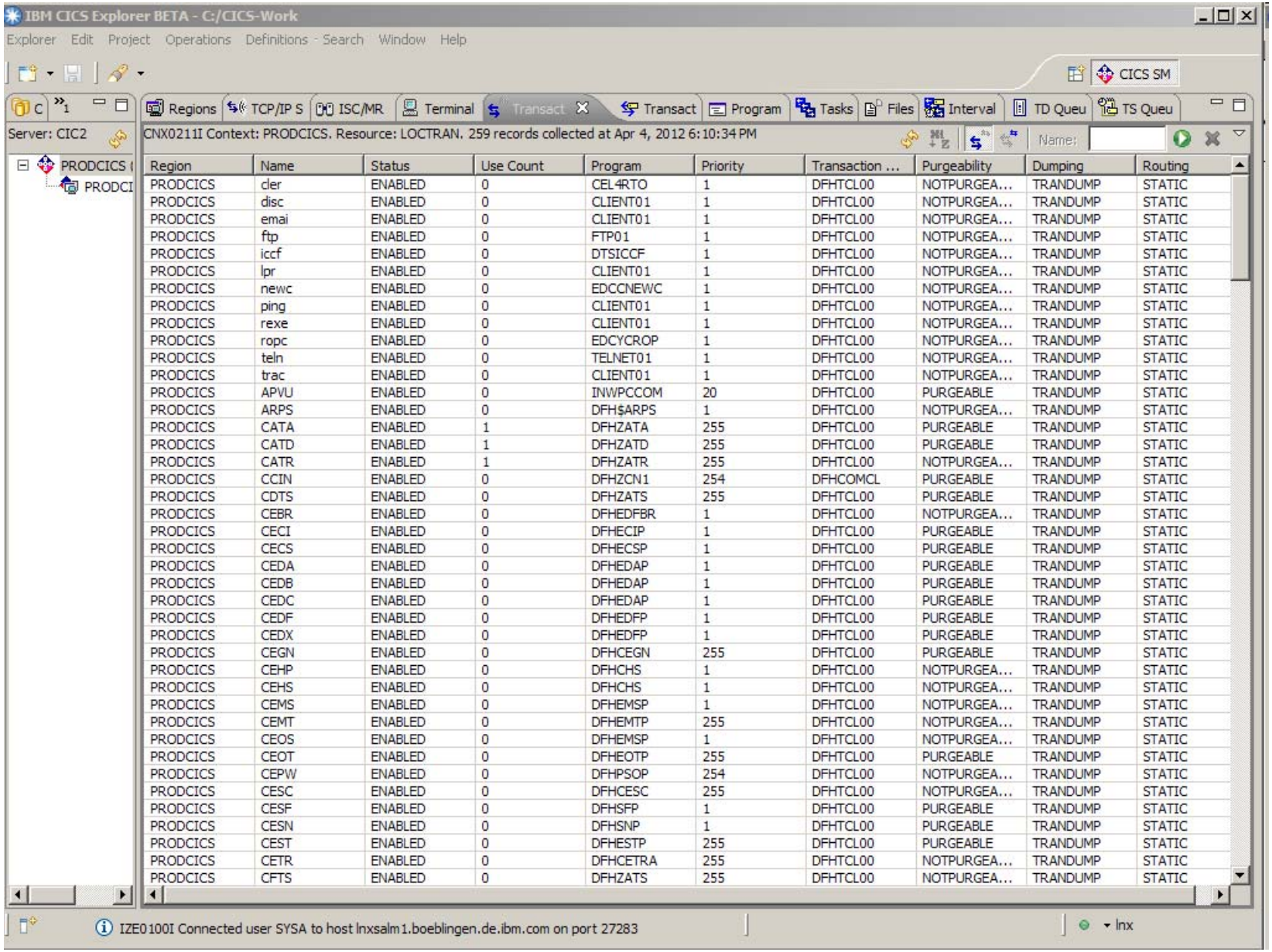

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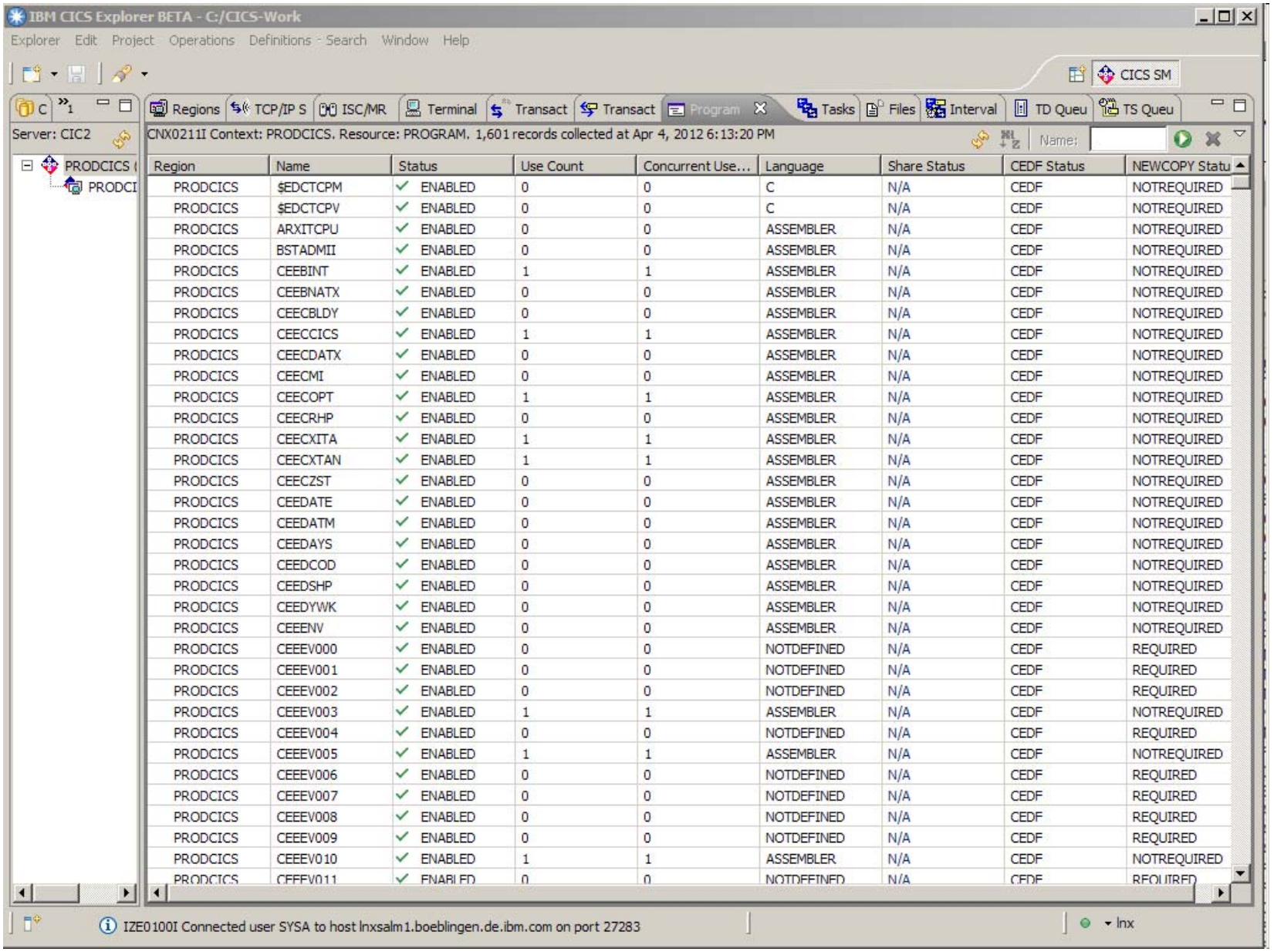

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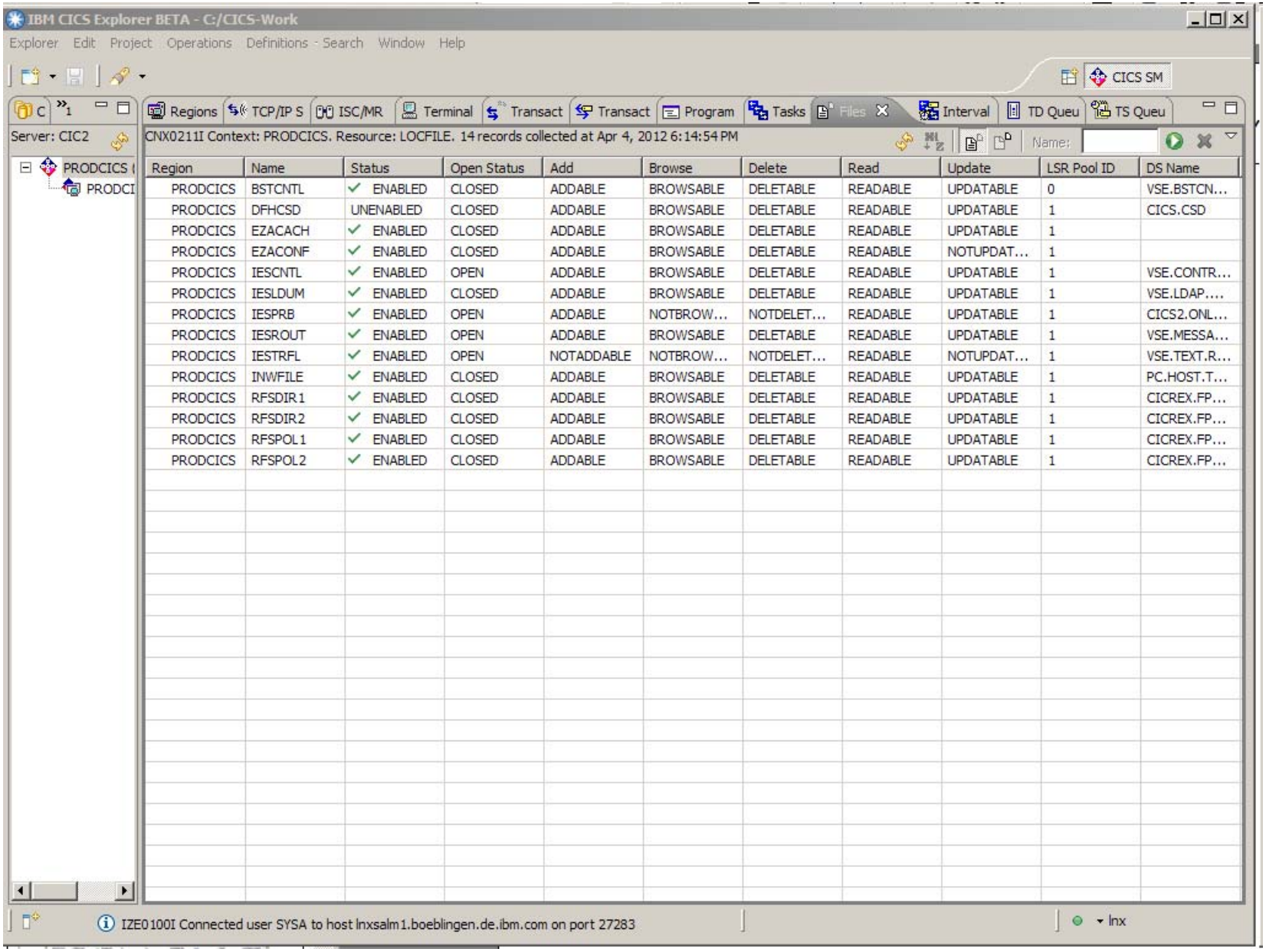

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More Information

… on VSE home page: http://ibm.com/vse

- Hints and Tips for z/VSE V4.3:
  - ftp://public.dhe.ibm.com/eserver/zseries/zos/vse/pdf3/zvse43/hintbmm2.pdf

- 64 bit virtual information:
  - IBM z/VSE Extended Addressability, Version 5 Release 1
  - IBM z/VSE System Macro Reference, Version 5 Release 1

- CICS TS: http://www-03.ibm.com/systems/z/os/zvse/products/cics.html

- IBM Redbooks:
  - Introduction to the New Mainframe: z/VSE Basics
    http://www.redbooks.ibm.com/abstracts/sg247436.html?Open

  - Security on IBM z/VSE – new update available
    http://www.redbooks.ibm.com/Redbooks.nsf/RedbookAbstracts/sg247691.html?Open

  - z/VSE Using DB2 on Linux for System z
    http://www.redbooks.ibm.com/abstracts/sg247690.html?Open

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