

5th European GSE / IBM TU
Technical University for z/VSE, z/VM and Linux on System z
October 24-26, 2011
Berlin, Germany

z/VSE V5.1 and 64-bit Addressing

Technical Overview

IS01

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z/VSE V5.1, jetzt 64 bit ready

Ein technischer Überblick

IS03

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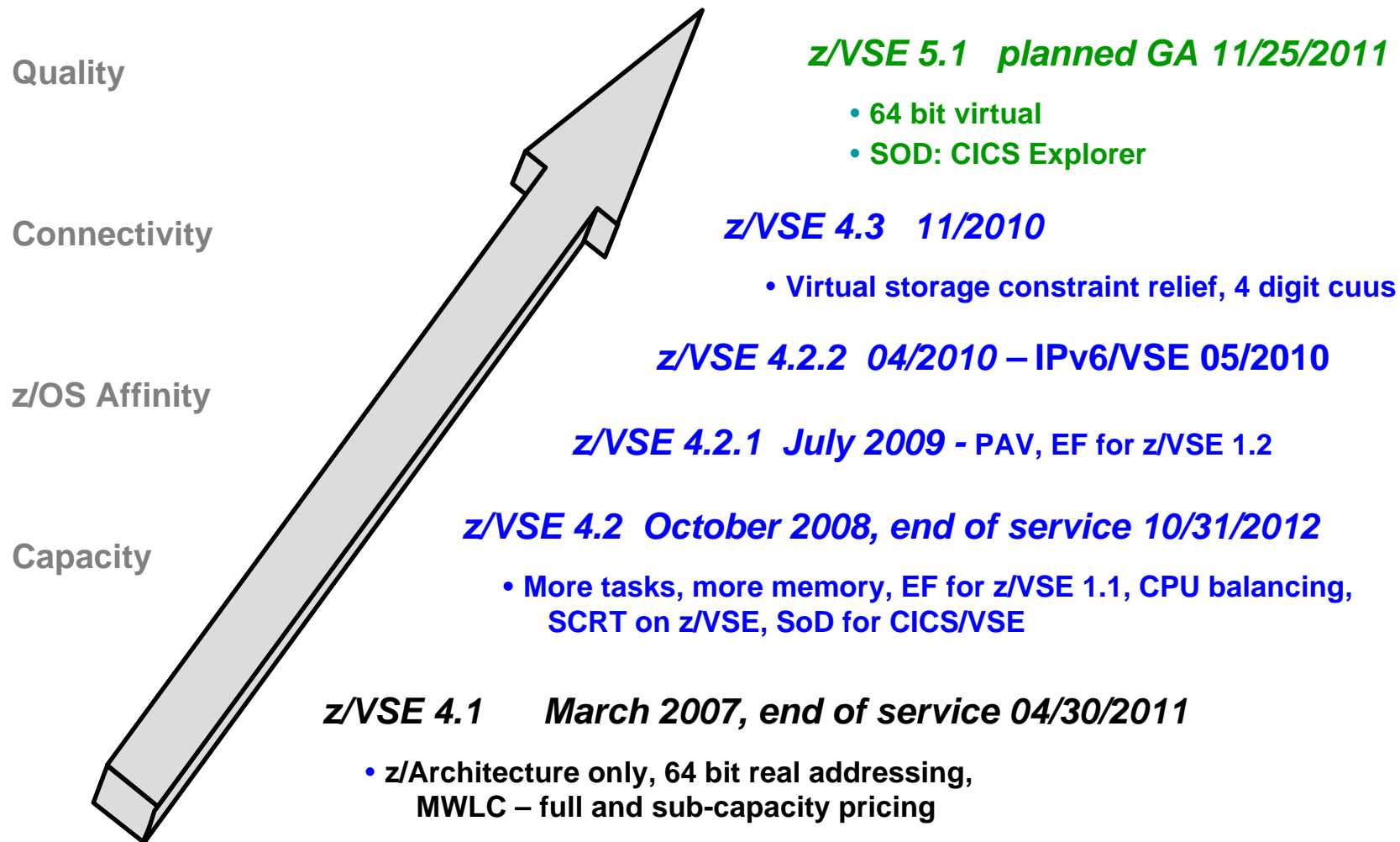
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Agenda

- Roadmap
- VSE strategy
- z/VSE 5.1 key functions
- 64 bit virtual
- CICS

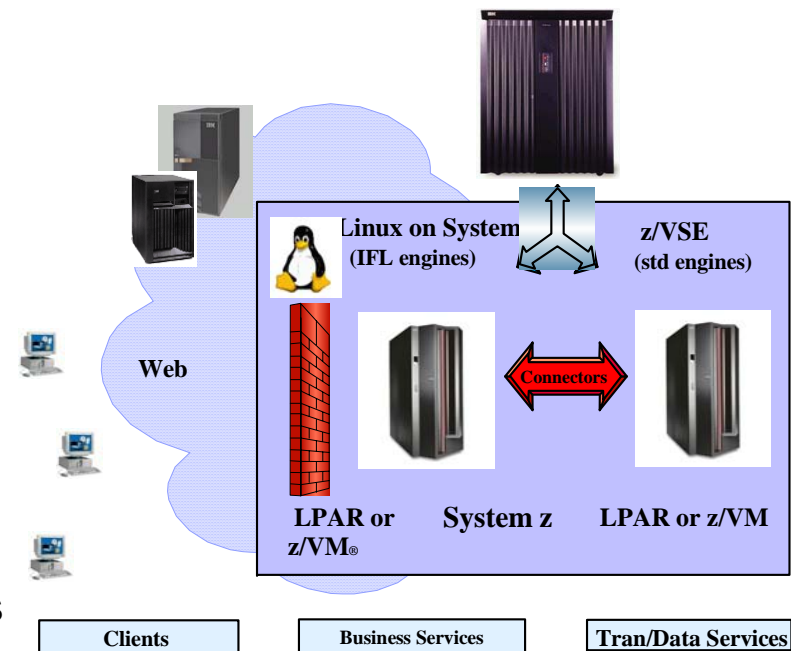
VSE Roadmap



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?



z/VSE 4.3

- Announced: 10/2010, GA: 11/26/2010
- z/VSE 4.3.1 GA: 08/12/2011

- IBM System z10 / z196 / z114 exploitation
 - Dynamically add of CPUs
 - Large (1 megabyte) page support
 - Static power saving mode for SCRT (z196)

- Virtual storage constraint relief for 24 bit (CICS) programs

- 4 digit device addresses (CUUs)

- Basic Security Manager (BSM) will allow to protect MQ resources

- Monitoring agent based on SNMP (Simple Network Management Protocol)

- Linux Fast Path

- Midrange Workload License Charges (MWLC) with sub-capacity mode
 - Sub-Capacity Reporting Tool (SCRT) – available with z/VSE 4.1 and later (z9 / z10 / z196 only)

- FSU from z/VSE 4.1 and 4.2

z/VSE 4.3 Migration Considerations

- Migrate to z/VSE 4.3.1 (+ latest PTF level)
- Parallel Access Volume support
 - Apply the latest Supervisor PTF level
- VSE/VSAM
 - Migration of VSAM catalogs
 - Don't use Fastcopy to migrate VSAM catalogs
 - Flashcopy all VSAM volumes allocated to a VSAM catalog
 - Migrate all recoverable VSAM catalogs to standard VSAM catalogs
 - **Before** the migration to z/VSE 4.3 or z/VSE 5.1
 - PTF for “automatic” migration soon
- CICS
 - CICS Coexistence Environment removed
 - DL/I 1.12 replaces DL/I VSE 1.11 and DL/I DOS/VS 1.10
 - CICS/VSE 2.3 no longer on base tapes

z/VSE V5.1

- Preview: 04/12/2011, Announcement: 10/12/2011, planned GA 11/25/2011
- 64-bit virtual addressing
- Introduces Architectural Level Set (ALS) that requires System z9 or later
- z114, z196 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
- Midrange Workload License Charge (MWLC) pricing with subcapacity option
- z114: Advanced Entry Workload License Charge (AEWLC) pricing with subcapacity option

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
 - VLAN support

- System management enhancements
 - GDPS (Geographically Dispersed Parallel Sysplex) client (in a z/VM guest)
 - SNMP Trap Client Extension monitoring – API

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

- CICS SOD:
 - IBM intends to provide CICS Explorer capabilities for CICS TS for VSE/ESA, to deliver additional value.

All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

VSE Support for System z

VSE Release	z800 / z900	z890 / z990	System z9 / z10 / z196 / z114	VSE EoS
z/VSE V5.1 (GA 4Q/2011)	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

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)
- 4096-bit RSA key support with configurable Crypto Express3 (z10, zEnterprise)
- Statement of general direction: Hipersockets Completion Queue (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
- Static power save mode supported for SCRT (z196 only)

IBM zEnterprise exploitation

- Large page (1 megabyte page) for data spaces
 - Better exploitation of large processor storage
 - No configuration options required
 - Transparent to applications
 - Not supported in z/VM guests

- Dynamic add of logical CPs
 - Ability to dynamically add logical central processors (CPs) without preplanning
 - Logical processor add from HMC/SE
 - Allows adding CPs to LPAR without re-IPL of the z/VSE system
 - Capacity of the z/VSE V4.3 system may be in-/decreased dependent on workload needs
 - New SYSDEF TD parameters (STARTSBY / STOPSBY) to manage the additional CPs
 - Not supported in z/VM guests

```

query dspace
AR 0015          DSIZE  MAX  PARTMAX  COMMAX  VDISK  DFSIZE
AR 0015 DEFINED:  20480K  256    16      20      1     960K
AR 0015 ACTUAL:   6880K   7      4      4      1
AR 0015
AR 0015 AREA DSPS  AREA DSPS  AREA DSPS  AREA DSPS  AREA DSPS  AREA DSPS
AR 0015 BG      1  FB      4  F3      2
AR 0015
AR 0015 MFRAME(31):  0(  0)
AR 0015
AR 0015 1I40I  READY
  
```

```

query td
AR 0015  CPU    STATUS      SPIN_TIME      NP_TIME  TOTAL_TIME  NP/TOT
AR 0015   00    ACTIVE          0             16367     26978     0.606
AR 0015   01    INACTIVE
AR 0015   02    INACTIVE
AR 0015   03    STANDBY
AR 0015
AR 0015  TOTAL          0             16367     26978     0.606
AR 0015
AR 0015                NP/TOT: 0.606          SPIN/(SPIN+TOT): 0.000
AR 0015  OVERALL UTILIZATION:  0%          NP UTILIZATION:  0%
AR 0015
AR 0015  CPU BALANCING:          NOT ACTIVATED
AR 0015
AR 0015  ELAPSED TIME SINCE LAST RESET:          4026069
AR 0015 1I40I  READY
  
```

zEnterprise zManager (HMC) and z/VSE

Hardware Management Console

Ensemble Management > TMCCz196 > Members

Members Virtual Servers Hypervisors Blades Topology

Tasks Selection Zoom Layout

P00D02D5

LP1 LP2 LP3 LP4 LP5 LP6 LP7 LP8 LP9 ZCFE ZCFF ZLPA ZLPB ZLPC ZLPD BladeCenters

TCPIP ZLIN070 ZLIN100 ZLIN106 ZLIN107 ZLXSAP36 ZLXSAP44 ZOS029 ZOS037 ZOS043 ZVSE422 ZVSE510

Total: 29 Selected: 0

Status: Exceptions and Messages

zEnterprise zManager (HMC) and z/VSE

Hardware Management Console

Ensemble Management > TMCCz196 > Members

Members | Virtual Servers | Hypervisors | Blades | Topology

Select	Name	Member	Status	Processors	Memory (MB)	Type	Auto Start	Shutdown Timeout
<input type="checkbox"/>	P00D02D5		Operating			PR/SM		
<input type="checkbox"/>	LP9	P00D02D5	Operating			z/VM	--	300
<input type="checkbox"/>	TCP/IP	P00D02D5	Operating	1	128	z/VM		
<input type="checkbox"/>	ZLIN070	P00D02D5	Operating	2	3,072	z/VM		
<input type="checkbox"/>	ZLIN100	P00D02D5	Operating	2	1,024	z/VM		
<input type="checkbox"/>	ZLIN106	P00D02D5	Operating	4	6,144	z/VM		
<input type="checkbox"/>	ZLIN107	P00D02D5	Operating	1	1,024	z/VM		
<input type="checkbox"/>	ZLXSAP36	P00D02D5	Operating	2	6,144	z/VM		
<input type="checkbox"/>	ZLXSAP44	P00D02D5	Operating	2	6,144	z/VM		
<input type="checkbox"/>	ZOS029	P00D02D5	Operating	4	2,048	z/VM		
<input type="checkbox"/>	ZOS037	P00D02D5	Operating	4	16,384	z/VM		
<input type="checkbox"/>	ZOS043	P00D02D5	Operating	4	16,384	z/VM		
<input checked="" type="checkbox"/>	ZVSE422	P00D02D5	Operating	2	1,024	z/VM		
<input type="checkbox"/>	ZVSE510	P00D02D5	Operating	3	2,048	z/VM		
<input type="checkbox"/>	ZLPA	P00D02D5	Operating			z/VM	--	300

Virtual Server Details: View virtual server details. - Click to launch

Tasks: ZVSE422

- Virtual Server Details
- Toggle Lock
- Daily
 - Activate
 - Deactivate
 - Grouping
- Configuration
 - Delete Virtual Server
 - New Virtual Server Based On
- Monitor
 - Monitor System Events

Status: Exceptions and Messages

zEnterprise zManager (HMC) and z/VSE

Virtual Server Details - ZVSE422 [P00D02D5:LP9:TMCC40]

Name Status **Processors** Memory Network Storage Options Workloads Performance

Initial virtual processors: * 2

Maximum virtual processors: * 2

Share limit: None

Initial share mode: Relative

Initial relative shares: * 2000

OK Apply Cancel Help

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)**

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

IPv6/VSE

- Announced: 04/06/2010, GA 05/28/2010, updated 08/2011
- Full function IPv4 (with November update) 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 frame) and Layer 3 (IP package) support
 - VLAN support
 - On extended base tape

IPv6/VSE - Functionality

- IPv6/VSE's dual stack support: allows IPv6-enabled applications to transparently communicate with partners via either IPv6 or IPv4 network
- IPv6 tunneling: encapsulates IPv6 datagrams within IPv4 packets
allows communication with IPv6 networks, even if local infrastructure is IPv4
- IPv4 and IPv6 enabled applications:
 - FTP server, FTP client
 - Batch FTP client
 - TN3270E server
 - NTP client / server to query time of day to synch TOD clock
 - System logger client to log e.g. z/VSE messages to Linux
 - Batch email client
 - Batch LPR + TN3270E / FTP / DIRECT printer sessions
 - Batch remote execution client
 - Batch PING
 - GZIP data compression
 - REXX automation
 - DBCS support: FTP client / server, LPR, batch email client, GZIP

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/P 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
 - Required for IPv6 communication through the z/VM VMSWITCH
 - Supported by IPv6/VSE
 - Can be used on z/VSE 5.1 only

z/VSE 5.1 Networking Enhancements ...

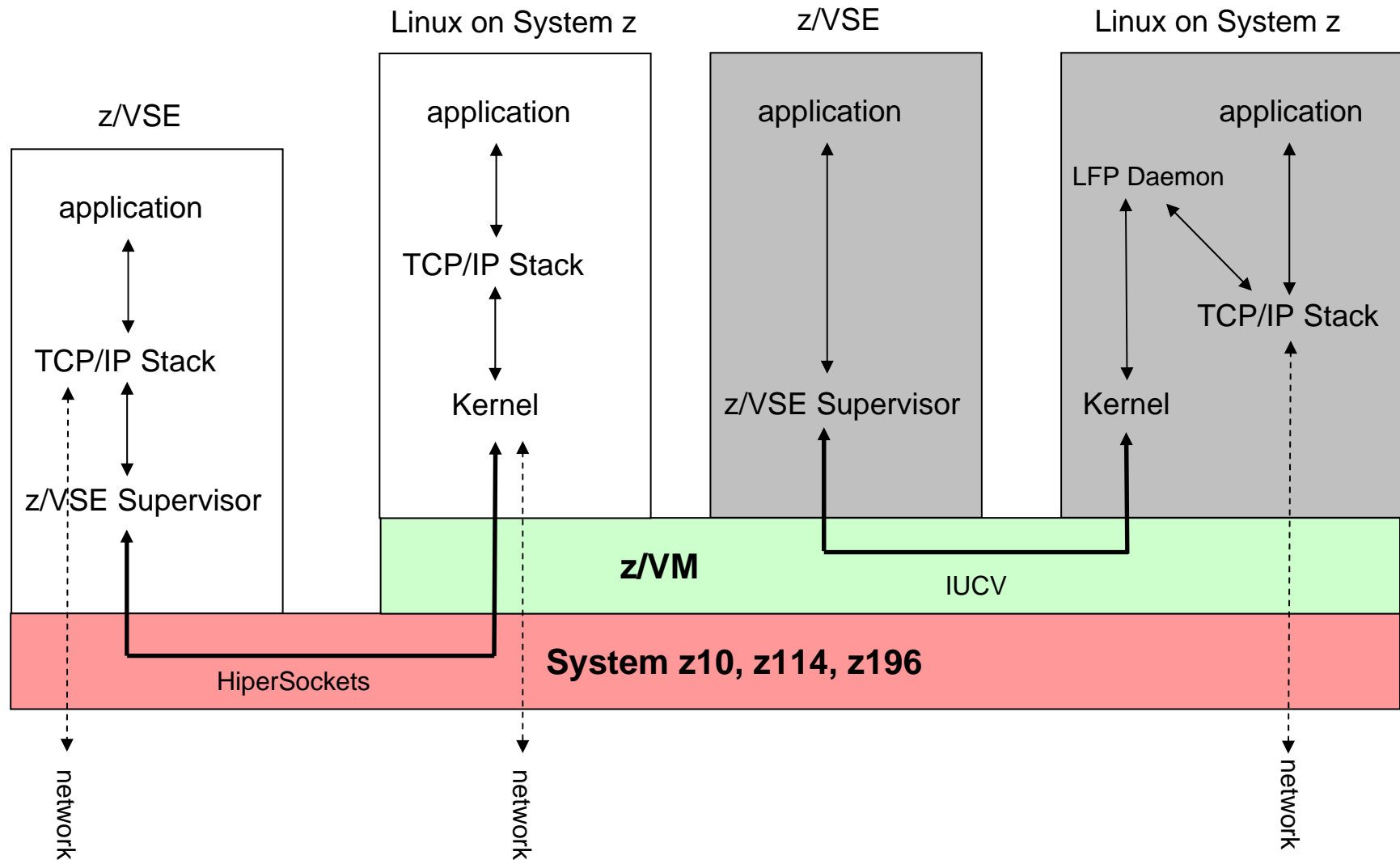
- Virtual LAN (VLAN support)
 - Allows to divide a physical network into separate logical networks
 - For OSA Express and HiperSocket devices
 - Layer 3: VLANs can be transparently used by TCP/IP for VSE/ESA and IPv6/VSE
 - Layer 2: VLANs can be used by IPv6/VSE only

- 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)

Linux Fast Path (LFP)

- Provided with the z/VSE base product – no additional charge (z/VSE 4.3 or higher)
- LFP 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
 - Routes IPv4 or **IPv6** socket request to Linux on System z
 - Without using the local TCP/IP stack
 - 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
- 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 application can exploit LFP**
- System requirements:
 - z/VM 5.4 or higher
 - Linux on System z distribution (min. SLES 10 SP3 or RHEL 5.5)

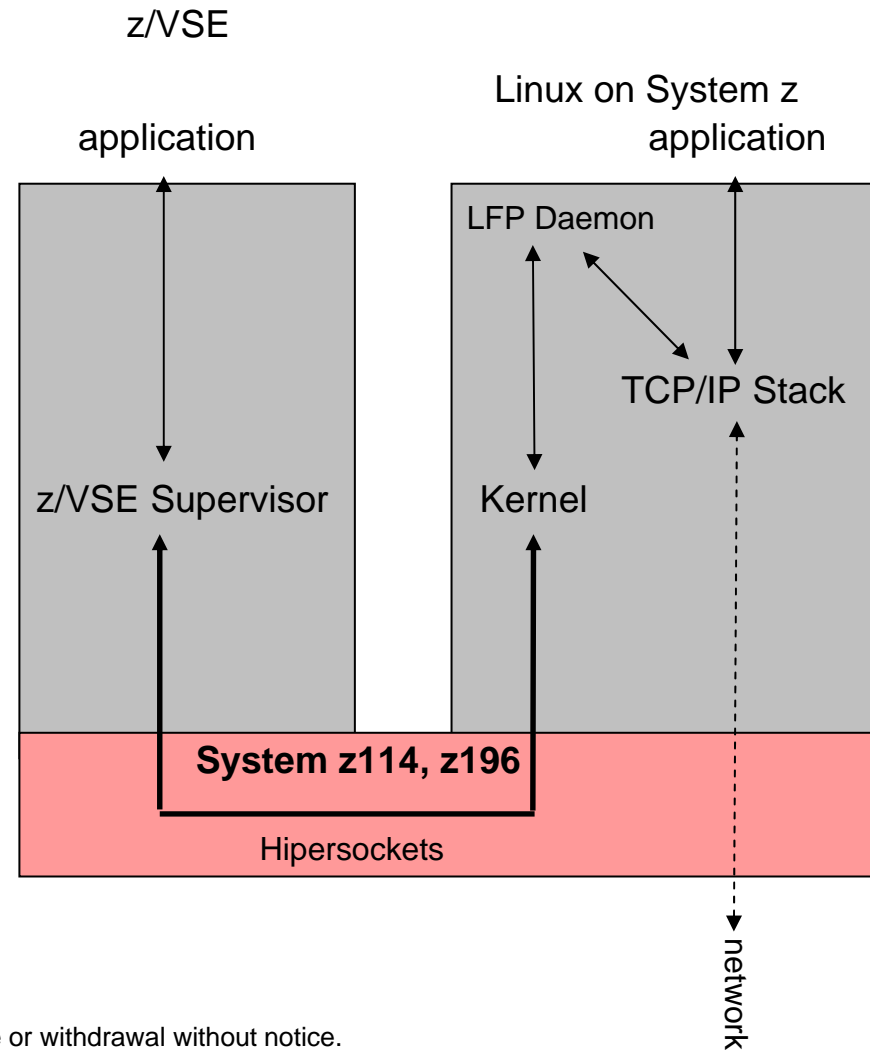
Linux Fast Path (LFP) ...



Linux Fast Path (LFP) ...

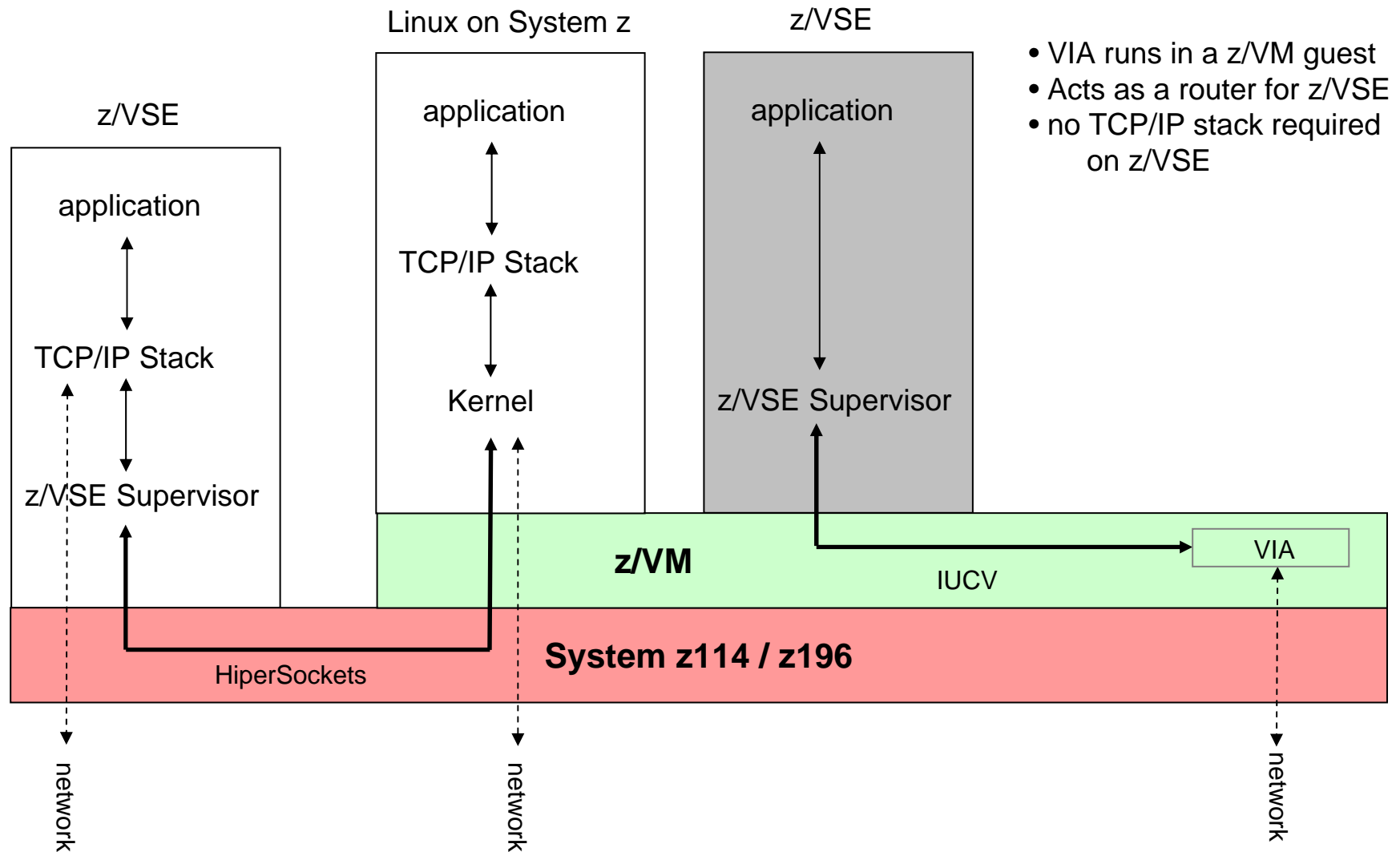
HiperSockets Completion Queue:
 IBM plans to support transferring HiperSockets messages asynchronously, in addition to the current synchronous manner on z196 and z114. This could be especially helpful in burst situations. The Completion Queue function is designed to allow HiperSockets to transfer data synchronously if possible and asynchronously if necessary, thus combining ultra-low latency with more tolerance for traffic peaks. HiperSockets Completion Queue is planned to be supported in the z/VM and z/VSE environments.

See IBM Hardware Announcement 111-136, July 12, 2011



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

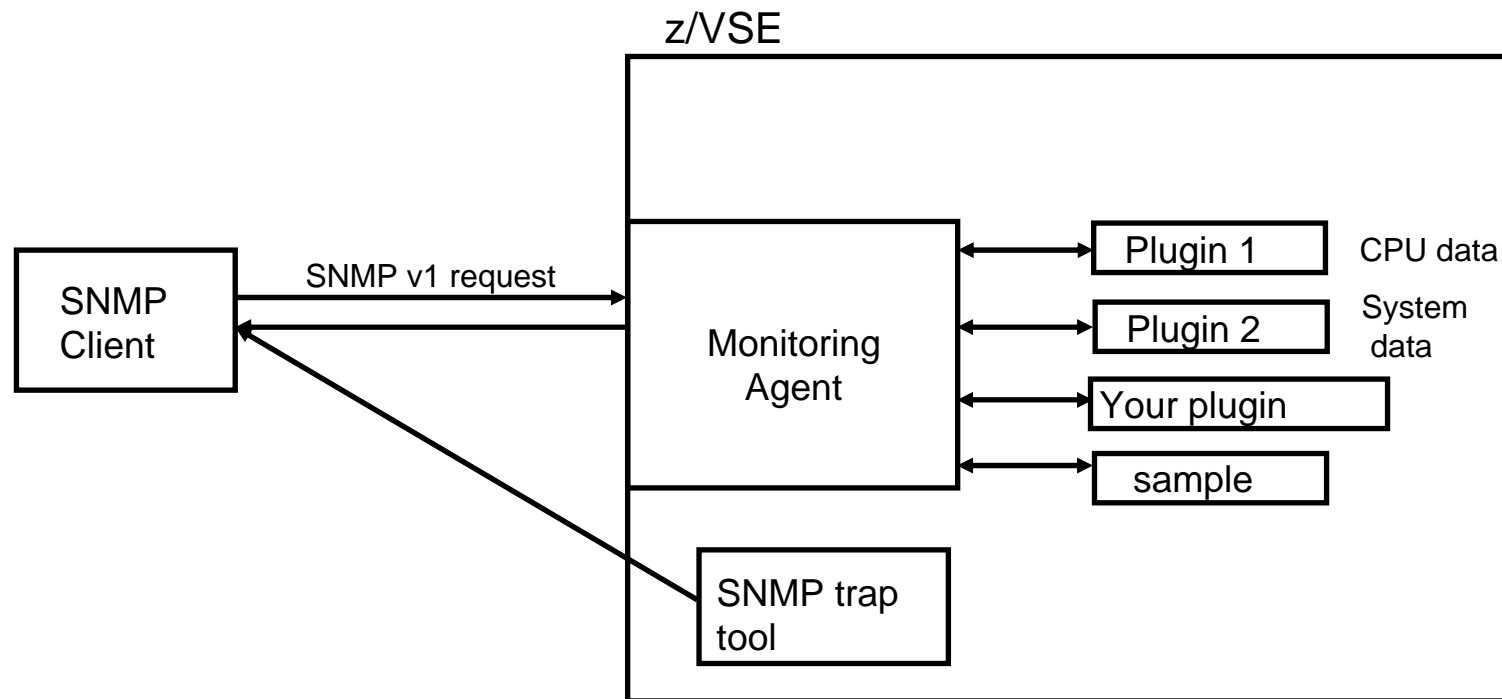


- VIA runs in a z/VM guest
- Acts as a router for z/VSE
- no TCP/IP stack required on z/VSE

Connectors

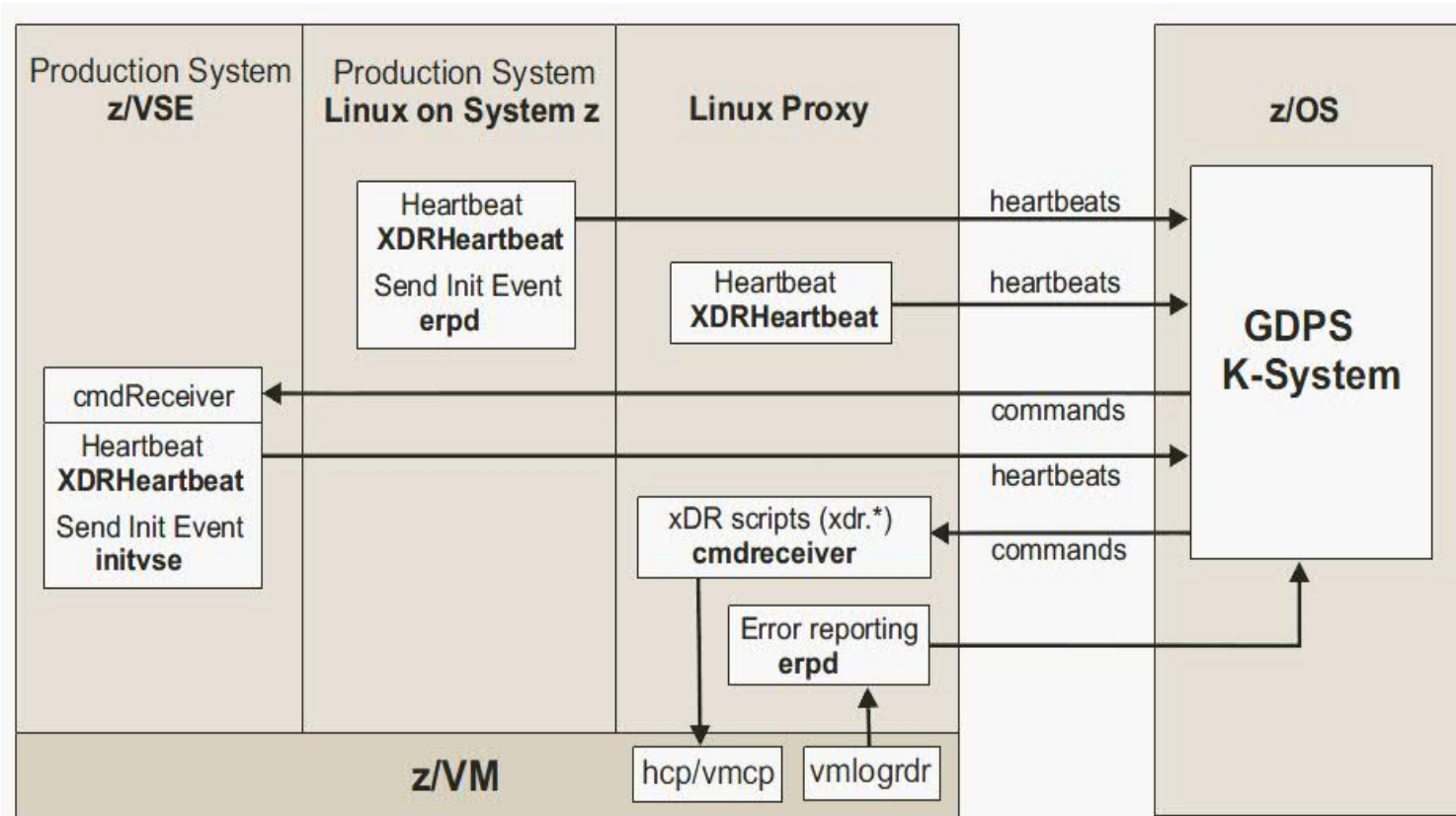
■ SNMP Connector

- 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**



Connectors

- 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
 - For high availability and disaster recovery environments



z/VSE 5.1: 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

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 1140I  READY
```

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        OK       OK
AR 0015 LF64ONLY:  NO
AR 0015 1I40I  READY
```


IARV64 Macro

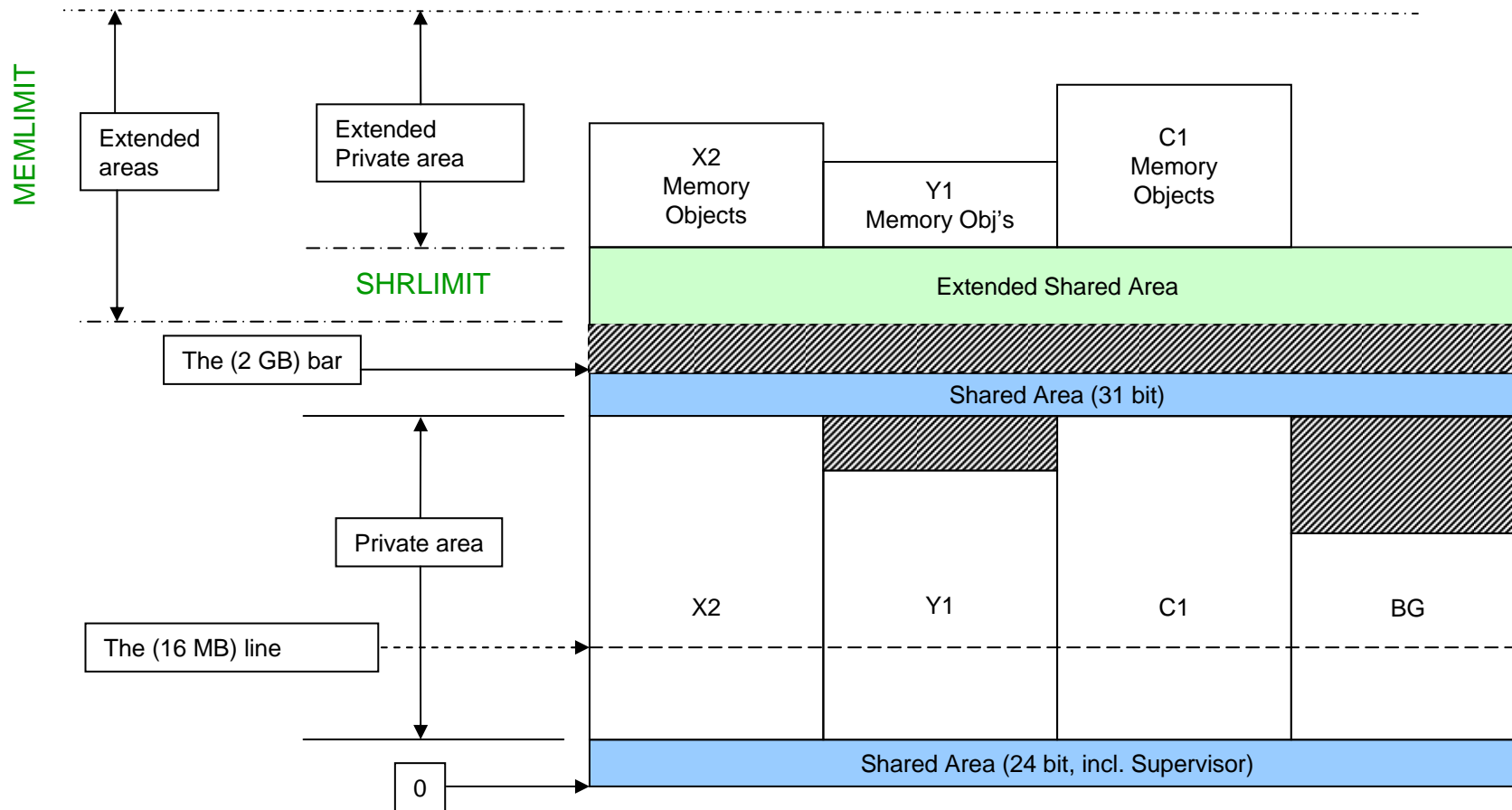
- IARV64 macro - ported from z/OS – provides services to
 - Creates and frees storage areas above the bar
 - Manage the physical frames behind the storage

- 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

64 bit virtual - Address Space Layout



64 bit virtual - Considerations

- Memory objects can be allocated for data only.
RMODE 64 is not supported. Interrupt handlers do not support execution above the bar.
- High level languages (COBOL, PL/I, C, RPG, ...) do not support AMODE 64.
 - High Level Assembler support only.
- LOAD / CDLOAD and the linkage editor do not support AMODE 64.
- Space switching Program Calls (ss-PCs) are not supported in AMODE 64.
- All z/VSE system services (Supervisor, VSAM, BAM, DL/I, ...) to be called in AMODE 24 / 31.
- Data areas for system services including I/O buffers to be allocated below the bar.
- The Supervisor code continues to use the short form of the PSW (8 byte).
- 64 bit addressing is not supported in ICCF pseudo partitions.
- CICS services **do not** support 64 bit registers or AMODE 64.

CICS

- z/VSE 4.3 will no longer offer CICS/VSE 2.3 as part of the z/VSE 4.3 base
 - Fulfills the statement of direction in announcement from October 9, 2007
 - Coexistence environment removed which includes DL/I V1.10
 - Migration from CICS/VSE to CICS TS on z/VSE 4.2 or earlier
 - Most migration inhibitors should be removed with recent improvements
 - Basic Security Manager (BSM) enhancements
 - More tasks
 - Virtual constraint relief

CICS ...

- CICS/VSE 2.3
 - Not supported on z/VSE 5.1
 - End of service: 10/31/2012

- 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
 - Optional product of z/VSE 4.3 (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

CICS TS for VSE/ESA SOD

- SOD: IBM intends to provide CICS Explorer capabilities for CICS TS for VSE/ESA, to deliver additional value.
 - New face to CICS
 - Integration point for CICS tooling
 - System management tools
 - Eclipse-based user interface on workstation
 - Connects to CICS TS via TCP/IP
 - Communication via HTTP requests

The screenshot displays the IBM CICS Explorer BETA application window. The main area shows a table of CICS jobs. The table has the following columns: Region, Job Name, MVS Syst..., Task Count, CICS Status, CICS TS L..., Total CPU, Page In C..., Page Out ..., and I/O Count. One row is visible with the following data: Region: PRODCI..., Job Name: CICS2, MVS Syst...: ?, Task Count: 4, CICS Status: ACTIVE (with a green checkmark), CICS TS L...: ?, Total CPU: 0000:00:0..., Page In C...: ?, Page Out ...: ?, and I/O Count: ?.

Region	Job Name	MVS Syst...	Task Count	CICS Status	CICS TS L...	Total CPU	Page In C...	Page Out ...	I/O Count
PRODCI...	CICS2	?	4	ACTIVE	?	0000:00:0...	?	?	?

The interface also includes a left-hand pane with a tree view showing 'Server: CIC2' and 'PRODCICS (1/1)' with a sub-entry 'PRODCICS (PRODCICS)'. The top menu bar includes Explorer, Edit, Project, Operations, Administration, RTA, WLM, Search, Window, and Help. The bottom status bar shows 'CNX0100I Connected user SYSA to hos...boeblingen.de.ibm.com on port 27283' and 'CICS VSE'.

IBM CICS Explorer BETA

Explorer Edit Project Operations Administration RTA WLM Search Window Help

CICSplex Expl CICSplex Rep

Server: CIC2

Regions ISC/MRO Connections Terminals Files Transactions Terminal Definitions TD Queues

CNX0211I Context: PRODCICS. Resource: TERMNL. 66 records collected at 11.04.2011 16:47:22

Region	Name	Network ...	Acquire S...	Service St...	ATI Status	TTI Status	Session S...	User ID	Transacti...
PRODCI...	-AAJ	TMPLETE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAK	TMPLETE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAL	TMPLETE1	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAM	TMPLETE2	RELEASED	✓ INSER...	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAN	TMPLETE3	RELEASED	✓ INSER...	ATI	TTI	NOCREATE	CICSUSER	
PRODCI...	-AAO	TMPLETE3	RELEASED	✓ INSER...	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAP	TMPLETE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAQ	TMPLETE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAR	TMPLETE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAS	TMPLETE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAT	TMPLETE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAU	TMPLETE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAV	TMPLETE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAW	TMPLETE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAX	TMPLETE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	-AAY	TMPLETE3	RELEASED	OUTSERVICE	ATI	TTI	CREATE	CICSUSER	
PRODCI...	A000	D3010001	ACQUIRED	✓ INSER...	ATI	TTI	CREATE	CICSUSER	
PRODCI...	CBRF	CBRF	RELEASED	✓ INSER...	ATI	TTI	NOCREATE	CICSUSER	
PRODCI...	CERR		NOTAPPLIC	✓ INSER...	NOATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CNSL		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CO01		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CO02		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CO03		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CO04		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CO05		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CO06		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CO07		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CO08		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CO09		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CO10		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	
PRODCI...	CO11		NOTAPPLIC	✓ INSER...	ATI	TTI	NOTAPPLIC	CICSUSER	

Events Properties Error Log

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CICS VSE

IBM CICS Explorer BETA

Explorer Edit Project Operations Administration RTA WLM Search Window Help

CICS SM

Regions ISC/MRO Connections Terminals Files Transactions Terminal Definitions TD Queues

CNX0211I Context: PRODCICS, Resource: LOCFILE, 14 records collected at 11.04.2011 16:47:34

Name:

Region	Name	Status	Open Status	Add	Browse	Delete	Read	Update	LSR Pool ID
PRODCI...	BSTCNTL	✓ ENABLED	CLOSED	ADDABLE	BROWSABLE	DELETABLE	READABLE	UPDATABLE	0
PRODCI...	DFHCSD	UNENABLED	CLOSED	ADDABLE	BROWSABLE	DELETABLE	READABLE	UPDATABLE	1
PRODCI...	EZACACH	✓ ENABLED	CLOSED	ADDABLE	BROWSABLE	DELETABLE	READABLE	UPDATABLE	1
PRODCI...	EZACONF	✓ ENABLED	CLOSED	ADDABLE	BROWSABLE	DELETABLE	READABLE	NOTUPDA...	1
PRODCI...	IESCNTL	✓ ENABLED	OPEN	ADDABLE	BROWSABLE	DELETABLE	READABLE	UPDATABLE	1
PRODCI...	IESLDUM	✓ ENABLED	CLOSED	ADDABLE	BROWSABLE	DELETABLE	READABLE	UPDATABLE	1
PRODCI...	IESPRB	✓ ENABLED	OPEN	ADDABLE	NOTBRO...	NOTDELET...	READABLE	UPDATABLE	1
PRODCI...	IESROUT	UNENABLED	CLOSED	ADDABLE	BROWSABLE	DELETABLE	READABLE	UPDATABLE	1
PRODCI...	IESTRFL	✓ ENABLED	OPEN	NOTADDA...	NOTBRO...	NOTDELET...	READABLE	NOTUPDA...	1
PRODCI...	INWFILE	✓ ENABLED	CLOSED	ADDABLE	BROWSABLE	DELETABLE	READABLE	UPDATABLE	1
PRODCI...	RFSDIR1	✓ ENABLED	CLOSED	ADDABLE	BROWSABLE	DELETABLE	READABLE	UPDATABLE	1
PRODCI...	RFSDIR2	✓ ENABLED	CLOSED	ADDABLE	BROWSABLE	DELETABLE	READABLE	UPDATABLE	1
PRODCI...	RFSPOL1	✓ ENABLED	CLOSED	ADDABLE	BROWSABLE	DELETABLE	READABLE	UPDATABLE	1
PRODCI...	RFSPOL2	✓ ENABLED	CLOSED	ADDABLE	BROWSABLE	DELETABLE	READABLE	UPDATABLE	1

Events Properties Error Log

Name:

CNX0100I Connected user SYSA to hos...boeblingen.de.ibm.com on port 27283

CICS VSE

IBM CICS Explorer BETA

Explorer Edit Project Operations Administration RTA WLM Search Window Help

CICSplex Explore CICSplex Reposit Server: CIC2

Regions ISC/MRO Connections Terminals Files Transactions Terminal Definitions TD Queues

CNX0211I Context: PRODCICS. Resource: LOCTRAN. 259 records collected at 11.04.2011 16:47:05

Region	Name	Status	Use Count	Program	Priority	Transactio...	Purgeability	Dumping	Routing
PRODCICS	cler	✓ ENABLED	0	CEL4RTO	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	disc	✓ ENABLED	0	CLIENT01	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	emai	✓ ENABLED	0	CLIENT01	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	ftp	✓ ENABLED	0	FTP01	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	iccf	✓ ENABLED	0	DTSICCF	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	lpr	✓ ENABLED	0	CLIENT01	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	newc	✓ ENABLED	0	EDCCNEWC	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	ping	✓ ENABLED	0	CLIENT01	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	rexe	✓ ENABLED	0	CLIENT01	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	ropc	✓ ENABLED	0	EDCYCROP	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	teln	✓ ENABLED	0	TELNET01	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	trac	✓ ENABLED	0	CLIENT01	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	APVU	✓ ENABLED	0	INWPCCOM	20	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	ARPS	✓ ENABLED	0	DFH\$ARPS	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	CATA	✓ ENABLED	1	DFHZATA	255	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CATD	✓ ENABLED	0	DFHZATD	255	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CATR	✓ ENABLED	1	DFHZATR	255	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	CCIN	✓ ENABLED	0	DFHZCN1	254	DFHCOMCL	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CDS	✓ ENABLED	0	DFHZATS	255	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CEBR	✓ ENABLED	0	DFHEDFBR	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	CECI	✓ ENABLED	0	DFHECIP	1	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CECS	✓ ENABLED	0	DFHECSP	1	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CEDA	✓ ENABLED	0	DFHEDAP	1	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CEDB	✓ ENABLED	0	DFHEDAP	1	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CEDC	✓ ENABLED	0	DFHEDAP	1	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CEDF	✓ ENABLED	0	DFHEDFP	1	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CEDX	✓ ENABLED	0	DFHEDFP	1	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CEGN	✓ ENABLED	0	DFHCEGN	255	DFHTCL00	PURGEABLE	TRANDUMP	STATIC
PRODCICS	CEHP	✓ ENABLED	0	DFHCHS	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	CEHS	✓ ENABLED	0	DFHCHS	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	CEMS	✓ ENABLED	0	DFHEMSP	1	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC
PRODCICS	CEMT	✓ ENABLED	0	DFHEMTP	255	DFHTCL00	NOTPURGE...	TRANDUMP	STATIC

Events Properties Error Log

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CICS VSE

More Information

... on VSE home page: <http://ibm.com/vse>

- Hints and Tips for :
 - z/VSE V4.2: <ftp://ftp.software.ibm.com/eserver/zseries/zos/vse/pdf3/zvse41/hint9mm2.pdf>
 - z/VSE V4.3: available soon

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

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

 - Security on IBM z/VSE
<http://www.redbooks.ibm.com/redpieces/abstracts/sg247691.html>
New draft: <http://www.redbooks.ibm.com/Redbooks.nsf/RedpieceAbstracts/sg247691.html?Open>

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