

z/OS Version 1.4 Consoles Enhancements

Console Restructure, One-Byte ID Tracker and System Console Availability



Multisystem Consoles in a Sysplex



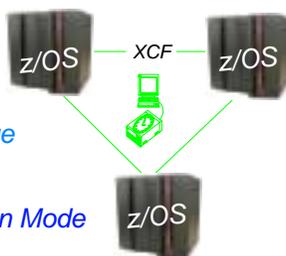
H/W Integrated Console



One per image

System Console

- IPL
- Problem Determination Mode
- (NIP Console)



MCS Console (Non-SNA)



Max 99 in a sysplex

- Master Console
- Status Display Console
- MCS Message Stream Console
- (NIP Console)
- (SUBSYSTEM)

MCS and EMCS Consoles:

- ▶ Can be active on any system in a sysplex
- ▶ Can operate any system in a sysplex
- ▶ Can receive messages from any system in a sysplex
- ▶ Can have alternates on any system(s) in the sysplex

MCS Sysplex Features:

- ▶ Sysplex wide AMRF
- ▶ Reply IDs are unique in a sysplex (range 99 - 9999)
- ▶ CPF, CMDSYS and ROUTE command for command routing
- ▶ MSCOPE for console message screening by system

Extended MCS Console



MCSOPER
MCSOPMSG
MGCRE

Number unlimited

- Programmable
- Full function console
- TSO/E
- NetView
- SDSF

Consoles in a Sysplex



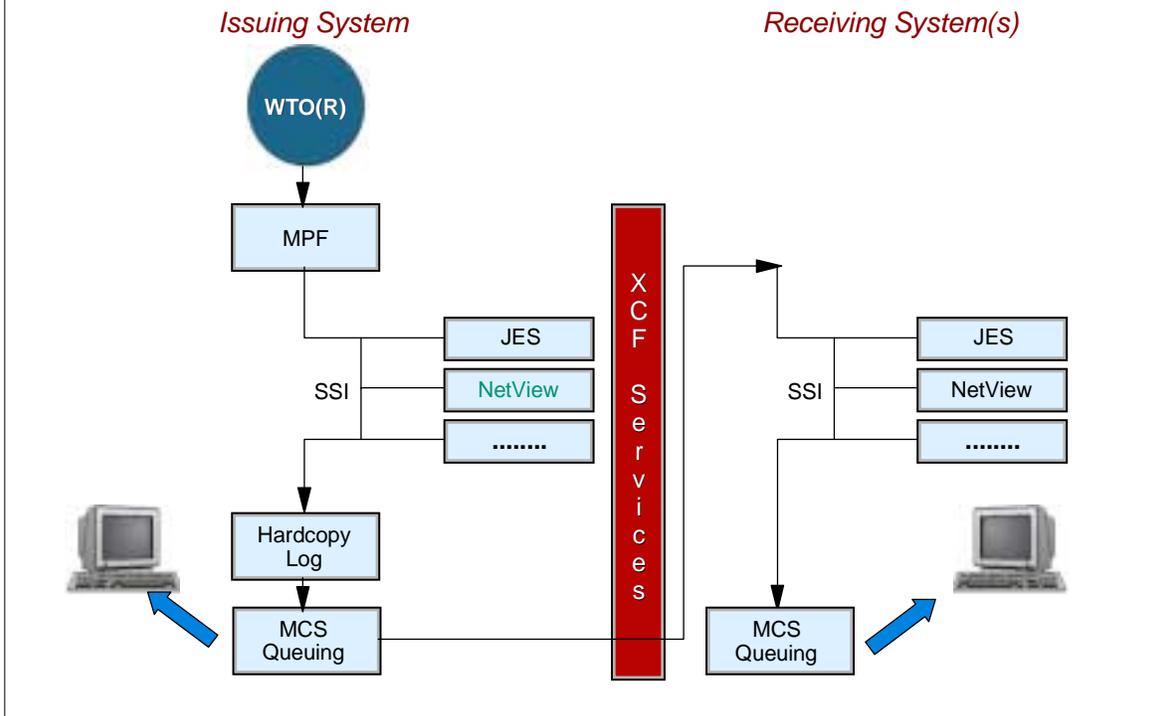
- ❑ Single master console for sysplex
 - Any console may have master authority
- ❑ Consoles attached to any system
- ❑ Sysplex-wide control from any console
 - MCS consoles
 - Extended MCS consoles
 - System console
 - Netview consoles
 - TSO CONSOLE mode consoles

Multisystem Consoles in a Sysplex



- ❑ Single system image
 - Attached to any system
 - Not separate consoles for every system
- ❑ Single point of control
 - Receive messages from any system in the sysplex
 - Route commands to any system in the sysplex

Message Flow in a Sysplex



Reasons for Console Restructure



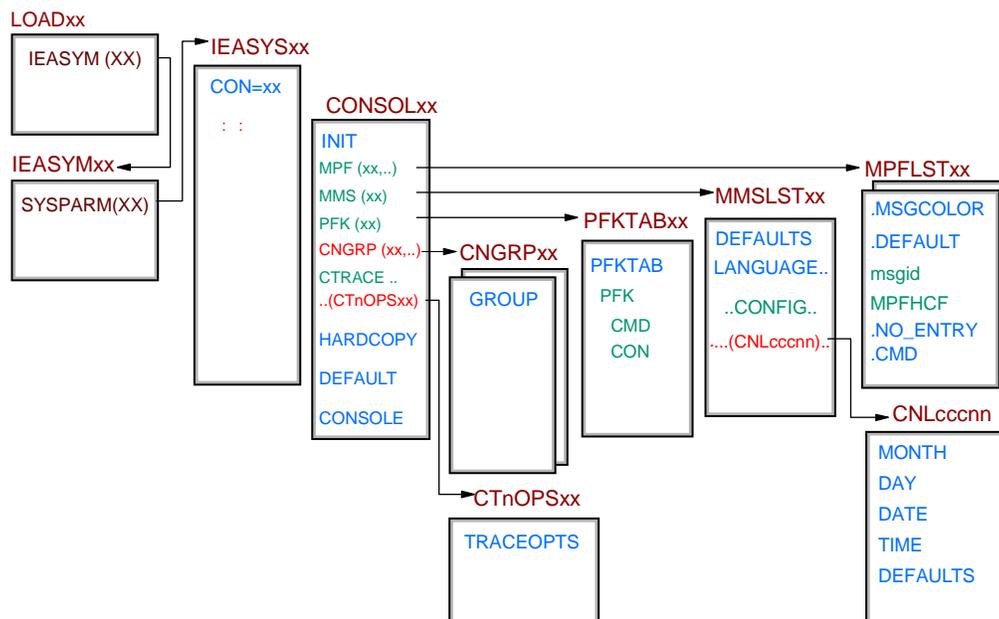
- Problems seen with current console implementation**
 - Runaway application can kill a system
 - Large systems can overwhelm small systems
 - All queuing decisions are made from a single task
- Prone to backups and storage overloads**
 - Traffic to a particular console
 - SYSLOG
 - Un-ended multiline WTOs
- Inflated importance on a single message**
 - Delivery of all messages considered the overriding responsibility
- Inflated importance of MCS consoles**

Consoles Restructure Components



- ❑ Console restructure - Console availability enhancements
 - Runaway application can kill a system
 - Large systems can overwhelm small systems
 - All queuing decisions are made from a single task
- ❑ System console availability
- ❑ One-byte ID tracker

Console Related Parmlib Members



CONSOLxx in a Sysplex



- ❑ Two or more systems in a sysplex
 - Code separate CONSOLxx each system
 - Code a single CONSOLxx for all systems
- ❑ Sysplex scope parameters
 - NAME, MSCOPE, CMDSYS, SYSTEM - (CONSOLE)
 - RLIM, AMRF, CNGRP, ROUETIME - (INIT)
 - RMAX - (DEFAULT)

CONSOLxx - CONSOLE Statement



- ❑ Console device numbers
 - Same number on multiple systems - separate CONSOLxx
 - Using system symbols allows a single member
 - Unique numbers on all systems - single CONSOLxx
- ❑ NAME(conname) - console name
 - Choose name to identify console
 - Be aware of possible EMCS name, userids,
 - **(Console restructure)**
 - The NAME keyword is now required
 - Except for the system console where the code will continue to create a name if none is supplied
 - The console definition is rejected if no name is specified

CONSOLxx - CONSOLE Statement



Receiving messages not explicitly routed to it

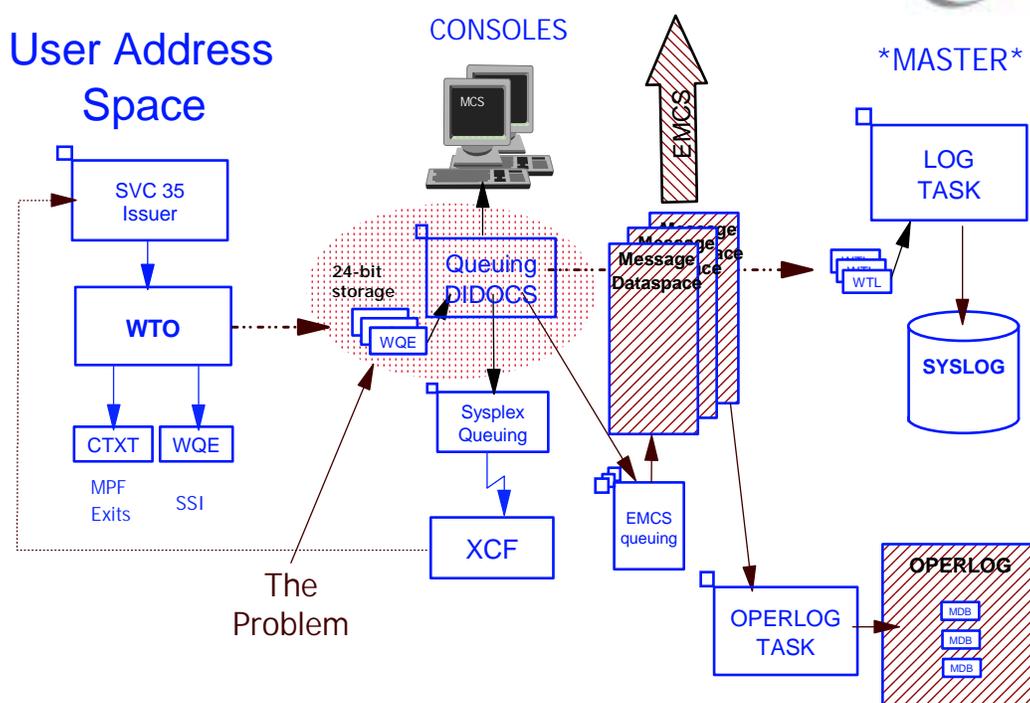
```
MSCOPE {(sysname|*[,sysname]...)}  
        {(*ALL)}
```

If a console has *ALL or multiple sysnames

```
VARY CN(ROGERS),MSCOPE=SC50
```

The MSCOPE of the system console now defaults to * instead of *ALL (**Console restructure**)

Message Processing before Restructure



Console Restructure Design Changes



- ❑ Eliminate outages due to a flood of WTOs or DOMs
 - Reduce reliance on one main task
 - Message cache data space
 - Queuing independence
 - Deliver message to syslog/operlog from caller's unit of work
 - Do not queue MLWTOs for delivery until message is complete

Multi-line Message Changes



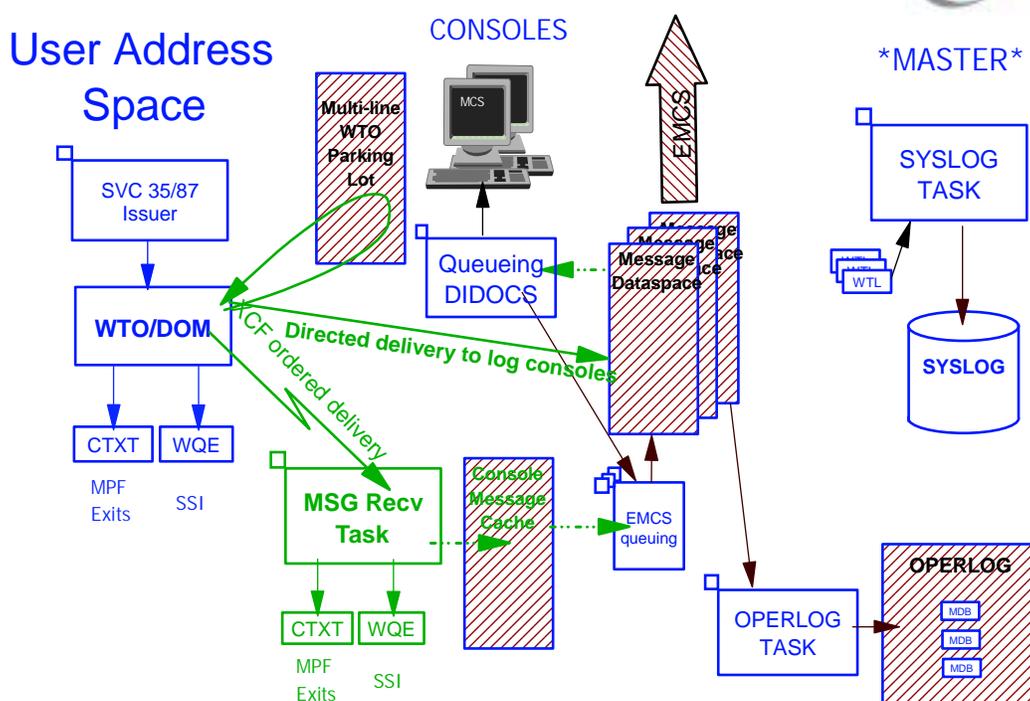
- ❑ Multi-line messages that are built dynamically using CONNECT processing will be held in a dataspace until complete
 - Not queued to a console or hardcopy until completed
 - Each line sent to message exits and SSI as issued
 - Un-ended messages will be ended at EOT or after a period of inactivity
 - MTRACE is performed for each line as it arrives

Console Restructure Design Changes



- ❑ System/Sysplex is more important than any message
- ❑ Lose messages to maintain healthy (message will still go to hardcopy and possibly some targets)
- ❑ Provide means to avoid effects of fast producer / slow consumers
- ❑ Remove reliance on a single task for queuing decisions
- ❑ Do more processing under the SVC 35 (WTO) and SVC 87 (DOM) issuers thread
- ❑ Use updated XCF services for transport
- ❑ Eliminate effects of poorly behaved issuers of multiline WTOs

Message Processing after Restructure



Console Externals Deleted



- ❑ **HARDCOPY** statement in **CONSOLxx**

- devnum deleted

```
HARDCOPY  DEVNUM  {(devnum)      }  
                {(SYSLOG)      }  
                {(OPERLOG)     }  
                {(devnum,OPERLOG)}  
                {(SYSLOG,OPERLOG)}
```

Hardcopy can only be directed to SYSLOG and/or OPERLOG

Console Externals Deleted



- ❑ The **HCPYGRP** keyword on the **HARDCOPY** statement in **CONSOLxx** is no longer accepted
- ❑ The **R=** parameter on the **CONTROL Q** command is no longer supported
 - Can no longer redirect backed up messages to another console

System Console Availability



- ❑ System Console Availability is a RAS item
- ❑ **Provide an automated way to indicate when the system console should be in PD mode to handle operator instructions**
- ❑ SMCS consoles cannot be activated until VTAM or TCPIP is active
 - z/OS V1R1 introduced SMCS consoles as an alternative to MCS consoles
- ❑ System consoles do not normally run in a full function mode (PD mode)
 - A command (V CN(console),ACTIVATE) is required to enter this mode
- ❑ In the gap between NIP and VTAM/TCPIP activation there are no 'ready' consoles.

System Console Availability Problem



- ❑ Currently, installations that wish to eliminate their MCS consoles are faced with the following problem
 - System IPLed with System Console
 - After NIP, System Console is not in PD-MODE
 - Messages may have been lost
 - Manual operator intervention required to get into PD-mode
 - After operator's console is activated system console must be manually removed from PD-mode

System Console Availability Solution



- ❑ System console availability can be achieved through the definition of a console group in PARMLIB
 - CONSOLE DEVNUM(SYSCONS)
 - AUTOACT(groupname)
- ❑ System console will automatically be placed in PD-mode if none of the consoles in the group are active
- ❑ System console is automatically removed from PD-MODE when any of the consoles in the group are active

System Console Changes



- ❑ Utilizing console restructure
 - The function is integral to running the operating system
- ❑ Utilizing system console availability - AUTOACT
 - Create a group in CNGRPxx parmlib member containing the consoles which can "replace" the system console
 - Specify AUTOACT(groupname) on the CONSOLE statement in CONSOLxx for the system console
 - Alternatively, the group can be activated dynamically through the use of the:
 - SET CNGRP and
 - V CN(syscons),AUTOACT commands

Console Externals Changes



- ❑ The ALTERNATE keyword on the CONSOLE statement no longer accepted
 - Must use ALTGRP for specifying back-up consoles
- ❑ Undelivered messages (UD) are no longer detected
 - UD keyword on the CONSOLE and HARDCOPY statements in CONSOLxx is no longer accepted
 - UD keyword no longer supported on the VARY CONSOLE and VARY HARDCOPY commands

One-byte Console ID Overview



- ❑ Future enhancements to the consoles components will require a redefinition of the console id field
- ❑ In z/OS V1R7 the one-byte console id will no longer be valid
- ❑ To aid in finding and eliminating users of one-byte console ids a service has been created.
 - Tracks 1-byte users on: WTO, MPF, SSI, MGCR/MGCRE, CONVCON, MCSOPER
 - Allows hooks into the same infrastructure for customers/vendors to track users of 1-byte console ids in their code

One-byte Console ID Solution



- ❑ Service is provided to detect and record instances of one-byte id usage
 - Command interface to activate / deactivate the service and to display the list of uses
- ❑ Programmable Interface is provided for customers and vendors to track usages in other interfaces
 - Requires hooks into existing code

Utilizing One-byte ID Tracker



- ❑ To track usages on the console component interfaces
 - Operator command to control the activation of the service SETCON TRACKING=ON/ONWITHABEND/OFF
 - Display 'violators' via the following command
 - DISPLAY OPDATA,TRACKING
 - Known instances can be ignored through the specification of CNIDTRxx member in SYS1.PARMLIB.
- ❑ To track other instances of 1-byte console ids
 - Initialize the CNZTRPL parameter list
 - Includes data that describes what is being tracked
 - Includes the 'bad' console id being used
 - Invoke the CNZTRKR service, passing the CNZTRPL parameter list

D OPDATA,TRACKING command



```

CNZ1001I 10.53.40 TRACKING DISPLAY
  STATUS=ON,ABEND NUM=08   MAX=1000 MEM=n/a EXCL=0   REJECT=0
  ----TRACKING INFORMATION----- -VALUE-- JOBNAME  PROGRAM+OFF-- ASID NUM
  Parmlib Reader: ADYSET00           00 *MASTER* ADYSETP   1BD8   01   1
  Parmlib Reader: COFVLF04           00 VLF        COFMINIT  2EFE   18   1
  Parmlib Reader: IEFSSN00           00 *MASTER* IEEMB860  9E2A   01   1
  Parmlib Reader: SMFPRM00           00 SMF        IFASMF    ECBE   19   1
  WTO: CNZ1234I                      00 CNZJ       MOD1      1B0AC  14   2
  WTO: CNZ1234I SYSTEM ZZ13 IS       A3 CNZJ       MOD2         9A   09   2
  WTO: CNZ1234I SYSTEM ZZ13 IS       B0 CNZJ       MOD2         9A   09   5
  WTO: CNZ5888E UH OH                 00 CNZEND     MOD3      1288  18   1
  
```

Example CNIDTRxx Parmlib Member



```

*                               Jobname  Pgmname                               *
* Tracking Information Mask      Mask      Mask      Comments (ignored)                    *
*-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
CONVCON                          |*       |AJOB     | AJOB ISSUES CONVCON |
MCSOPER: *                       |MAINAS  |EMCSCON  | EMCSCON GETS MIGID  |
MGCR: *                          |SS2     |THESS20  |                      |
MGCR: *                          |*       |MYASIS   |                      |
PARMLIB READER: IEFSSN??         |*MASTER*|IEEMB860 |                      |
WTO: IEF452I *                   |*       |IEFNB903 |                      |
WTO: IEF677I WARNING MESSAGE|*       |IEFNB903 |                      |
***** Bottom of Data *****
  
```

Migration - Coexistence Considerations



❑ Compatibility requirements

- All systems in a sysplex must be at either
 - z/OS 1.5
 - z/OS V1R4M2 with SDSF APAR PQ73805 installed
 - z/OS V1R4 with APAR OW56244 and SDSF APAR PQ73805 installed
 - Have APAR OW56244 installed on any level between OS/390 V2R10 and z/OS V1R3