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SDSF: What’s New in z/OS 1.12?
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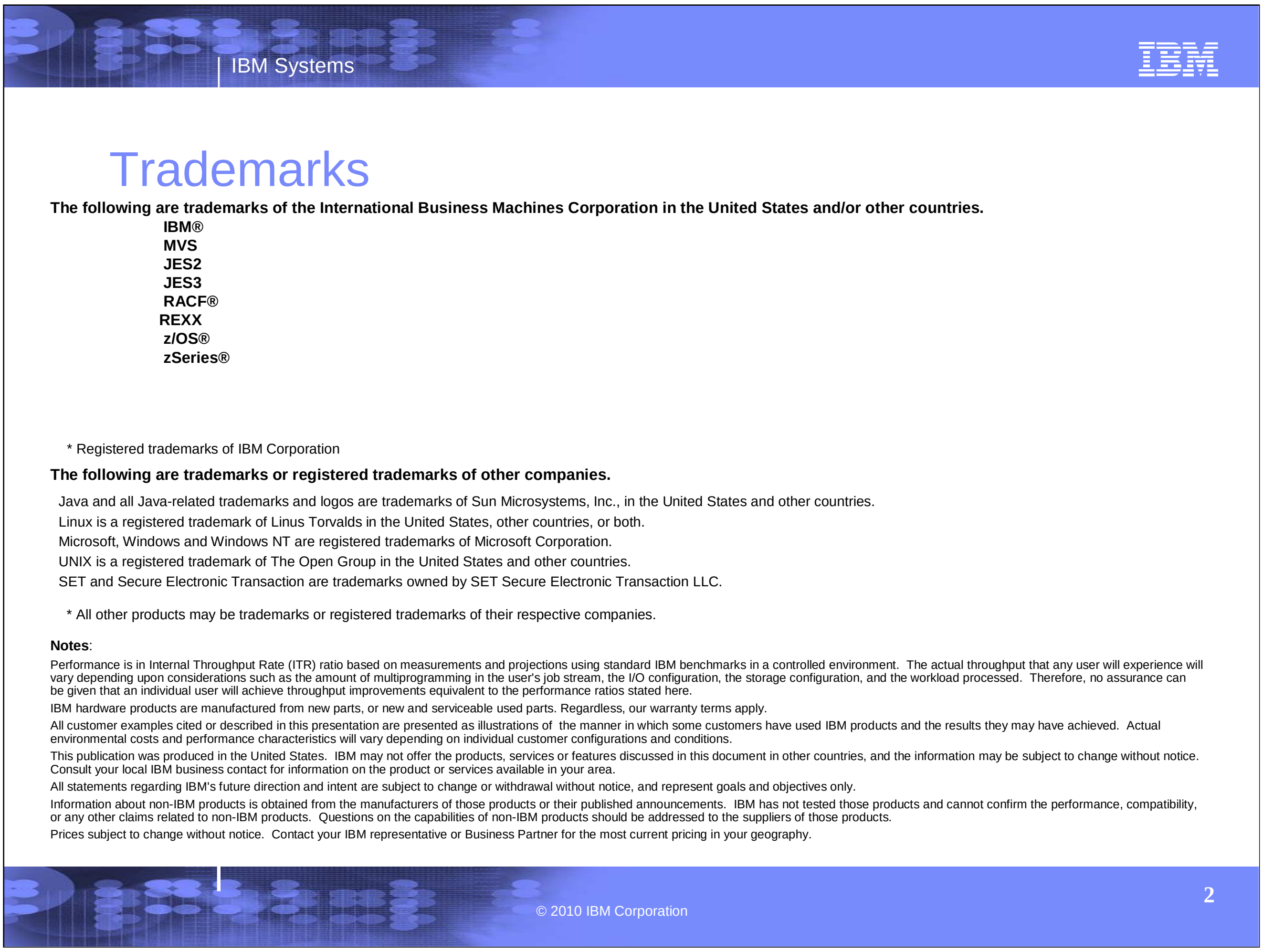
In z/OS 1.12 SDSF, several new functions are introduced, including additional JES3 support, a Health Checker History display, and support for Java.



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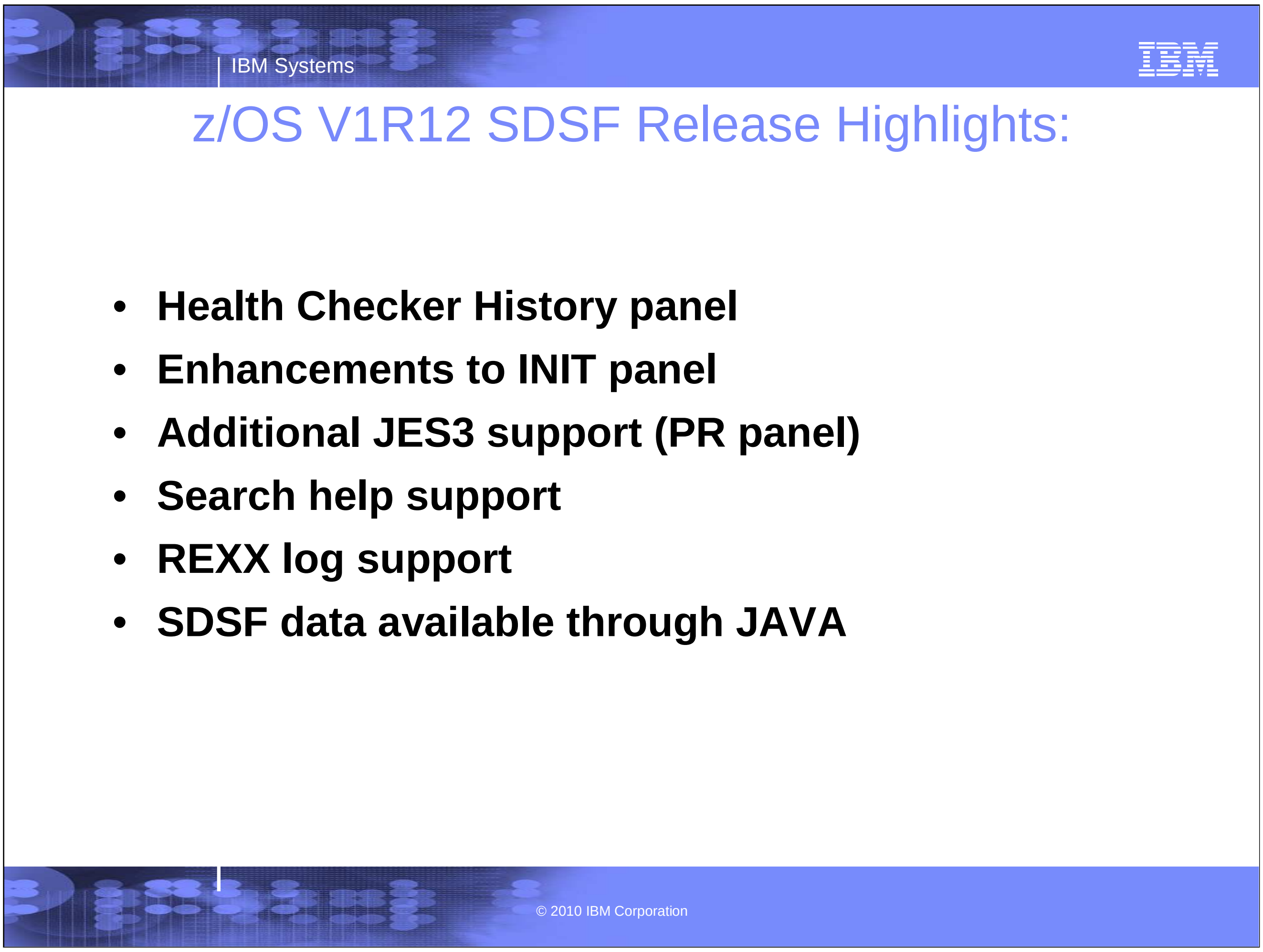

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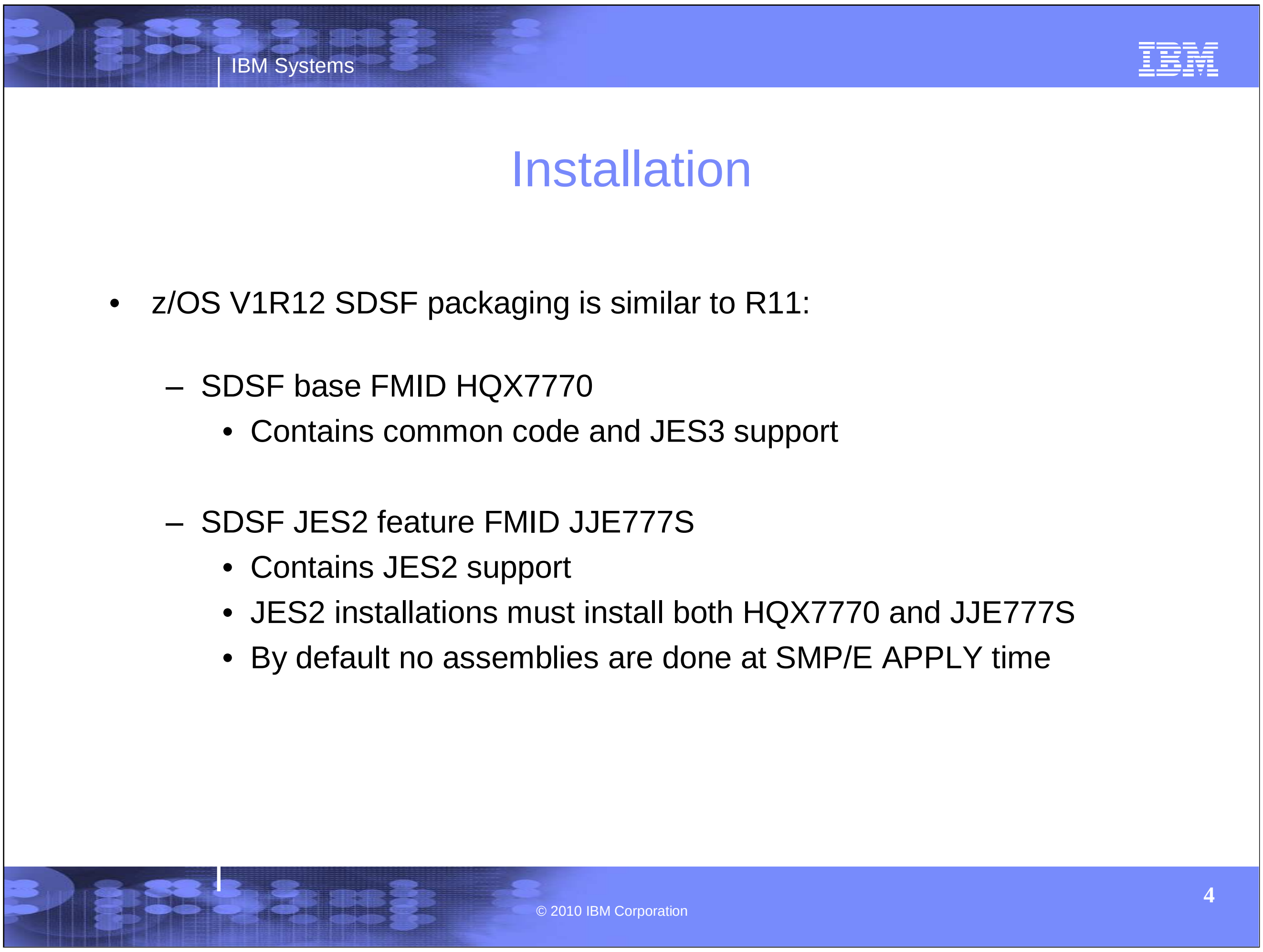
z/OS V1R12 SDSF Release Highlights:

- **Health Checker History panel**
- **Enhancements to INIT panel**
- **Additional JES3 support (PR panel)**
- **Search help support**
- **REXX log support**
- **SDSF data available through JAVA**



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Installation

- z/OS V1R12 SDSF packaging is similar to R11:
  - SDSF base FMID HQX7770
    - Contains common code and JES3 support
  - SDSF JES2 feature FMID JJE777S
    - Contains JES2 support
    - JES2 installations must install both HQX7770 and JJE777S
    - By default no assemblies are done at SMP/E APPLY time

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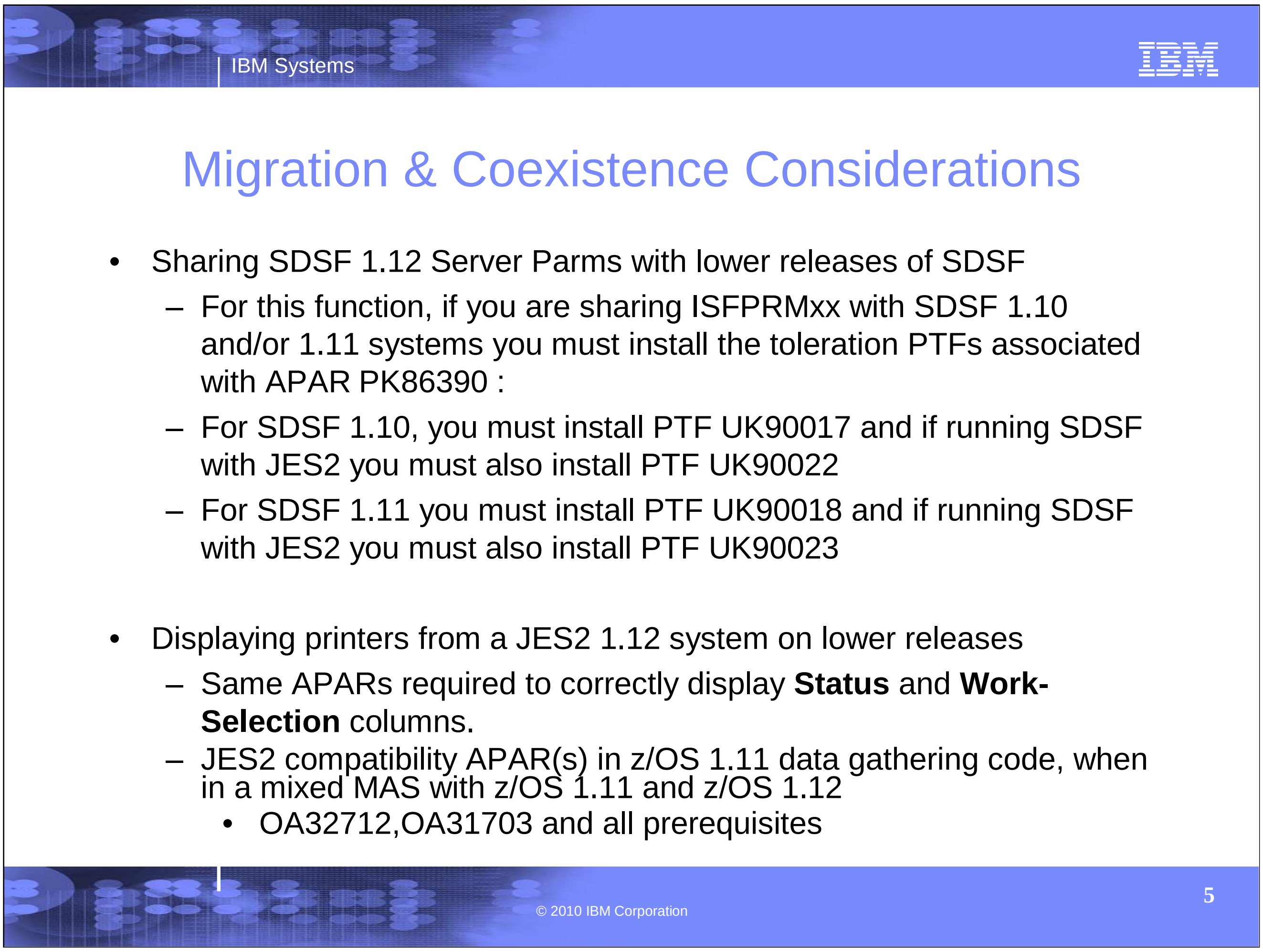
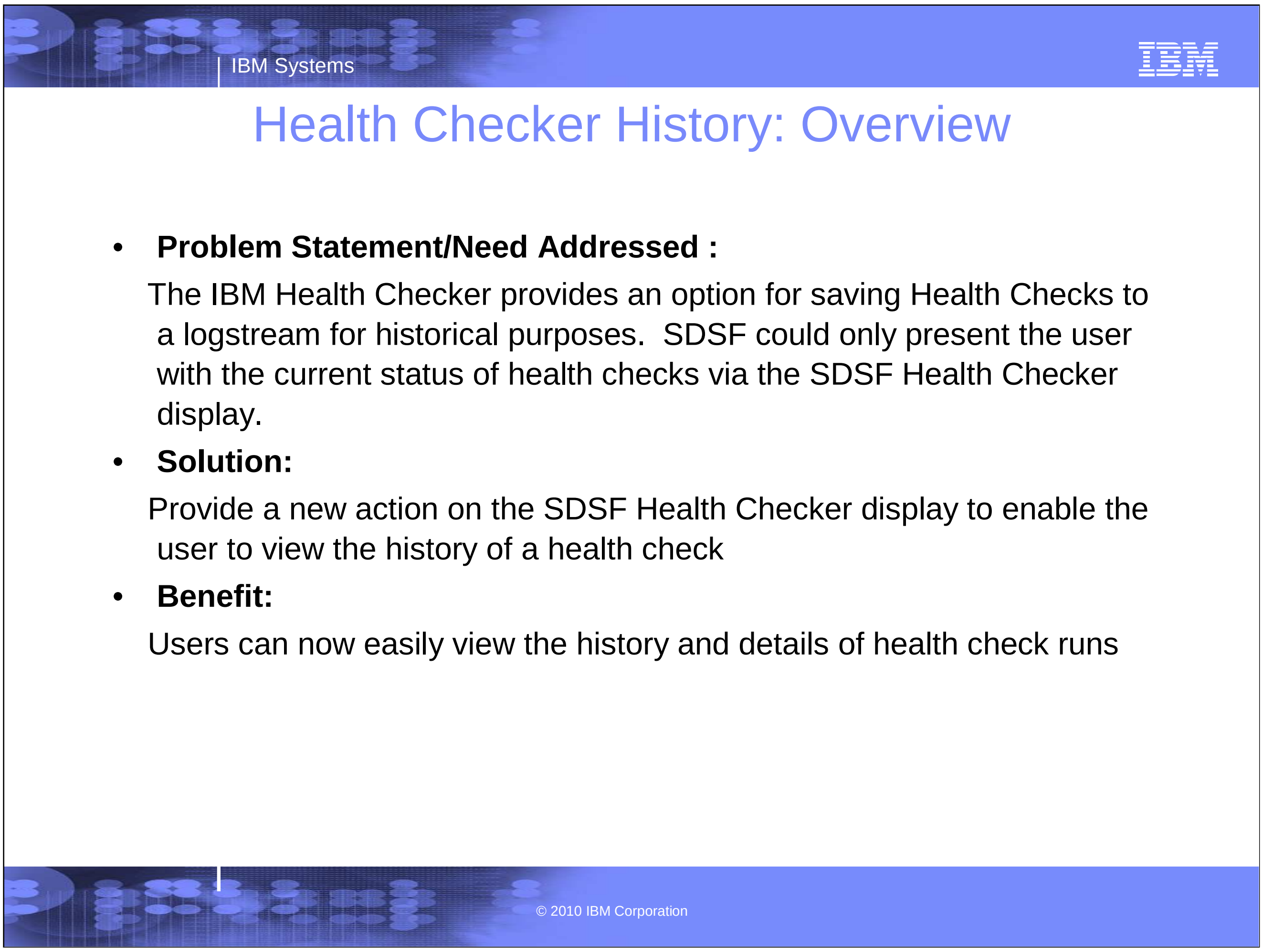


Migration & Coexistence Considerations

- Sharing SDSF 1.12 Server Parms with lower releases of SDSF
  - For this function, if you are sharing ISFPRMxx with SDSF 1.10 and/or 1.11 systems you must install the toleration PTFs associated with APAR PK86390 :
  - For SDSF 1.10, you must install PTF UK90017 and if running SDSF with JES2 you must also install PTF UK90022
  - For SDSF 1.11 you must install PTF UK90018 and if running SDSF with JES2 you must also install PTF UK90023

- Displaying printers from a JES2 1.12 system on lower releases
  - Same APARs required to correctly display **Status** and **Work-Selection** columns.
  - JES2 compatibility APAR(s) in z/OS 1.11 data gathering code, when in a mixed MAS with z/OS 1.11 and z/OS 1.12
    - OA32712,OA31703 and all prerequisites



Health Checker History: Overview

- **Problem Statement/Need Addressed :**

  The IBM Health Checker provides an option for saving Health Checks to a logstream for historical purposes. SDSF could only present the user with the current status of health checks via the SDSF Health Checker display.

- **Solution:**

  Provide a new action on the SDSF Health Checker display to enable the user to view the history of a health check

- **Benefit:**

  Users can now easily view the history and details of health check runs

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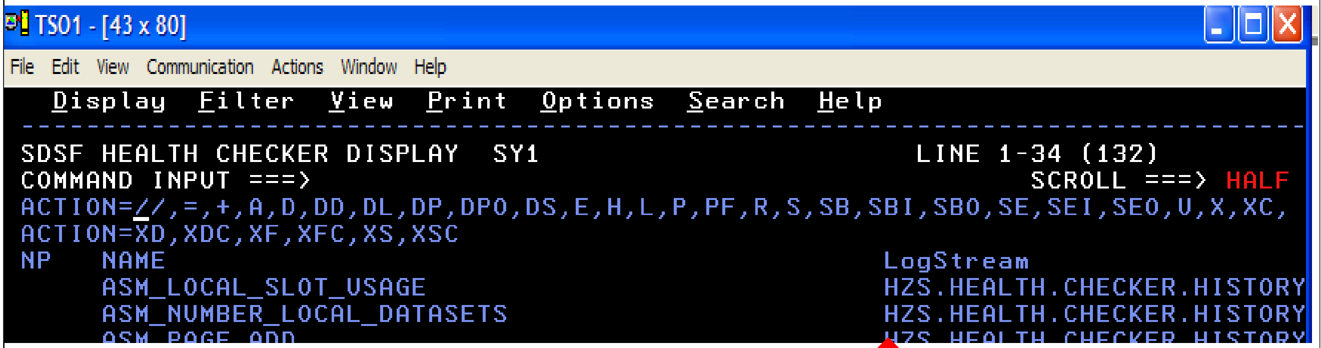
Health Checker History

- In support of the new SDSF Health Checker History display there is a new column on the SDSF Health Checker display titled LogStream. This column shows the current logstream to which the IBM Health Checker for z/OS is connected, from which history data will be gathered.



```
  Display  Filter  View  Print  Options  Search  Help
--------------------------------------------------------------------------------
SDSF HEALTH CHECKER DISPLAY  SY1                       LINE 1-34 (132)
COMMAND INPUT ===>                                            SCROLL ===> HALF
ACTION=//,=,+,A,D,DD,DL,DP,DPO,DS,E,H,L,P,PF,R,S,SB,SBI,SBO,SE,SEI,SEO,U,X,XC,
ACTION=XD,XDC,XF,XFC,XS,XSC
NP   NAME                                            LogStream
     ASM_LOCAL_SLOT_USAGE                            HZS.HEALTH.CHECKER.HISTORY
     ASM_NUMBER_LOCAL_DATASETS                       HZS.HEALTH.CHECKER.HISTORY
     ASM_PAGE_ADD                                    HZS.HEALTH.CHECKER.HISTORY
```

New column: LogStream

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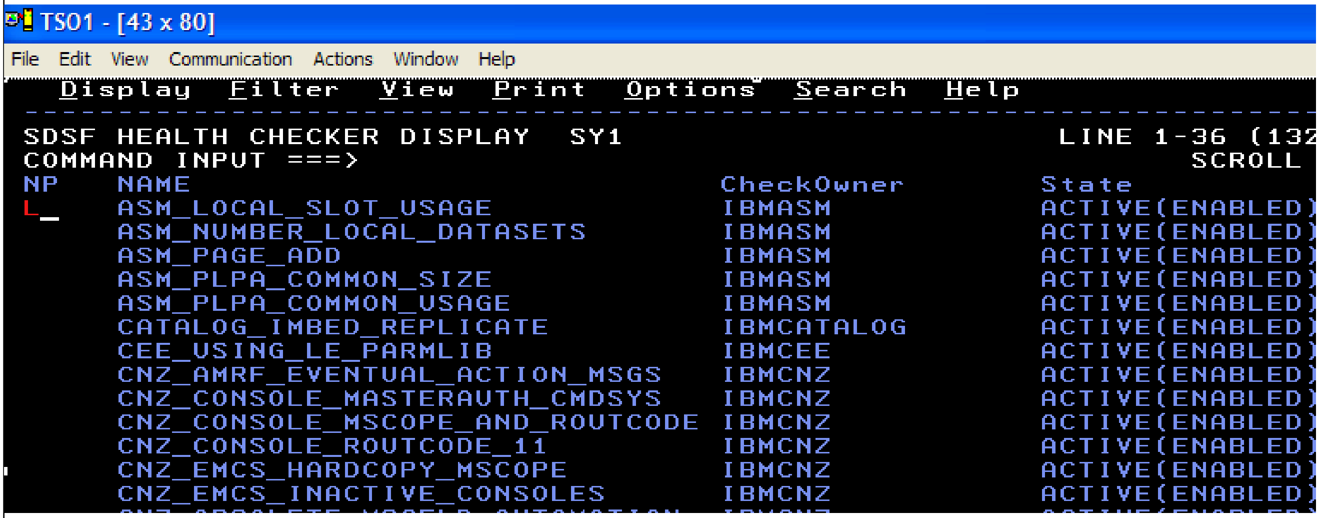
Health Checker History

- The support is invoked by:
  - The new L (ListHistory) action on the SDSF Health Checker display
  - This action is valid for checks that have logstream associated to them



```
   Display  Filter  View  Print  Options  Search  Help
 ------------------------------------------------------------------------
 SDSF HEALTH CHECKER DISPLAY  SY1                           LINE 1-36 (132
 COMMAND INPUT ===>                                                 SCROLL
 NP   NAME                              CheckOwner        State
 L_   ASM_LOCAL_SLOT_USAGE              IBMASM            ACTIVE(ENABLED)
      ASM_NUMBER_LOCAL_DATASETS         IBMASM            ACTIVE(ENABLED)
      ASM_PAGE_ADD                      IBMASM            ACTIVE(ENABLED)
      ASM_PLPA_COMMON_SIZE              IBMASM            ACTIVE(ENABLED)
      ASM_PLPA_COMMON_USAGE             IBMASM            ACTIVE(ENABLED)
      CATALOG_IMBED_REPLICATE           IBMCATALOG        ACTIVE(ENABLED)
      CEE_USING_LE_PARMLIB              IBMCEE            ACTIVE(ENABLED)
      CNZ_AMRF_EVENTUAL_ACTION_MSGS     IBMCNZ            ACTIVE(ENABLED)
      CNZ_CONSOLE_MASTERAUTH_CMDSYS     IBMCNZ            ACTIVE(ENABLED)
      CNZ_CONSOLE_MSCOPE_AND_ROUTCODE   IBMCNZ            ACTIVE(ENABLED)
      CNZ_CONSOLE_ROUTCODE_11           IBMCNZ            ACTIVE(ENABLED)
      CNZ_EMCS_HARDCOPY_MSCOPE          IBMCNZ            ACTIVE(ENABLED)
      CNZ_EMCS_INACTIVE_CONSOLES        IBMCNZ            ACTIVE(ENABLED)
```

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In this example the L action invokes the SDSF Health Checker History display for the ASM_LOCAL_SLOT_USAGE check

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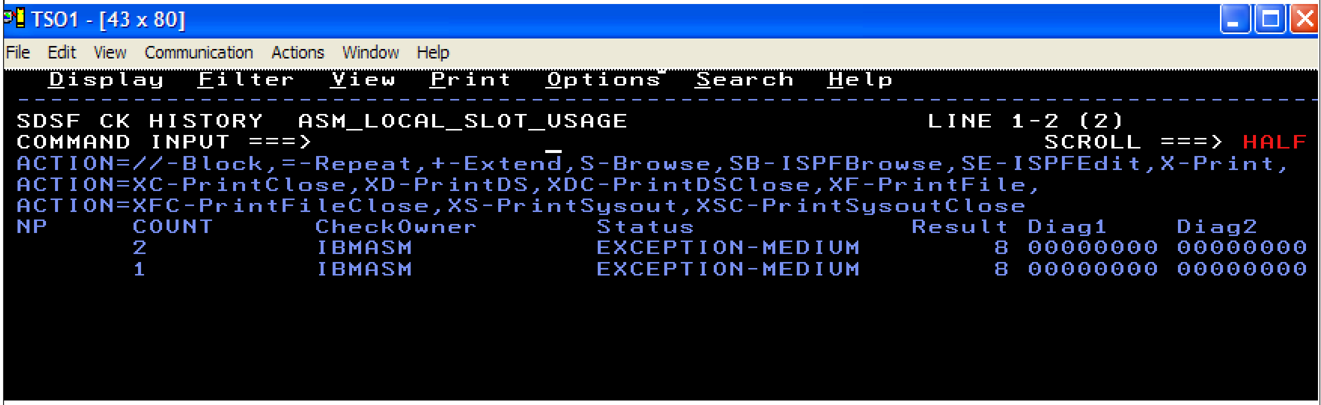
Health Checker History

- The L action displays the new CKH panel



```
  Display  Filter  View  Print  Options  Search  Help
 -------------------------------------------------------------------------------
 SDSF CK HISTORY  ASM_LOCAL_SLOT_USAGE                   LINE 1-2 (2)
 COMMAND INPUT ===>                                             SCROLL ===> HALF
 ACTION=//-Block,=-Repeat,+-Extend,S-Browse,SB-ISPFBrowse,SE-ISPFEdit,X-Print,
 ACTION=XC-PrintClose,XD-PrintDS,XDC-PrintDSClose,XF-PrintFile,
 ACTION=XFC-PrintFileClose,XS-PrintSysout,XSC-PrintSysoutClose
 NP      COUNT       CheckOwner        Status                  Result Diag1    Diag2
         2           IBMASM            EXCEPTION-MEDIUM             8 00000000 00000000
         1           IBMASM            EXCEPTION-MEDIUM             8 00000000 00000000
```

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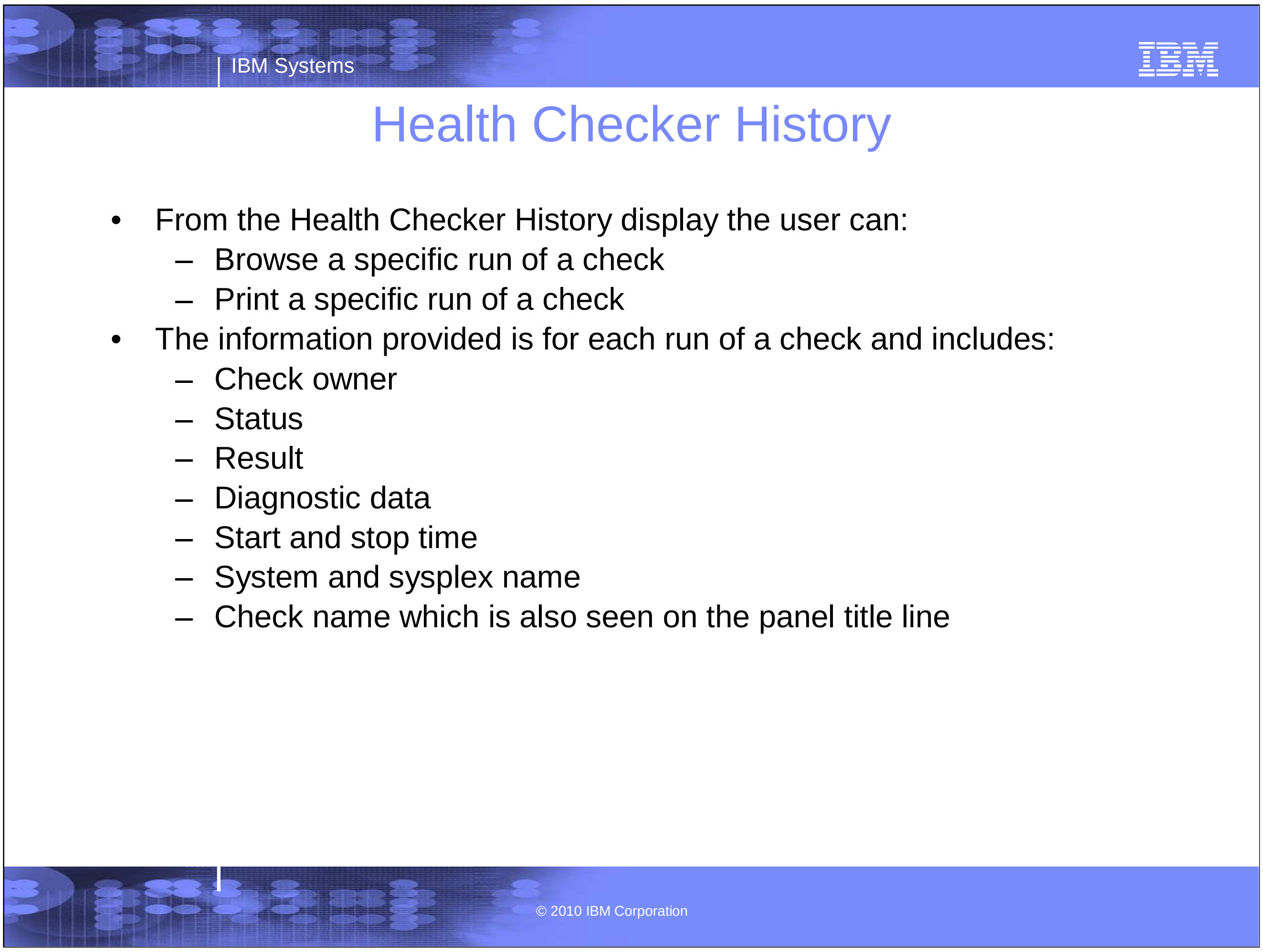
In this example the L action invokes the SDSF Health Checker History display for the ASM_LOCAL_SLOT_USAGE check



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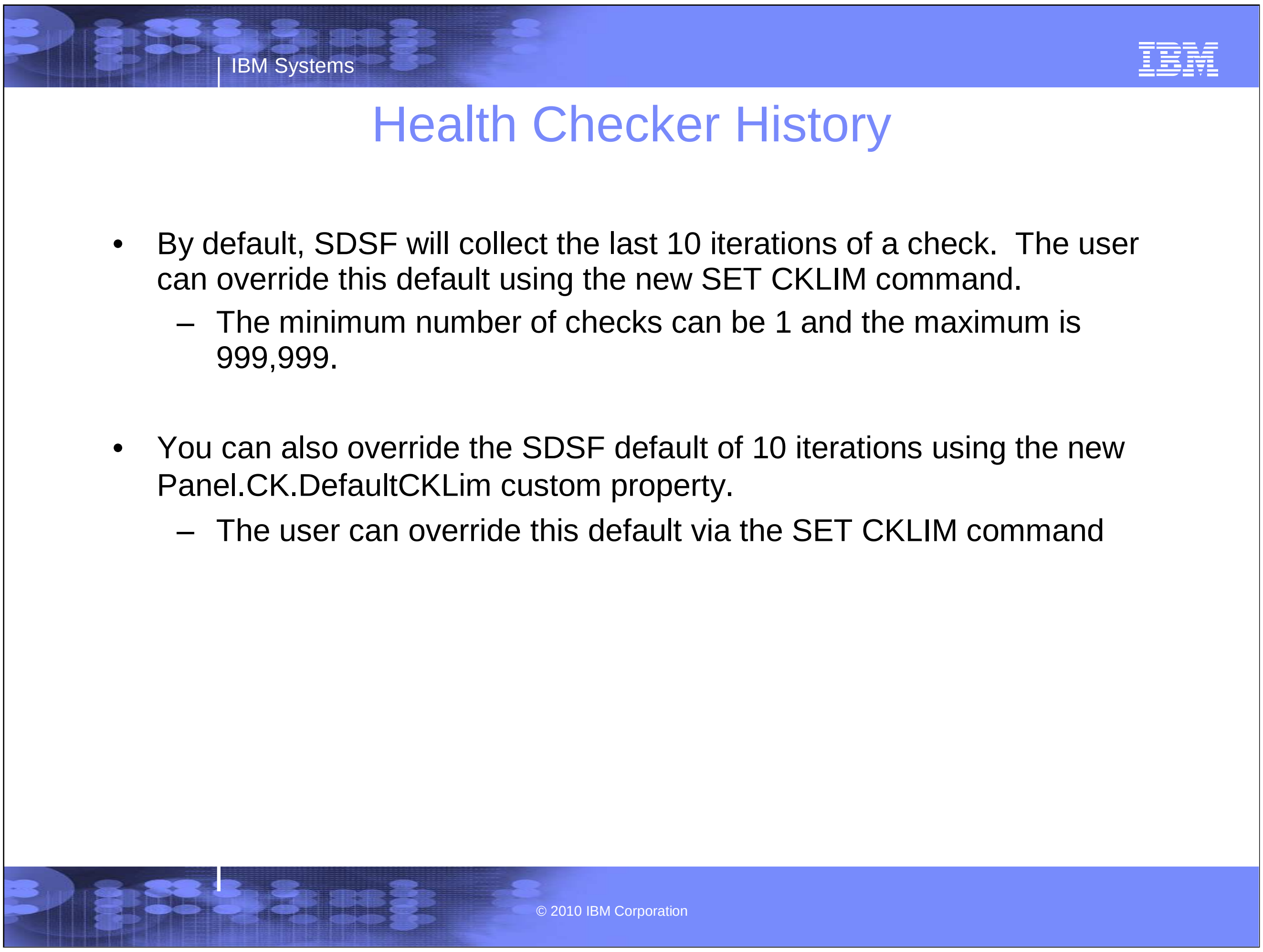
Health Checker History

- From the Health Checker History display the user can:
  - Browse a specific run of a check
  - Print a specific run of a check
- The information provided is for each run of a check and includes:
  - Check owner
  - Status
  - Result
  - Diagnostic data
  - Start and stop time
  - System and sysplex name
  - Check name which is also seen on the panel title line



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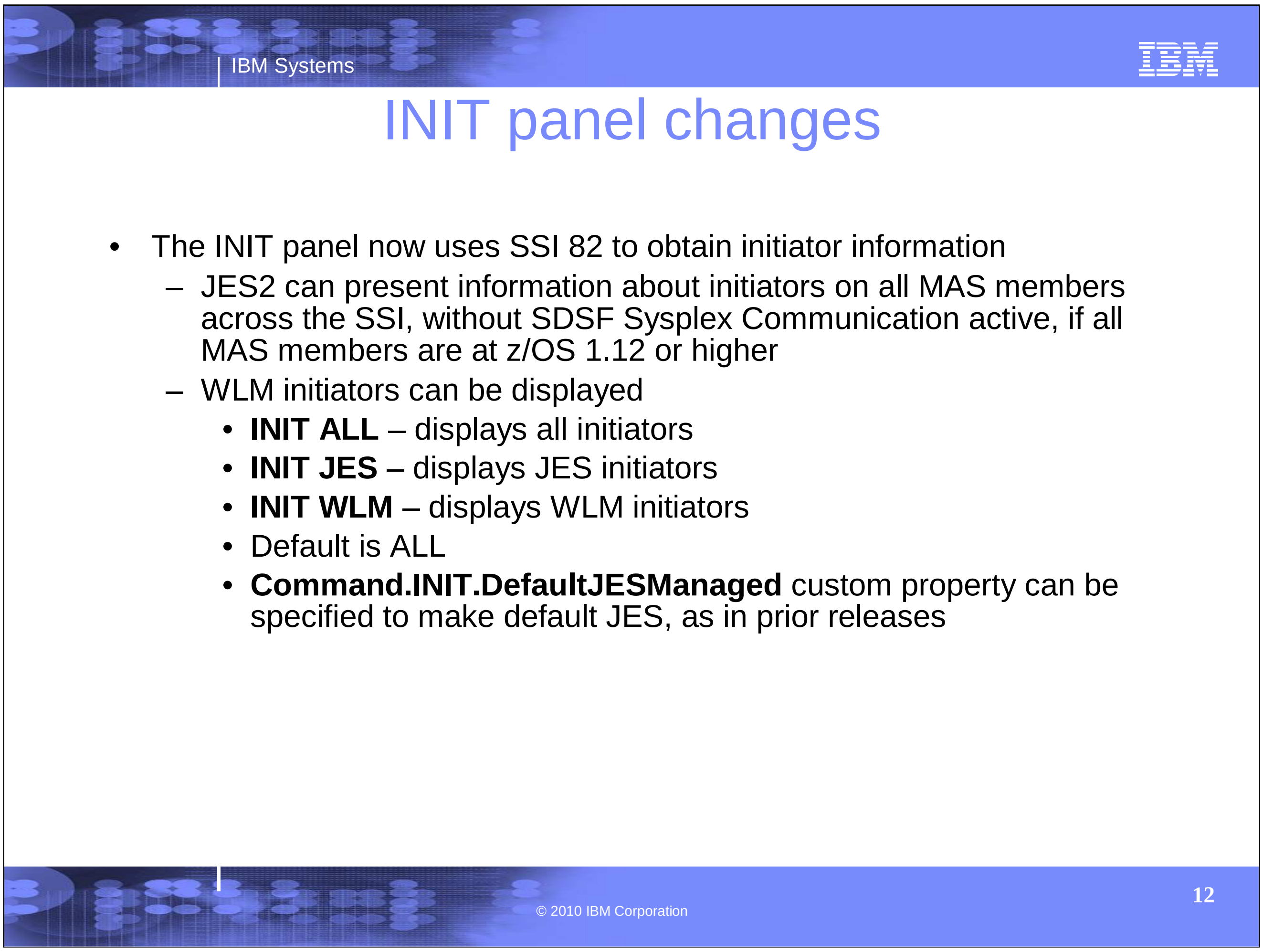
Health Checker History

- By default, SDSF will collect the last 10 iterations of a check. The user can override this default using the new SET CKLIM command.
  - The minimum number of checks can be 1 and the maximum is 999,999.
- You can also override the SDSF default of 10 iterations using the new Panel.CK.DefaultCKLim custom property.
  - The user can override this default via the SET CKLIM command



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INIT panel changes

- The INIT panel now uses SSI 82 to obtain initiator information
  - JES2 can present information about initiators on all MAS members across the SSI, without SDSF Sysplex Communication active, if all MAS members are at z/OS 1.12 or higher
  - WLM initiators can be displayed
    - **INIT ALL** – displays all initiators
    - **INIT JES** – displays JES initiators
    - **INIT WLM** – displays WLM initiators
    - Default is ALL
    - **Command.INIT.DefaultJESManaged** custom property can be specified to make default JES, as in prior releases

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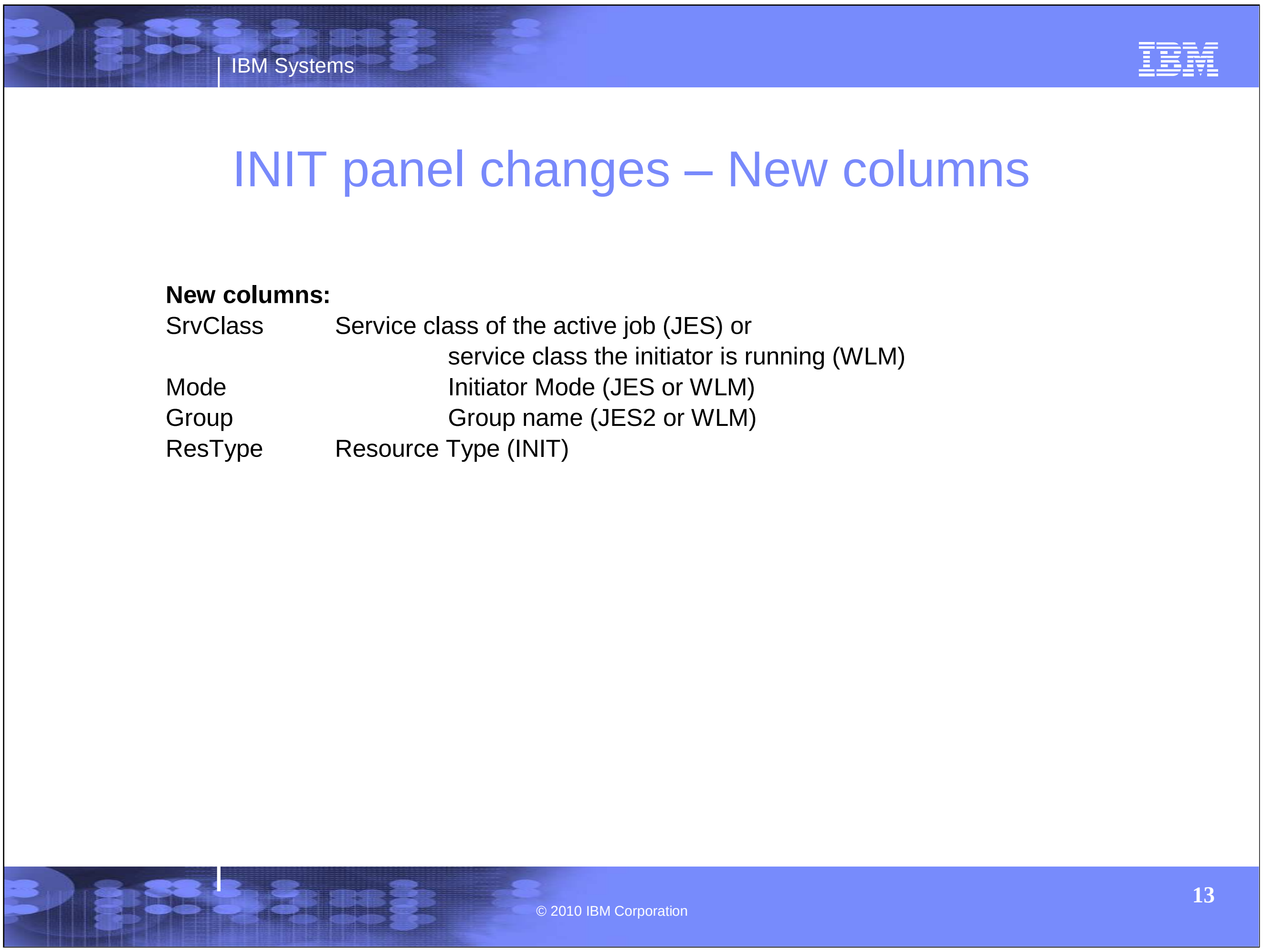

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INIT panel changes – New columns

New columns:

SrvClass	Service class of the active job (JES) or service class the initiator is running (WLM)
Mode	Initiator Mode (JES or WLM)
Group	Group name (JES2 or WLM)
ResType	Resource Type (INIT)

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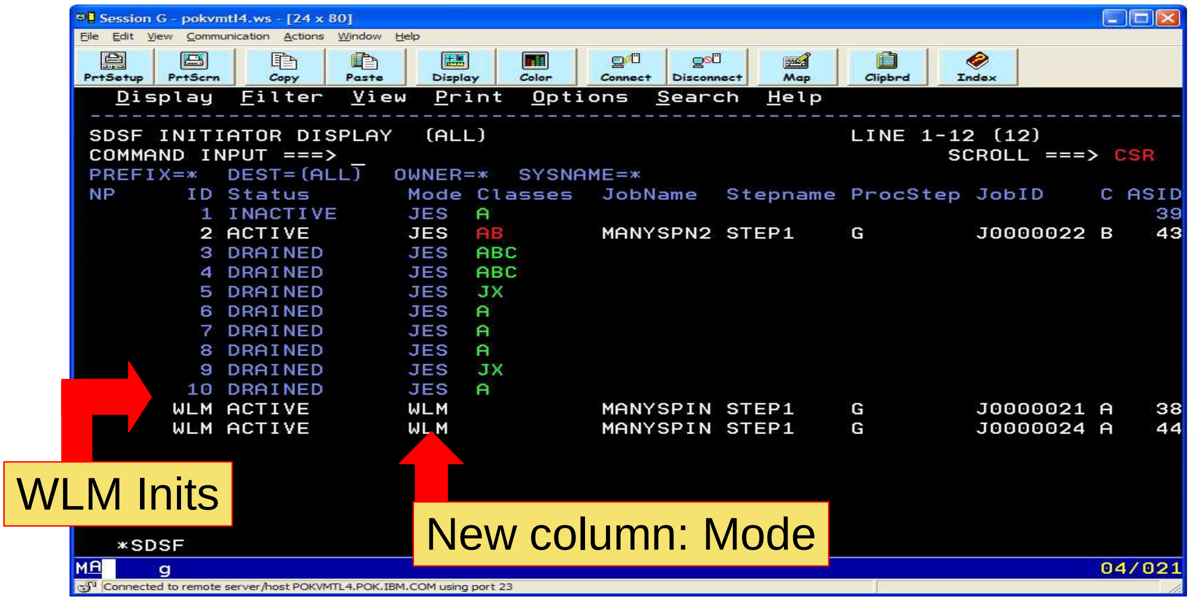
INIT Panel - example


Session G - pokvmtl4.ws - [24 x 80]
File Edit View Communication Actions Window Help
PrtSetup
PrtScrn
Copy
Paste
Display
Color
Connect
Disconnect
Map
Clipbrd
Index

```
  Display  Filter  View  Print  Options  Search  Help
 -------------------------------------------------------------------------------
 SDSF INITIATOR DISPLAY  (ALL)                          LINE 1-12 (12)
 COMMAND INPUT ===>                                            SCROLL ===> CSR
 PREFIX=*  DEST=(ALL)  OWNER=*  SYSNAME=*
 NP      ID Status       Mode Classes  JobName  Stepname ProcStep JobID    C ASID
          1 INACTIVE     JES  A                                              39
          2 ACTIVE       JES  AB       MANYSPN2 STEP1    G        J0000022 B   43
          3 DRAINED      JES  ABC
          4 DRAINED      JES  ABC
          5 DRAINED      JES  JX
          6 DRAINED      JES  A
          7 DRAINED      JES  A
          8 DRAINED      JES  A
          9 DRAINED      JES  JX
         10 DRAINED      JES  A
        WLM ACTIVE       WLM           MANYSPIN STEP1    G        J0000021 A   38
        WLM ACTIVE       WLM           MANYSPIN STEP1    G        J0000024 A   44

  *SDSF
MA      g                                                                 04/021
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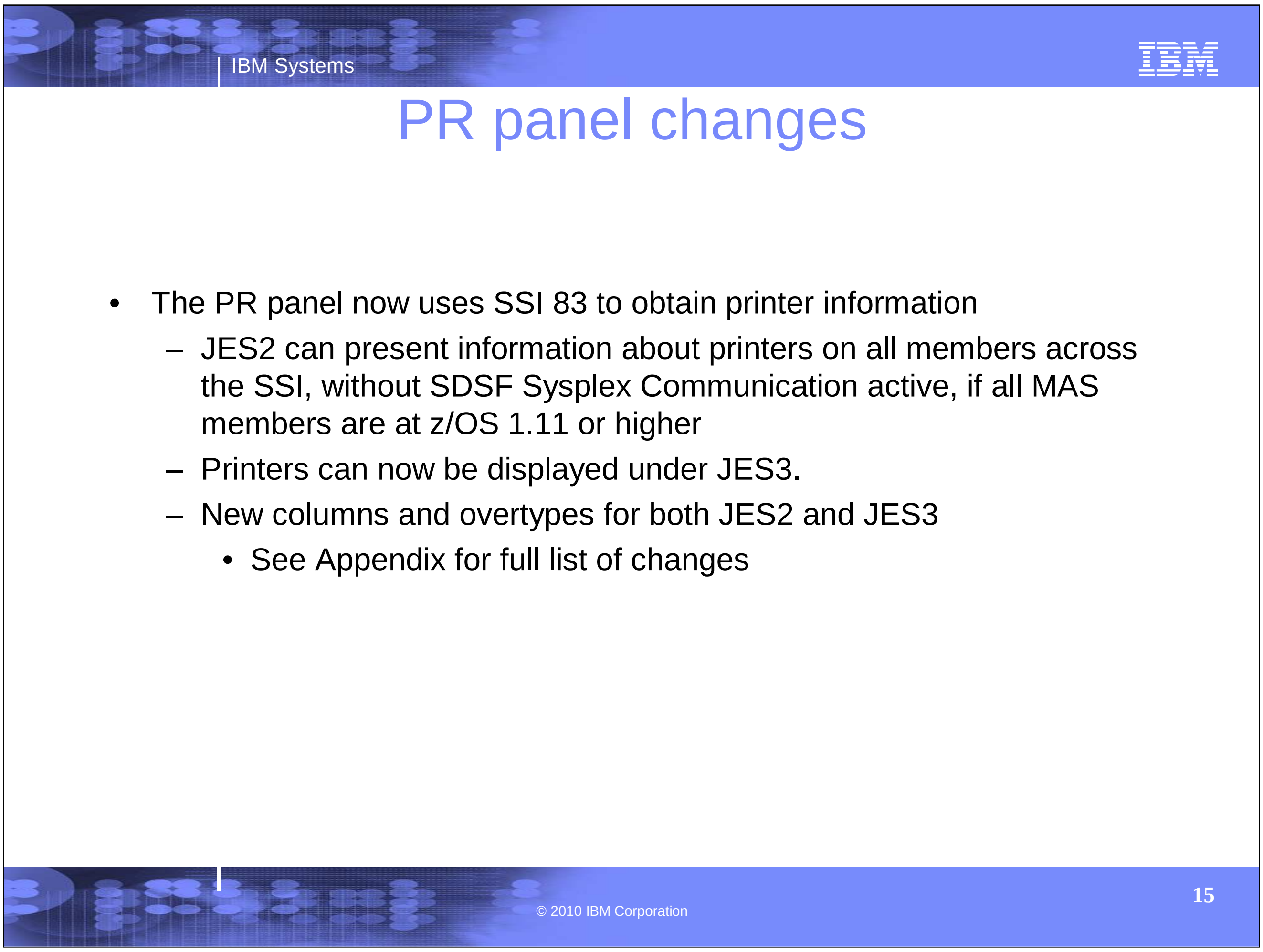
WLM Inits

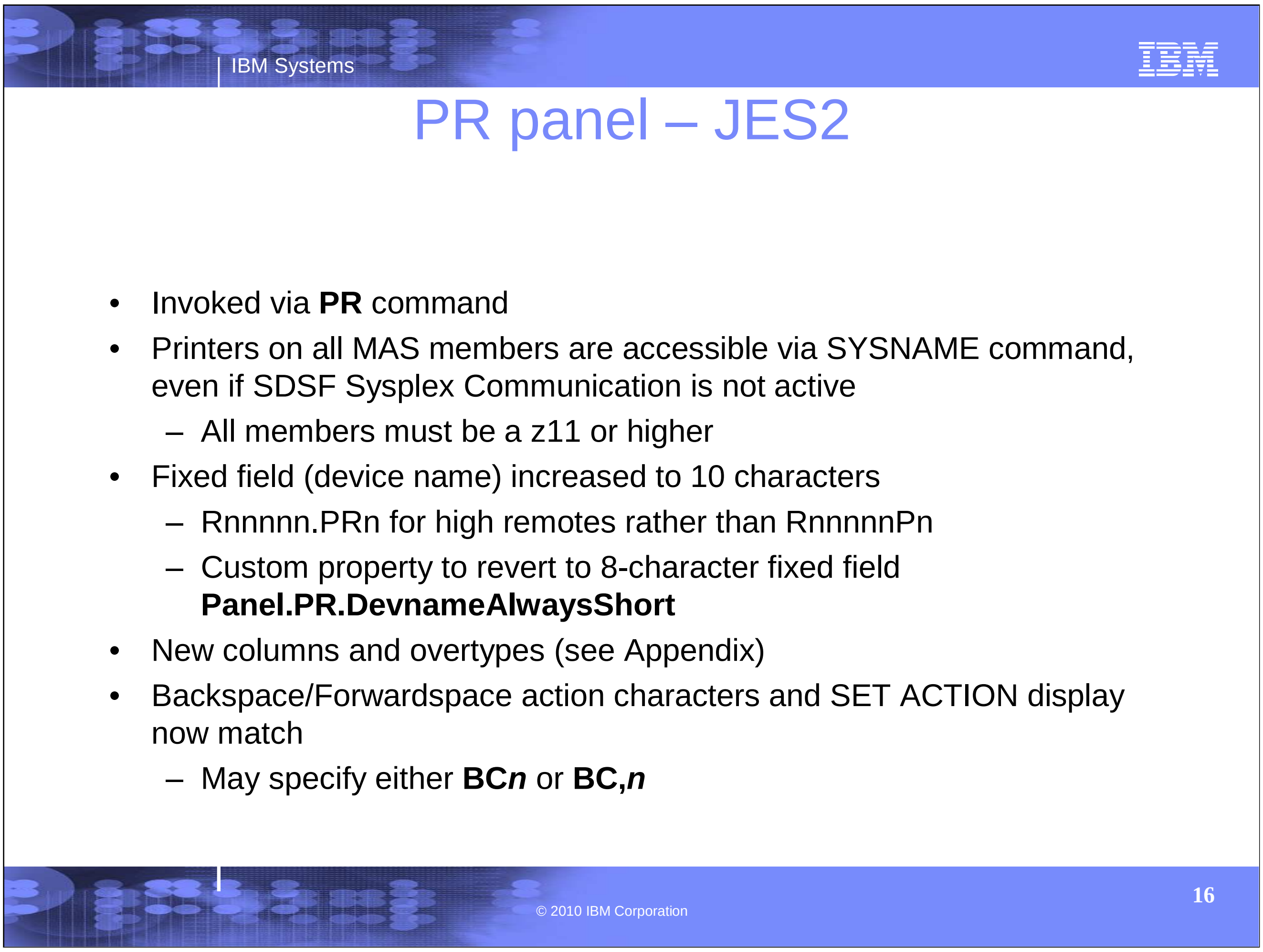
New column: Mode

Here’s an example of the INIT panel with a couple of active WLM inits. Note the new rows, displaying the WLM inits, and the new “Mode” column.



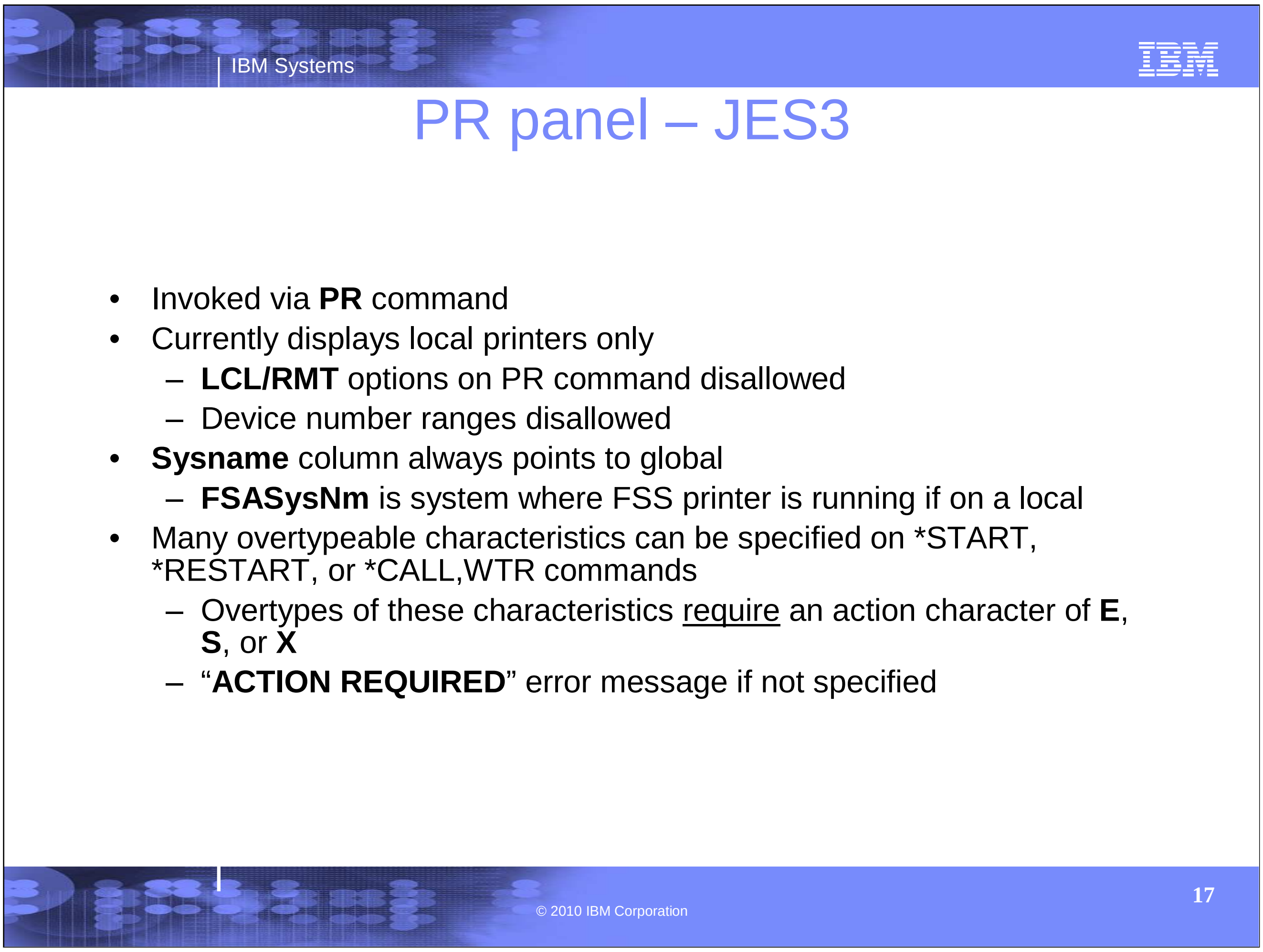
PR panel changes

- The PR panel now uses SSI 83 to obtain printer information
  - – JES2 can present information about printers on all members across the SSI, without SDSF Sysplex Communication active, if all MAS members are at z/OS 1.11 or higher
  - – Printers can now be displayed under JES3.
  - – New columns and overtypes for both JES2 and JES3
    - See Appendix for full list of changes



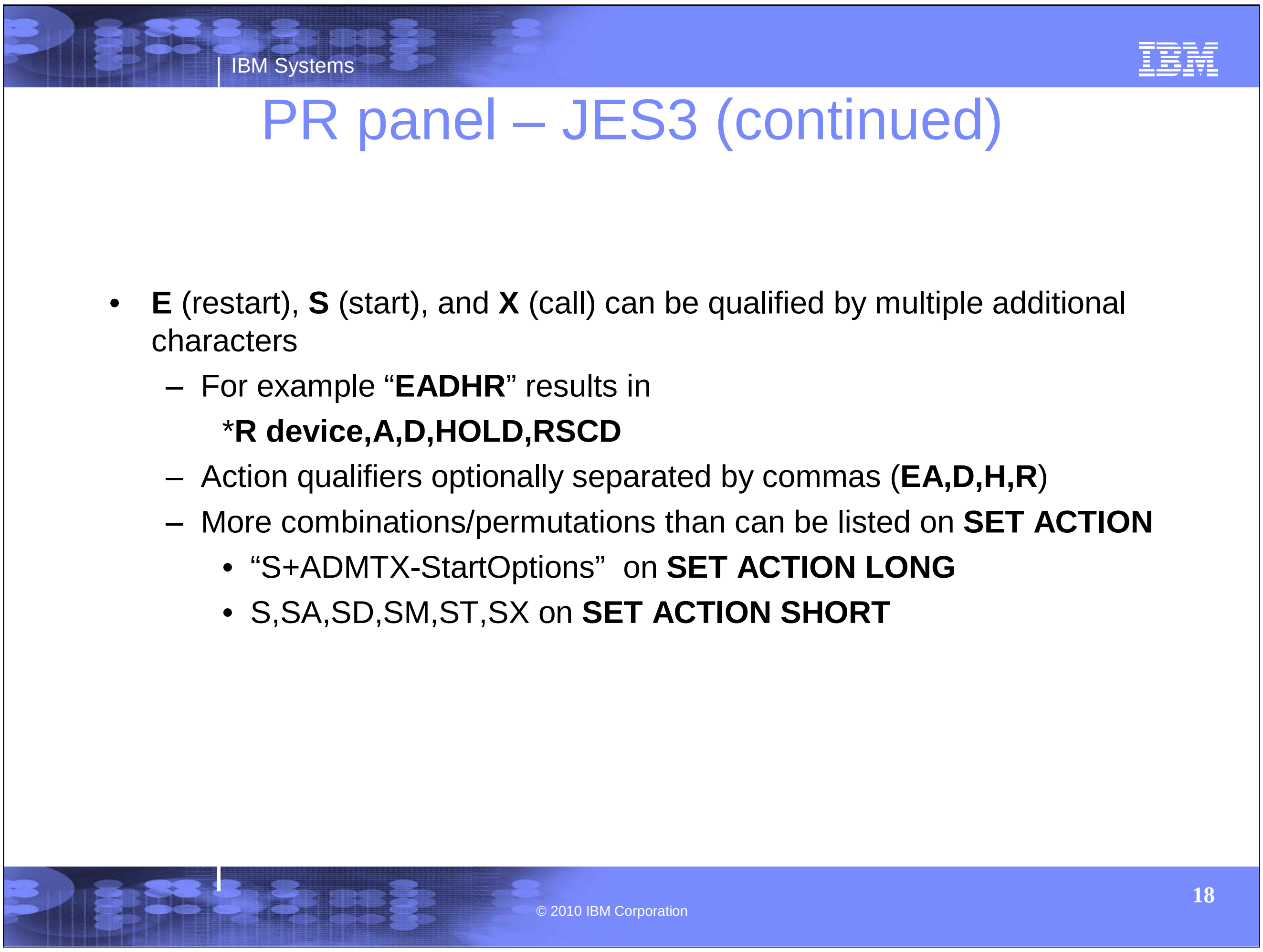
PR panel – JES2

- Invoked via **PR** command
- Printers on all MAS members are accessible via SYSNAME command, even if SDSF Sysplex Communication is not active
  - All members must be a z11 or higher
- Fixed field (device name) increased to 10 characters
  - Rnnnnn.PRn for high remotes rather than RnnnnnPn
  - Custom property to revert to 8-character fixed field **Panel.PR.DevnameAlwaysShort**
- New columns and overtypes (see Appendix)
- Backspace/Forwardspace action characters and SET ACTION display now match
  - May specify either **BC*n*** or **BC,*n***



PR panel – JES3

- Invoked via **PR** command
- Currently displays local printers only
  - **LCL/RMT** options on PR command disallowed
  - Device number ranges disallowed
- **Sysname** column always points to global
  - **FSASysNm** is system where FSS printer is running if on a local
- Many overtypeable characteristics can be specified on *START, *RESTART, or *CALL,WTR commands
  - Overtypes of these characteristics require an action character of **E**, **S**, or **X**
  - “**ACTION REQUIRED**” error message if not specified



PR panel – JES3 (continued)

- **E** (restart), **S** (start), and **X** (call) can be qualified by multiple additional characters
  - For example “**EADHR**” results in

    ***R device,A,D,HOLD,RSCD**
  - Action qualifiers optionally separated by commas (**EA,D,H,R**)
  - More combinations/permutations than can be listed on **SET ACTION**
    - “S+ADMTX-StartOptions” on **SET ACTION LONG**
    - S,SA,SD,SM,ST,SX on **SET ACTION SHORT**

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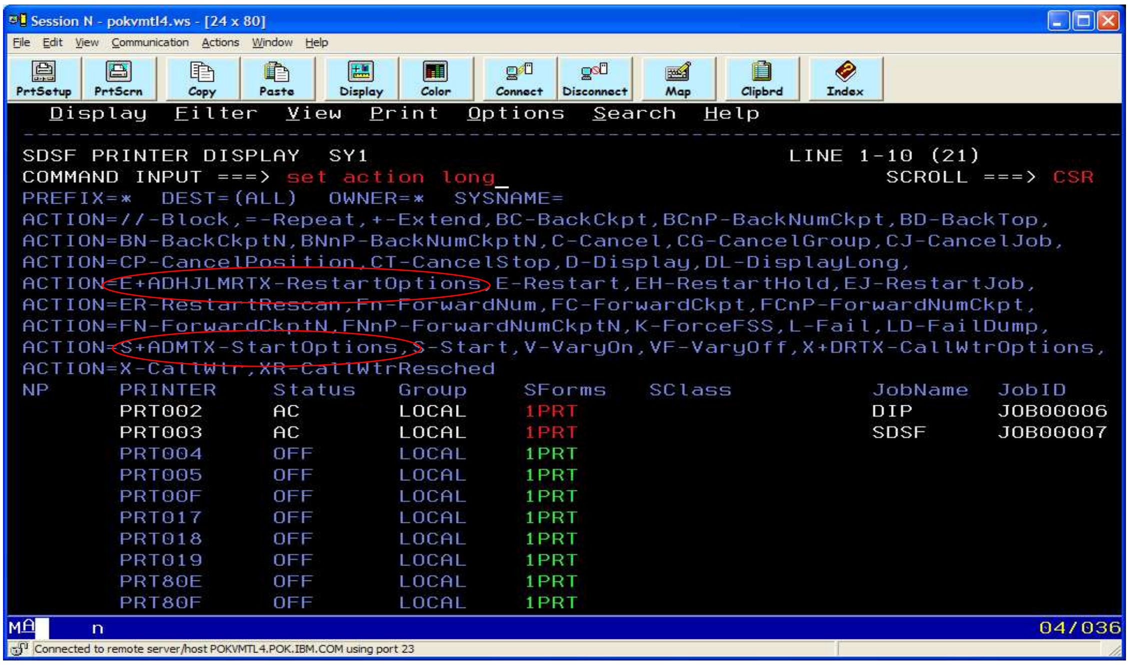
JES3 Printer Actions


Session N - pokvmtl4.ws - [24 x 80]
File Edit View Communication Actions Window Help
PrtSetup PrtScrn Copy Paste Display Color Connect Disconnect Map Clipbrd Index

```
  Display  Filter  View  Print  Options  Search  Help
 -------------------------------------------------------------------------------
 SDSF PRINTER DISPLAY  SY1                                  LINE 1-10 (21)
 COMMAND INPUT ===> set action long_                               SCROLL ===> CSR
 PREFIX=*  DEST=(ALL)  OWNER=*  SYSNAME=
 ACTION=//-Block,=-Repeat,+-Extend,BC-BackCkpt,BCnP-BackNumCkpt,BD-BackTop,
 ACTION=BN-BackCkptN,BNnP-BackNumCkptN,C-Cancel,CG-CancelGroup,CJ-CancelJob,
 ACTION=CP-CancelPosition,CT-CancelStop,D-Display,DL-DisplayLong,
 ACTION=E+ADHJLMRTX-RestartOptions,E-Restart,EH-RestartHold,EJ-RestartJob,
 ACTION=ER-RestartRescan,Fn-ForwardNum,FC-ForwardCkpt,FCnP-ForwardNumCkpt,
 ACTION=FN-ForwardCkptN,FNnP-ForwardNumCkptN,K-ForceFSS,L-Fail,LD-FailDump,
 ACTION=S+ADMTX-StartOptions,S-Start,V-VaryOn,VF-VaryOff,X+DRTX-CallWtrOptions,
 ACTION=X-CallWtr,XR-CallWtrResched
 NP      PRINTER    Status    Group     SForms    SClass          JobName   JobID
         PRT002     AC        LOCAL     1PRT                      DIP       JOB00006
         PRT003     AC        LOCAL     1PRT                      SDSF      JOB00007
         PRT004     OFF       LOCAL     1PRT
         PRT005     OFF       LOCAL     1PRT
         PRT00F     OFF       LOCAL     1PRT
         PRT017     OFF       LOCAL     1PRT
         PRT018     OFF       LOCAL     1PRT
         PRT019     OFF       LOCAL     1PRT
         PRT80E     OFF       LOCAL     1PRT
         PRT80F     OFF       LOCAL     1PRT
MA       n                                                                  04/036
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```

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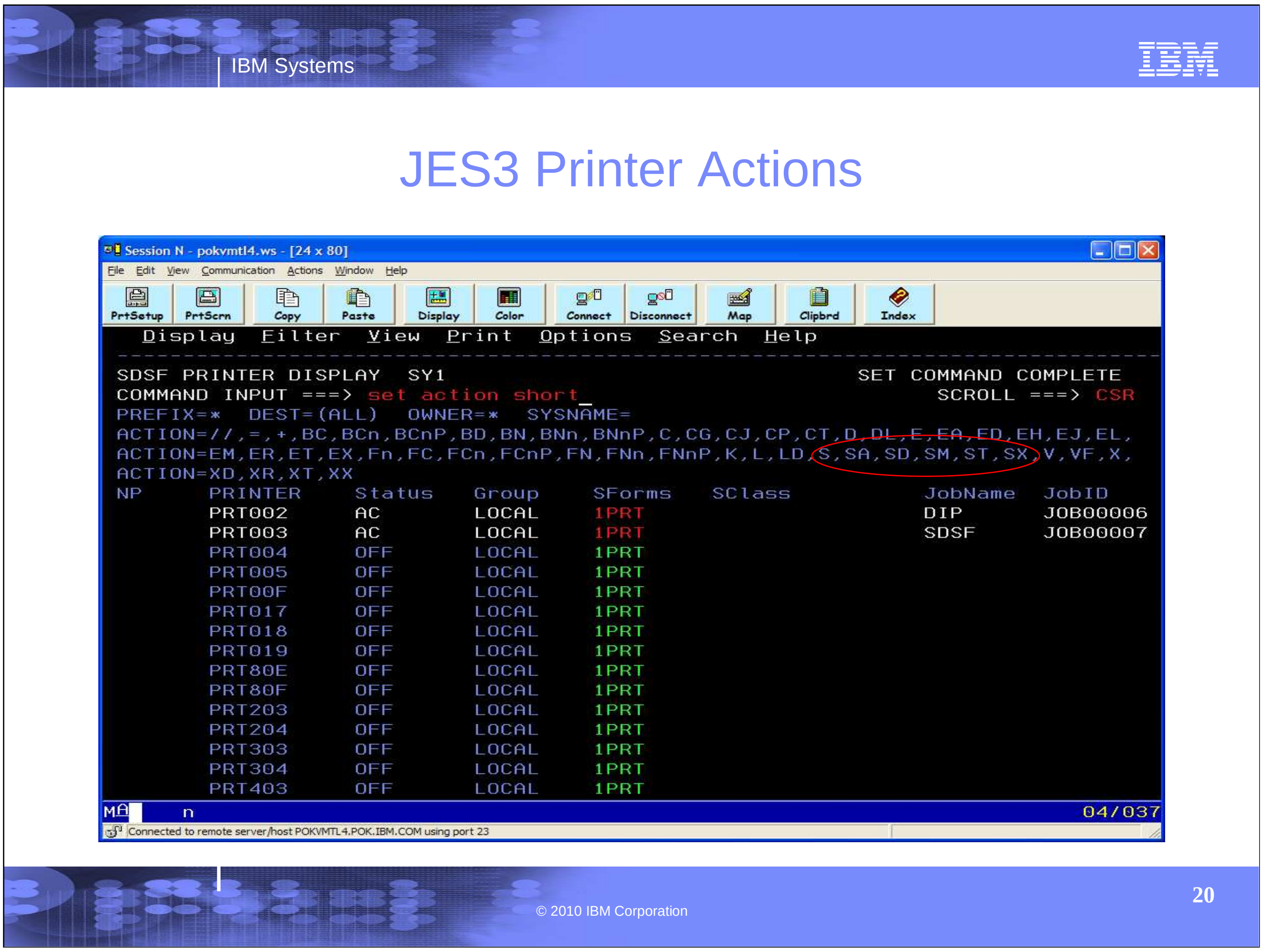
This screen shot shows the JES3 printer panel with SET ACTION LONG enabled. Note that the E, S, and X parameters are abbreviated in the display. If all the combinations and permutations allowed for these had been listed, they would not fit on the screen.



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JES3 Printer Actions

Session N - pokvmtl4.ws - [24 x 80]
File Edit View Communication Actions Window Help
PrtSetup PrtScrn Copy Paste Display Color Connect Disconnect Map Clipbrd Index

```
  Display  Filter  View  Print  Options  Search  Help
 -------------------------------------------------------------------------------
 SDSF PRINTER DISPLAY  SY1                              SET COMMAND COMPLETE
 COMMAND INPUT ===> set action short_                        SCROLL ===> CSR
 PREFIX=*  DEST=(ALL)  OWNER=*  SYSNAME=
 ACTION=//,=,+,BC,BCn,BCnP,BD,BN,BNn,BNnP,C,CG,CJ,CP,CT,D,DL,E,EA,ED,EH,EJ,EL,
 ACTION=EM,ER,ET,EX,Fn,FC,FCn,FCnP,FN,FNn,FNnP,K,L,LD,S,SA,SD,SM,ST,SX,V,VF,X,
 ACTION=XD,XR,XT,XX
 NP       PRINTER     Status    Group     SForms    SClass          JobName  JobID
          PRT002      AC        LOCAL     1PRT                      DIP      JOB00006
          PRT003      AC        LOCAL     1PRT                      SDSF     JOB00007
          PRT004      OFF       LOCAL     1PRT
          PRT005      OFF       LOCAL     1PRT
          PRT00F      OFF       LOCAL     1PRT
          PRT017      OFF       LOCAL     1PRT
          PRT018      OFF       LOCAL     1PRT
          PRT019      OFF       LOCAL     1PRT
          PRT80E      OFF       LOCAL     1PRT
          PRT80F      OFF       LOCAL     1PRT
          PRT203      OFF       LOCAL     1PRT
          PRT204      OFF       LOCAL     1PRT
          PRT303      OFF       LOCAL     1PRT
          PRT304      OFF       LOCAL     1PRT
          PRT403      OFF       LOCAL     1PRT
MA      n                                                                04/037
```

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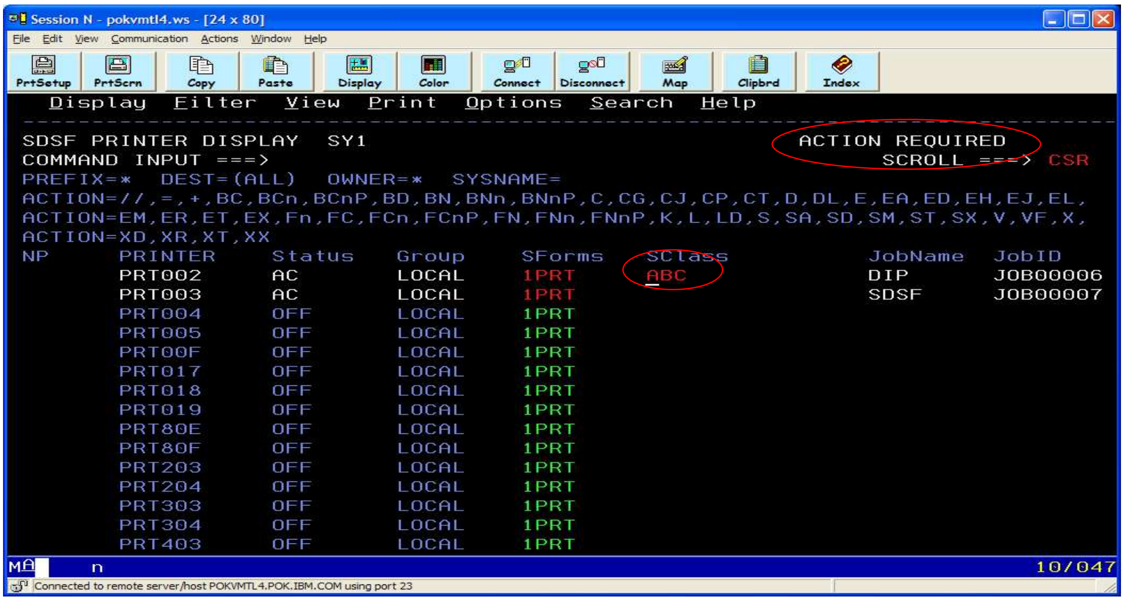
This screen shot shows thew JES3 printer panel with SET ACTION SHORT enabled. Note that that all of the qualifying characters on E, S, and X are listed, but not all combinations are shown. If all the combinations and permutations allowed for these had been listed, they would not fit on the screen.

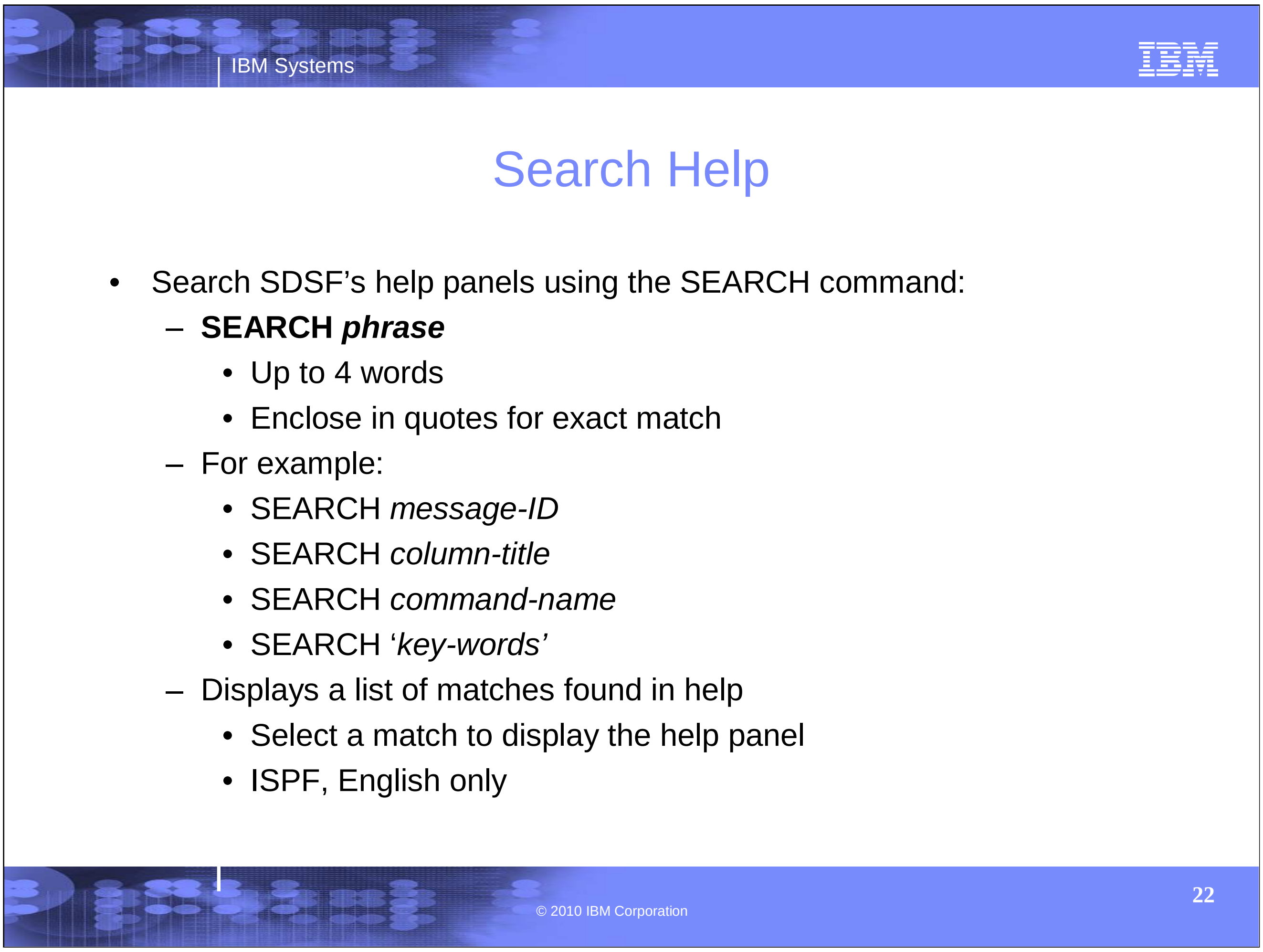
JES3 Printer Actions/Overtypes



Session N - pokvmtl4.ws - [24 x 80]
File Edit View Communication Actions Window Help
PrtSetup PrtScrn Copy Paste Display Color Connect Disconnect Map Clipbrd Index

```
  Display  Filter  View  Print  Options  Search  Help
 -------------------------------------------------------------------------------
 SDSF PRINTER DISPLAY  SY1                                  ACTION REQUIRED
 COMMAND INPUT ===>                                              SCROLL ===> CSR
 PREFIX=*  DEST=(ALL)  OWNER=*  SYSNAME=
 ACTION=//,=,+,BC,BCn,BCnP,BD,BN,BNn,BNnP,C,CG,CJ,CP,CT,D,DL,E,EA,ED,EH,EJ,EL,
 ACTION=EM,ER,ET,EX,Fn,FC,FCn,FCnP,FN,FNn,FNnP,K,L,LD,S,SA,SD,SM,ST,SX,V,VF,X,
 ACTION=XD,XR,XT,XX
 NP      PRINTER     Status    Group     SForms    SClass          JobName  JobID
         PRT002      AC        LOCAL     1PRT      ABC             DIP      JOB00006
         PRT003      AC        LOCAL     1PRT                      SDSF     JOB00007
         PRT004      OFF       LOCAL     1PRT
         PRT005      OFF       LOCAL     1PRT
         PRT00F      OFF       LOCAL     1PRT
         PRT017      OFF       LOCAL     1PRT
         PRT018      OFF       LOCAL     1PRT
         PRT019      OFF       LOCAL     1PRT
         PRT80E      OFF       LOCAL     1PRT
         PRT80F      OFF       LOCAL     1PRT
         PRT203      OFF       LOCAL     1PRT
         PRT204      OFF       LOCAL     1PRT
         PRT303      OFF       LOCAL     1PRT
         PRT304      OFF       LOCAL     1PRT
         PRT403      OFF       LOCAL     1PRT
MA      n                                                                10/047
Connected to remote server/host POKVMTL4.POK.IBM.COM using port 23
```

This is what you would see if you tried to overtype a field that required an action character along with the overtype. To get the overtype to work for Sclass, an action character of E or S is required. Most, but not all JES3 printer overtypes work this way.



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Search Help

- Search SDSF’s help panels using the SEARCH command:
  - **SEARCH *phrase***
    - Up to 4 words
    - Enclose in quotes for exact match
  - For example:
    - SEARCH *message-ID*
    - SEARCH *column-title*
    - SEARCH *command-name*
    - SEARCH ‘*key-words*’
  - Displays a list of matches found in help
    - Select a match to display the help panel
    - ISPF, English only

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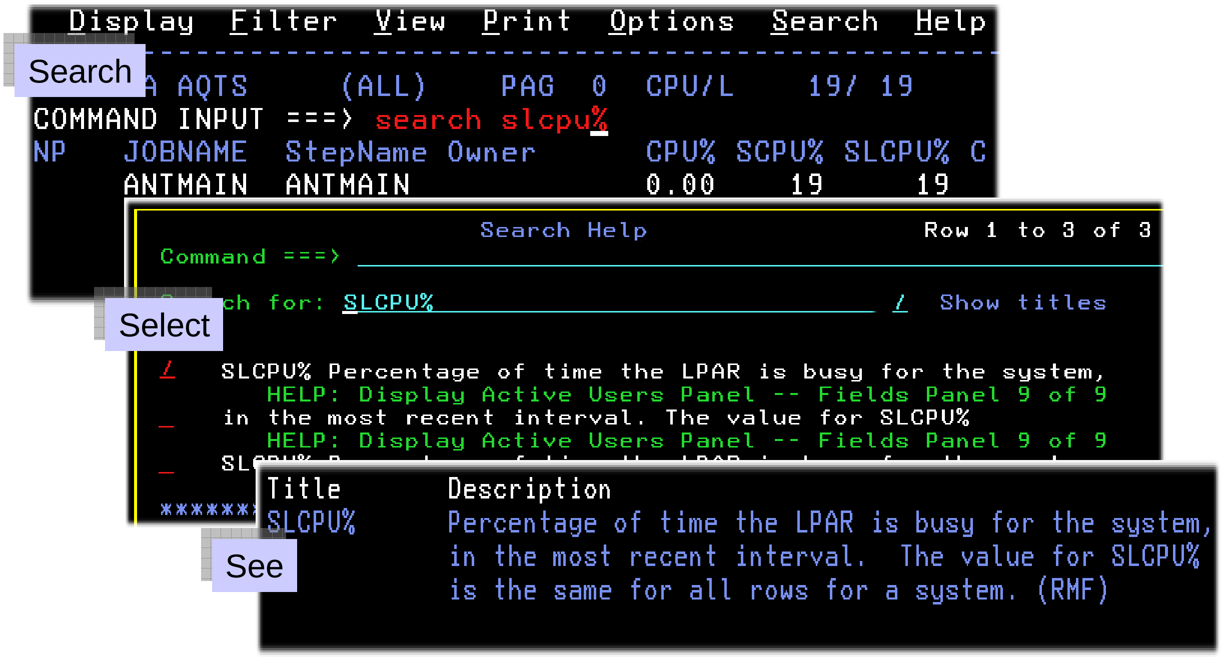
Search Help



Search

```
 Display  Filter  View  Print  Options  Search  Help
 ---------------------------------------------------
        A AQTS      (ALL)    PAG  0  CPU/L    19/ 19
COMMAND INPUT ===> search slcpu%
NP   JOBNAME  StepName Owner      CPU% SCPU% SLCPU% C
     ANTMAIN  ANTMAIN             0.00    19     19
```

Select

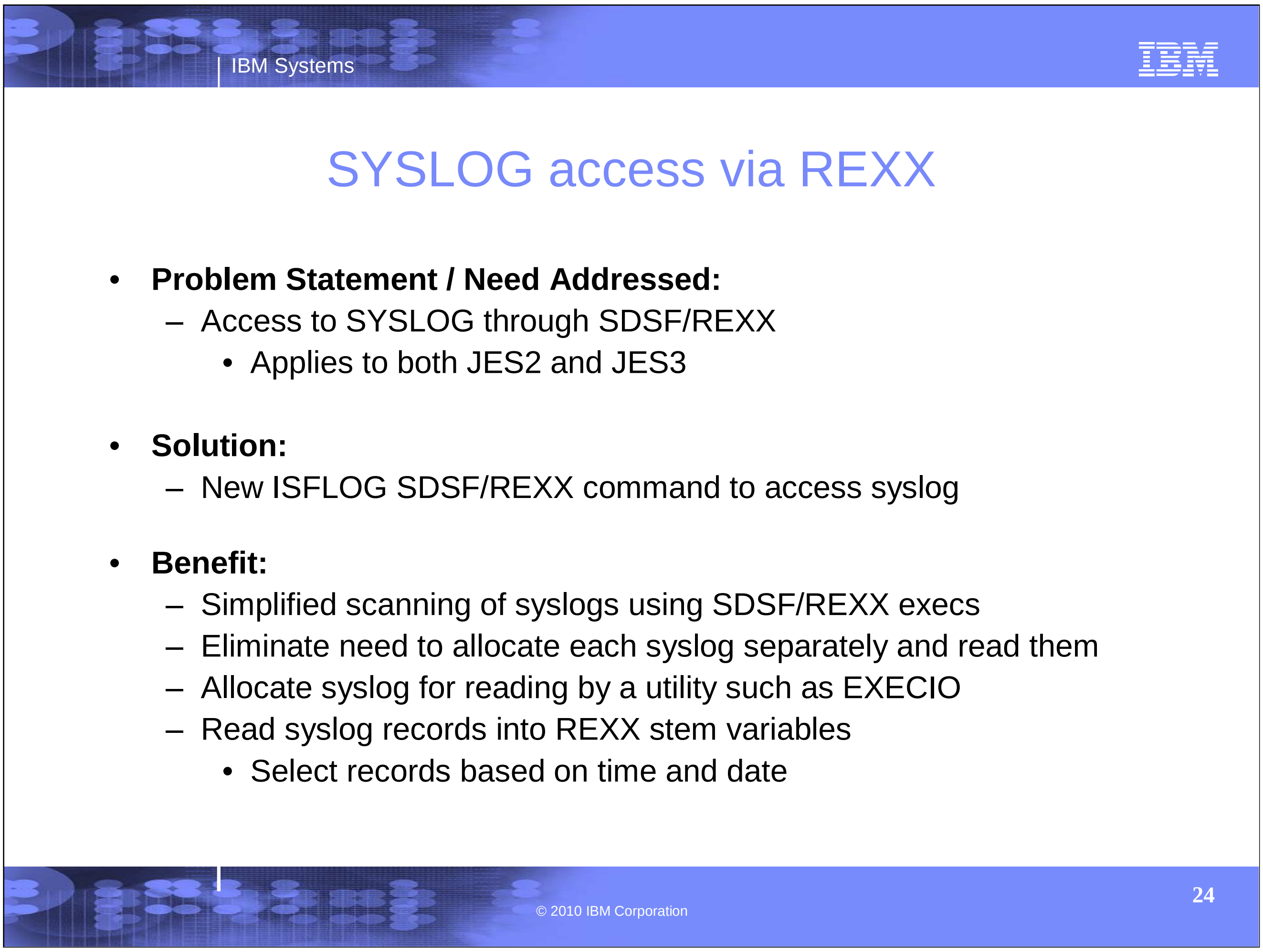
```
                     Search Help                  Row 1 to 3 of 3
 Command ===> ____________________________________________________

        ch for: SLCPU%____________________________  /  Show titles

 /   SLCPU% Percentage of time the LPAR is busy for the system,
        HELP: Display Active Users Panel -- Fields Panel 9 of 9
 _   in the most recent interval. The value for SLCPU%
        HELP: Display Active Users Panel -- Fields Panel 9 of 9
 _   SL
 *******
```

See

```
Title       Description
SLCPU%      Percentage of time the LPAR is busy for the system,
            in the most recent interval.  The value for SLCPU%
            is the same for all rows for a system. (RMF)
```



IBM Systems

SYSLOG access via REXX

- **Problem Statement / Need Addressed:**
  - Access to SYSLOG through SDSF/REXX
    - Applies to both JES2 and JES3
- **Solution:**
  - New ISFLOG SDSF/REXX command to access syslog
- **Benefit:**
  - Simplified scanning of syslogs using SDSF/REXX execs
  - Eliminate need to allocate each syslog separately and read them
  - Allocate syslog for reading by a utility such as EXECIO
  - Read syslog records into REXX stem variables
    - Select records based on time and date

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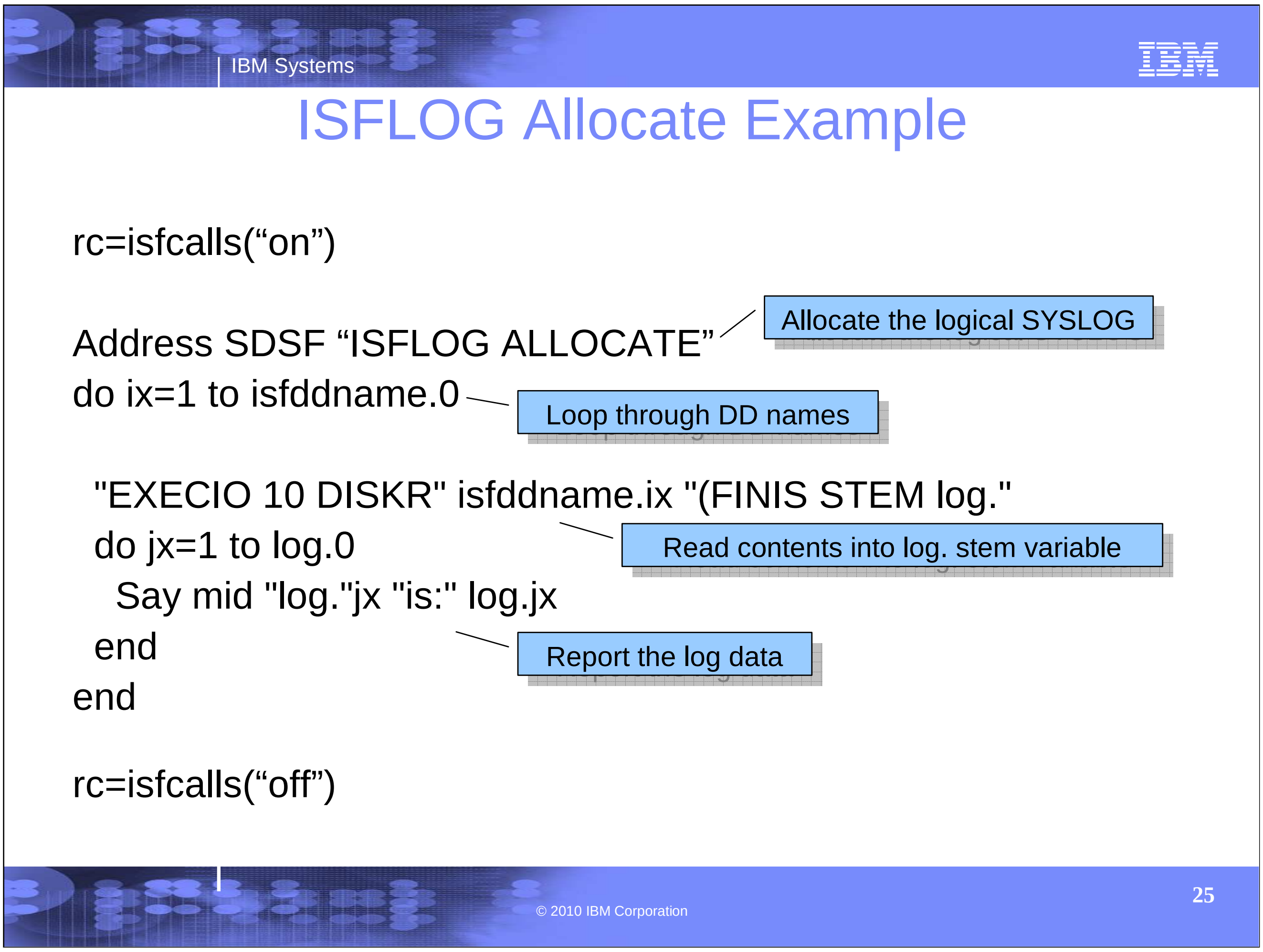
SDSF/REXX was introduced in z/OS V1R9 and enhanced since. It allows access to the SDSF panels through REXX. Row and column data is represented as REXX stem variables.



IBM Systems

ISFLOG Allocate Example

```
rc=isfcalls("on")

Address SDSF "ISFLOG ALLOCATE"
do ix=1 to isfddname.0

 "EXECIO 10 DISKR" isfddname.ix "(FINIS STEM log."
 do jx=1 to log.0
   Say mid "log."jx "is:" log.jx
 end
end

rc=isfcalls("off")
```

Allocate the logical SYSLOG

Loop through DD names

Read contents into log. stem variable

Report the log data

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isfcalls("on") must be the first statement in all SDSF/REXX execs to define the host command environment.

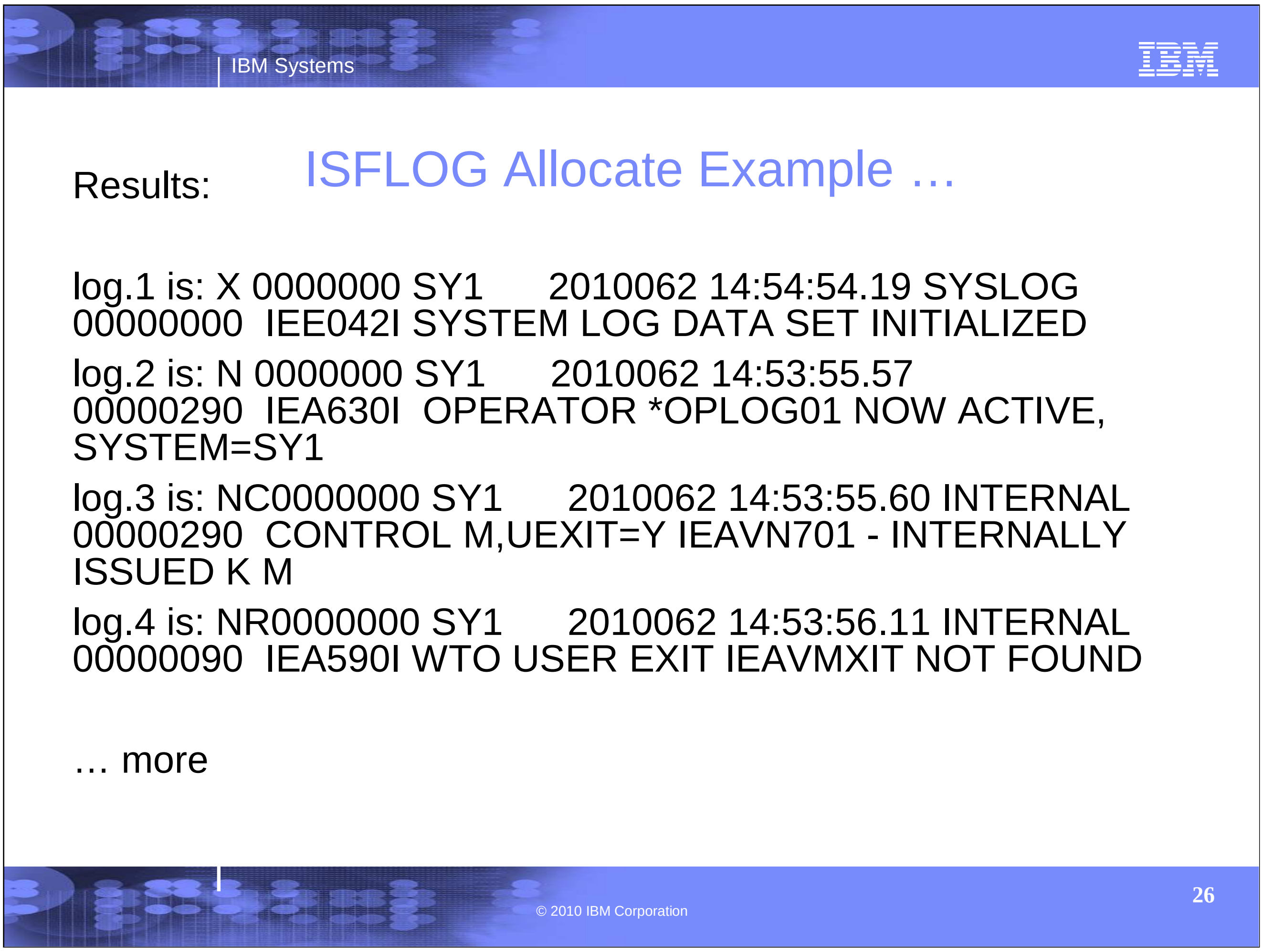
As with all SDSF allocations, ISFLOG ALLOCATE returns the allocated ddname in the isfddname stem. The data set name is also available in the isfdsname stem.

This example uses EXECIO to read the allocated syslog using EXECIO. ISFLOG uses the JES logical syslog, so only a single data set will be allocated.

You can add logic to scan for specific messages or events.

Finally, use the isfcalls("off") statement to remove the host command environment.

As with all SDSF functions, you should always check the return code from a command. Any error messages are returned in the isfmsg variable and isfmsg2 stem variable,.

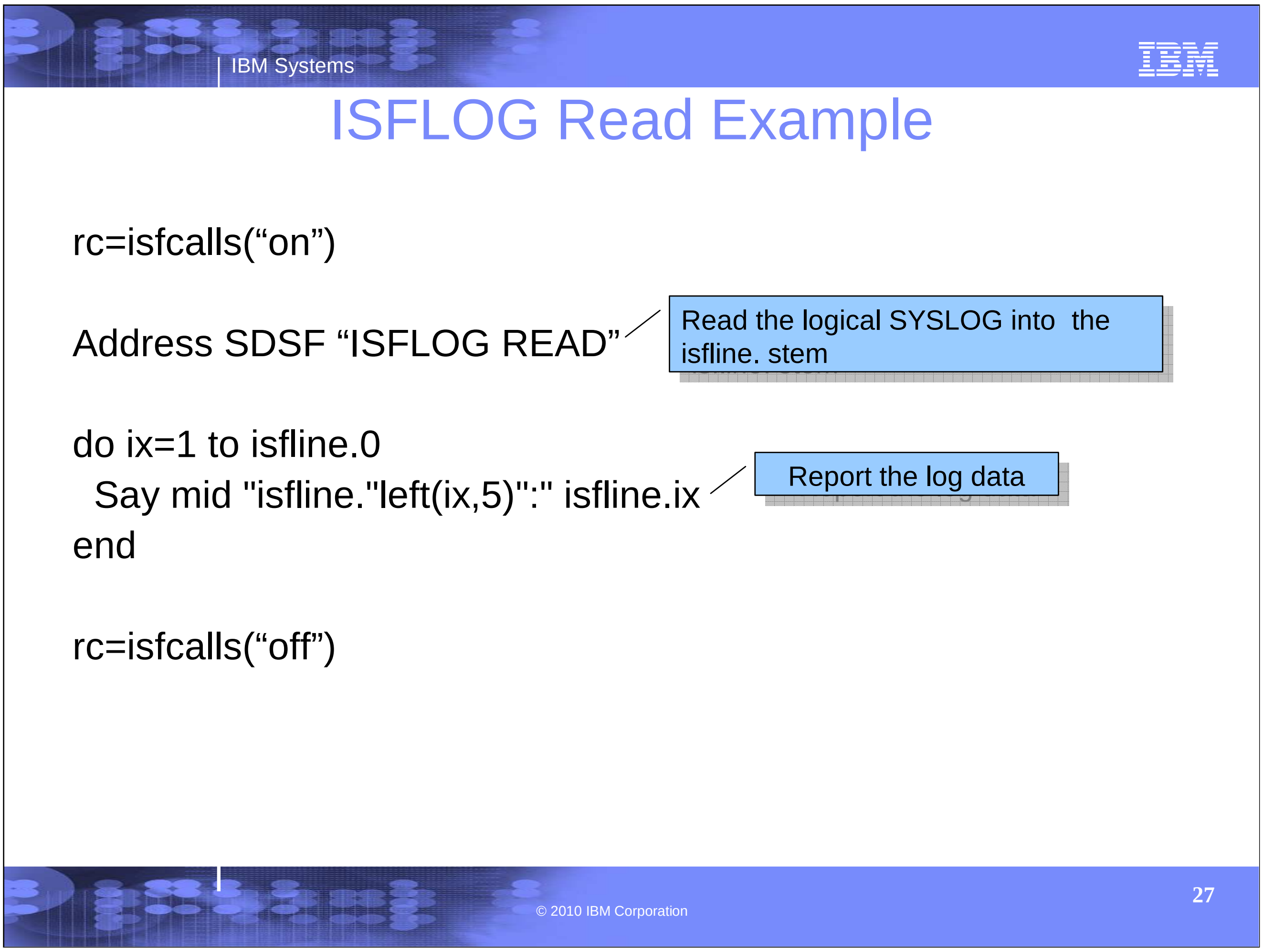


ISFLOG Allocate Example …

Results:

```
log.1 is: X 0000000 SY1      2010062 14:54:54.19 SYSLOG
00000000  IEE042I SYSTEM LOG DATA SET INITIALIZED
log.2 is: N 0000000 SY1      2010062 14:53:55.57
00000290  IEA630I  OPERATOR *OPLOG01 NOW ACTIVE,
SYSTEM=SY1
log.3 is: NC0000000 SY1      2010062 14:53:55.60 INTERNAL
00000290  CONTROL M,UEXIT=Y IEAVN701 - INTERNALLY
ISSUED K M
log.4 is: NR0000000 SY1      2010062 14:53:56.11 INTERNAL
00000090  IEA590I WTO USER EXIT IEAVMXIT NOT FOUND
```

… more



IBM Systems

ISFLOG Read Example

```
rc=isfcalls(“on”)

Address SDSF “ISFLOG READ”

do ix=1 to isfline.0
  Say mid "isfline."left(ix,5)":" isfline.ix
end

rc=isfcalls(“off”)
```

Read the logical SYSLOG into the isfline. stem

Report the log data

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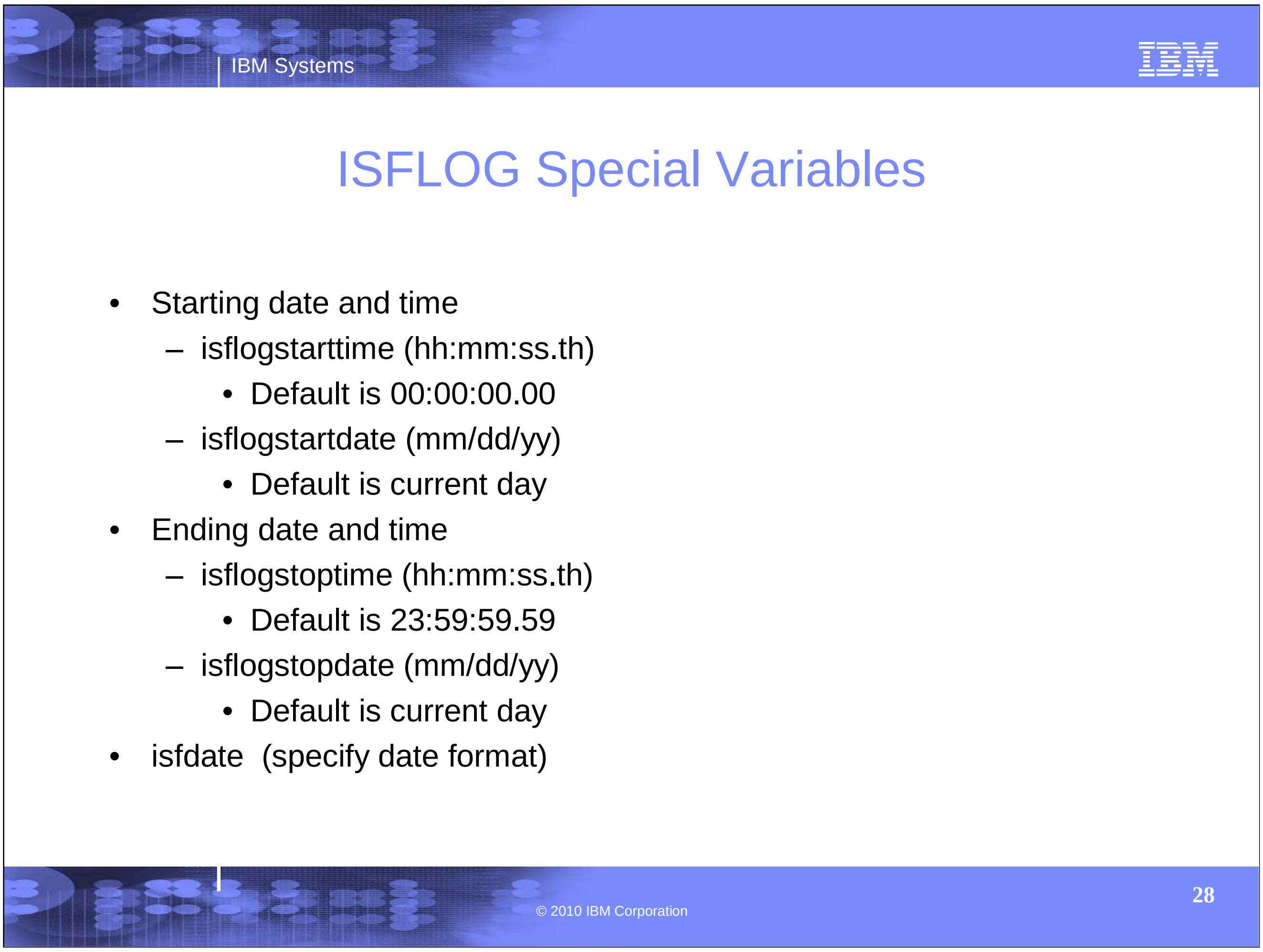
This example reads the current day of syslog because the start time and date are defaulted.

Each record of syslog is loaded into the isfline stem variable. Isfline.0 has the number of variables created.



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ISFLOG Special Variables

- Starting date and time
  - isflogstarttime (hh:mm:ss.th)
    - Default is 00:00:00.00
  - isflogstartdate (mm/dd/yy)
    - Default is current day
- Ending date and time
  - isflogstoptime (hh:mm:ss.th)
    - Default is 23:59:59.59
  - isflogstopdate (mm/dd/yy)
    - Default is current day
- isfdate (specify date format)

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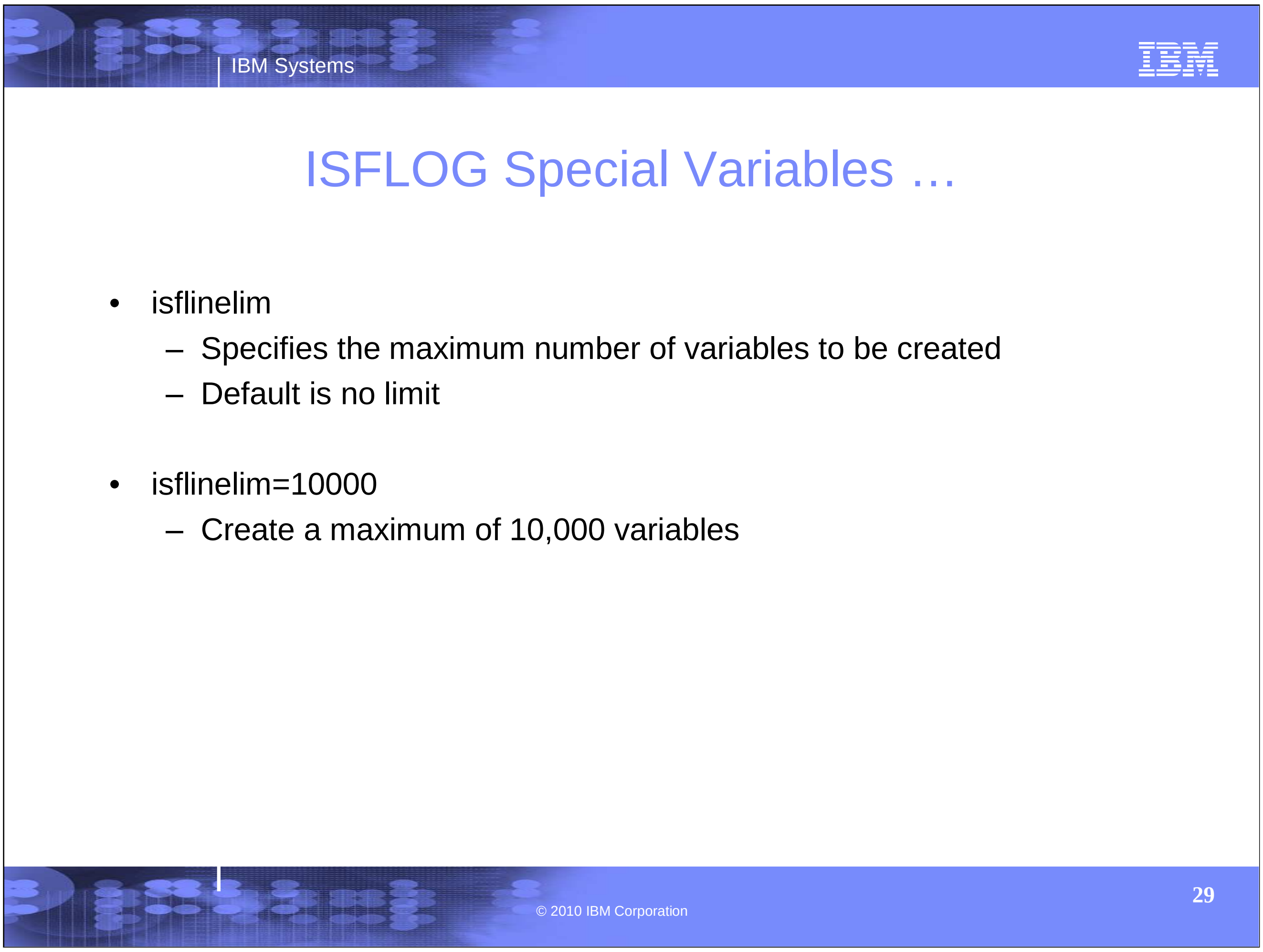
You can use the time and date variables to select a portion of the log to process. You should pick reasonable limits since that affects the number of variables created.

The isfdate special variable supports the same date patterns as the interactive SET DATE command.



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ISFLOG Special Variables …

- isflinelim
  - Specifies the maximum number of variables to be created
  - Default is no limit

- isflinelim=10000
  - Create a maximum of 10,000 variables

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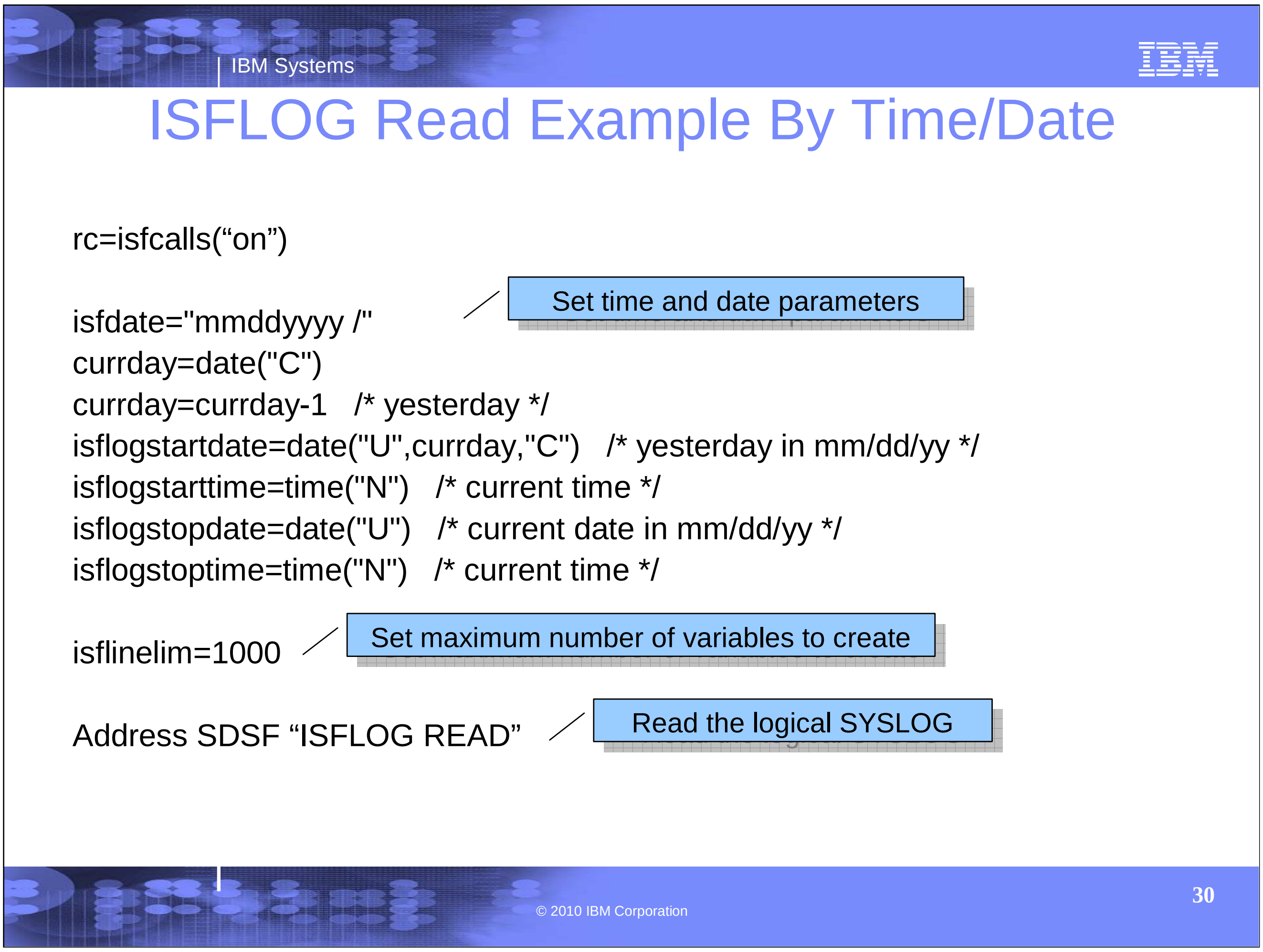
When the line limit is reached, SDSF stops creating variables, issues a message, and ends with a return code of 4.



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ISFLOG Read Example By Time/Date

```
rc=isfcalls(“on”)

isfdate="mmddyyyy /"
currday=date("C")
currday=currday-1   /* yesterday */
isflogstartdate=date("U",currday,"C")   /* yesterday in mm/dd/yy */
isflogstarttime=time("N")   /* current time */
isflogstopdate=date("U")   /* current date in mm/dd/yy */
isflogstoptime=time("N")   /* current time */

isflinelim=1000

Address SDSF “ISFLOG READ”
```

Set time and date parameters

Set maximum number of variables to create

Read the logical SYSLOG

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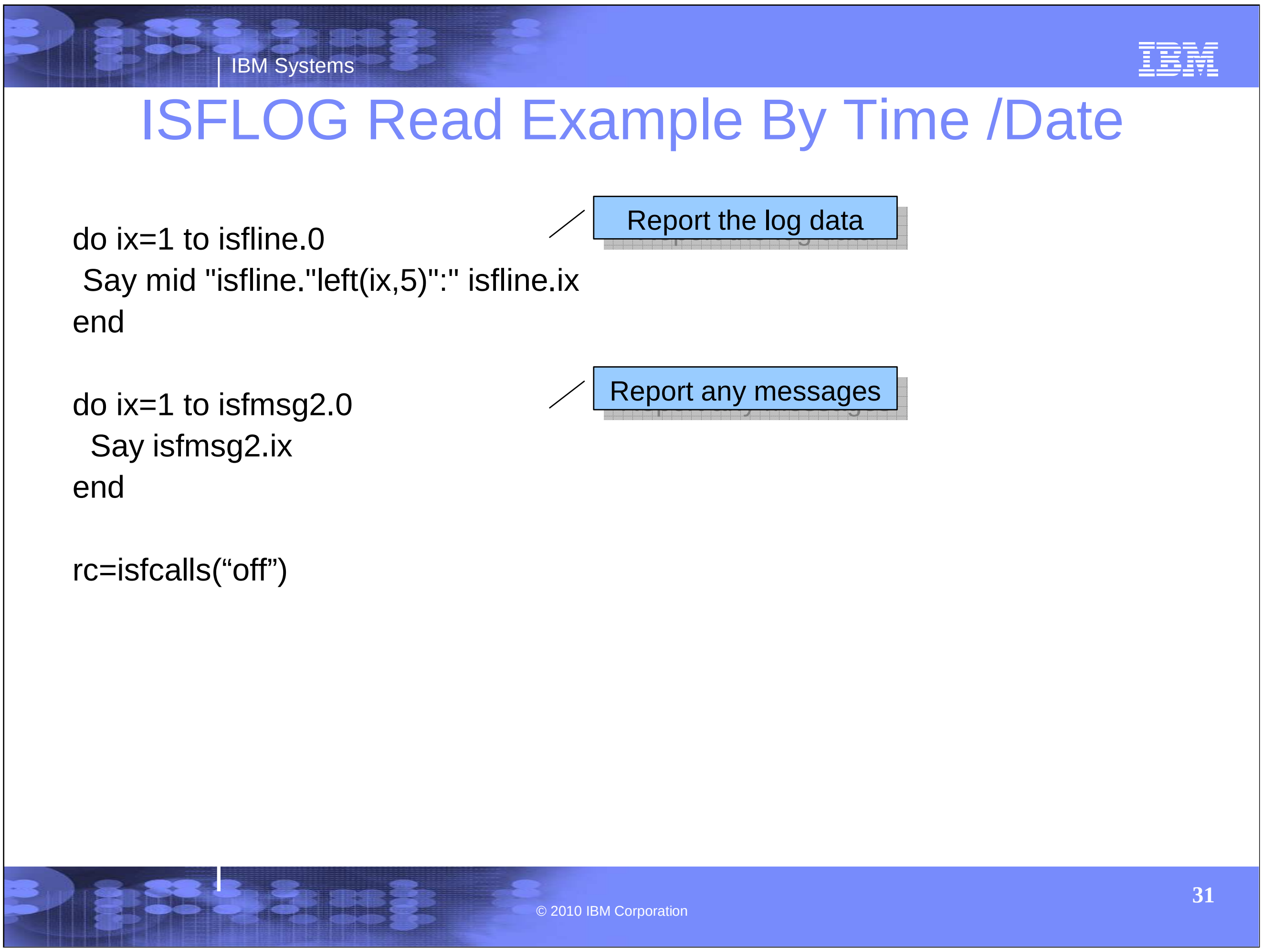
This example reads the last 24 hours of syslog.

The isfdate variable is used to set the date format, in this case, mm/dd/yyyy. SDSF also accepts a two digit year with this format.

The current day number is obtained. We subtract 1 to get yesterday’s day number and then convert it to mm/dd/yy format.

We set the starting and ending time to the current time.



ISFLOG Read Example By Time /Date

```
do ix=1 to isfline.0
 Say mid "isfline."left(ix,5)":" isfline.ix
end

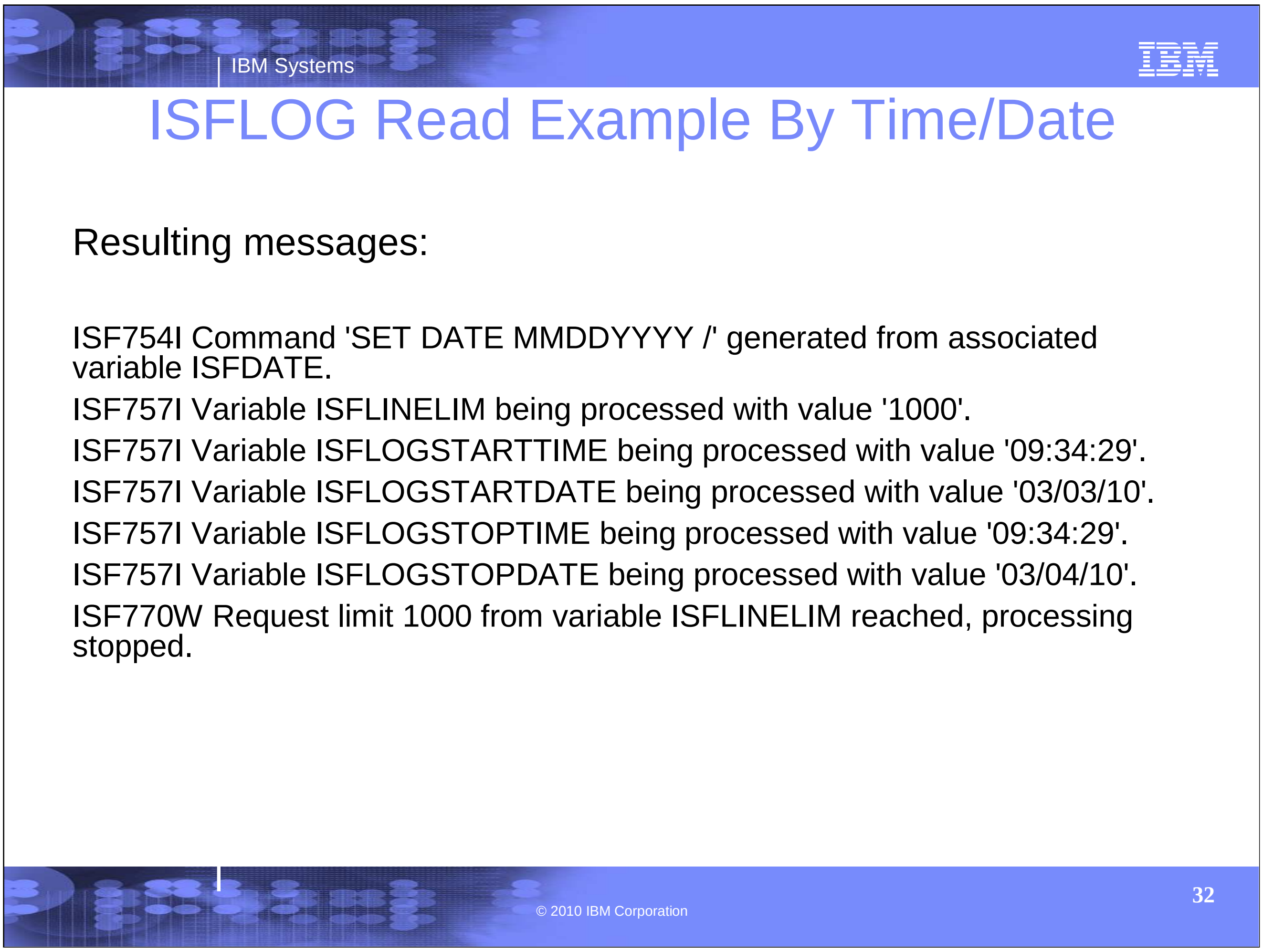
do ix=1 to isfmsg2.0
  Say isfmsg2.ix
end

rc=isfcalls(“off”)
```

Report the log data

Report any messages

You should always check the return code from SDSF and list the messages.



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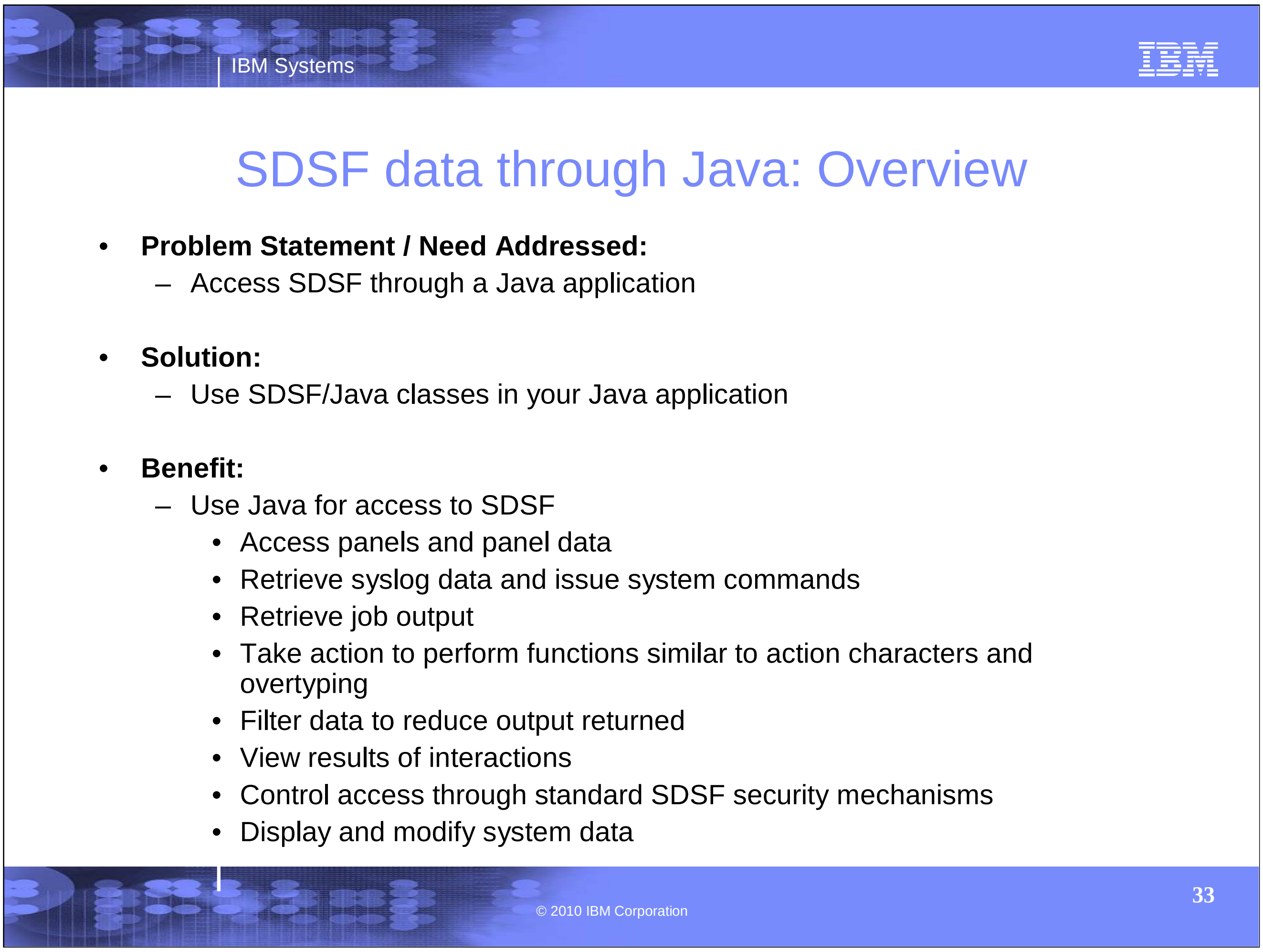
ISFLOG Read Example By Time/Date

Resulting messages:

```
ISF754I Command 'SET DATE MMDDYYYY /' generated from associated variable ISFDATE.
ISF757I Variable ISFLINELIM being processed with value '1000'.
ISF757I Variable ISFLOGSTARTTIME being processed with value '09:34:29'.
ISF757I Variable ISFLOGSTARTDATE being processed with value '03/03/10'.
ISF757I Variable ISFLOGSTOPTIME being processed with value '09:34:29'.
ISF757I Variable ISFLOGSTOPDATE being processed with value '03/04/10'.
ISF770W Request limit 1000 from variable ISFLINELIM reached, processing stopped.
```

You should always check the return code from SDSF and list the messages.

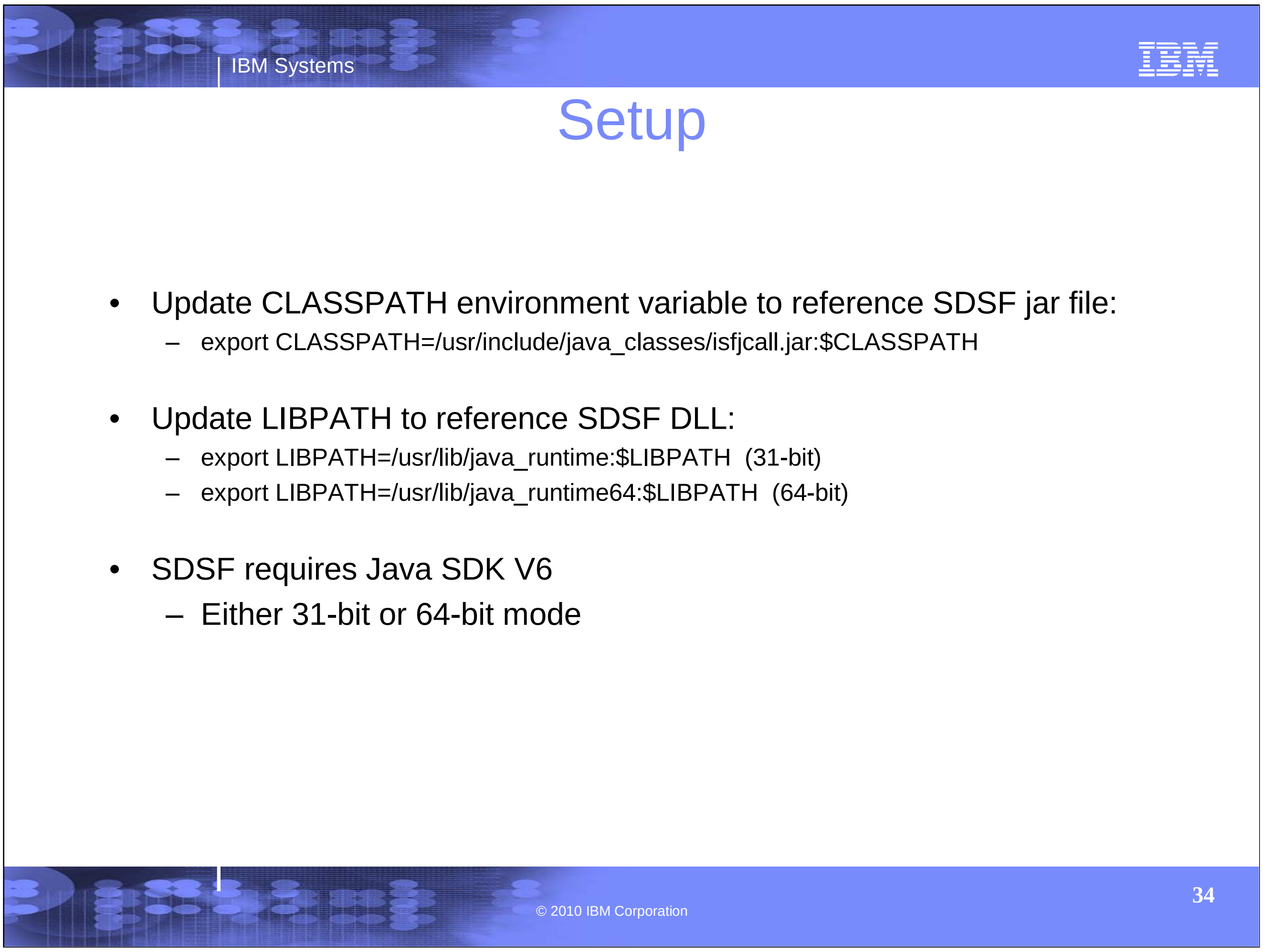
The records from syslog will be in the isfline stem variables.



IBM Systems

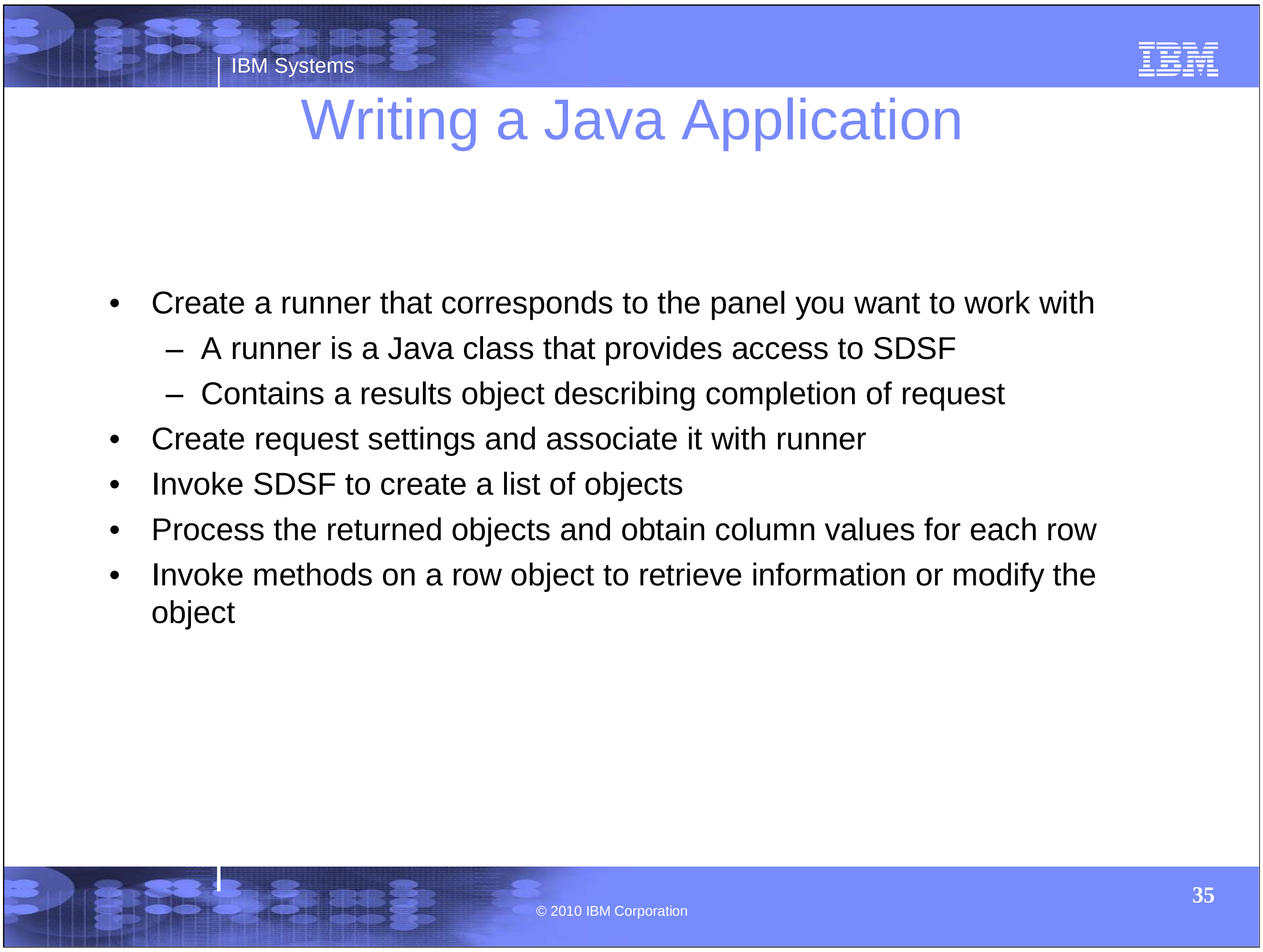
SDSF data through Java: Overview

- **Problem Statement / Need Addressed:**
  - Access SDSF through a Java application
- **Solution:**
  - Use SDSF/Java classes in your Java application
- **Benefit:**
  - Use Java for access to SDSF
    - Access panels and panel data
    - Retrieve syslog data and issue system commands
    - Retrieve job output
    - Take action to perform functions similar to action characters and overtyping
    - Filter data to reduce output returned
    - View results of interactions
    - Control access through standard SDSF security mechanisms
    - Display and modify system data



Setup

- Update CLASSPATH environment variable to reference SDSF jar file:
  - export CLASSPATH=/usr/include/java_classes/isfjcall.jar:$CLASSPATH
- Update LIBPATH to reference SDSF DLL:
  - export LIBPATH=/usr/lib/java_runtime:$LIBPATH (31-bit)
  - export LIBPATH=/usr/lib/java_runtime64:$LIBPATH (64-bit)
- SDSF requires Java SDK V6
  - Either 31-bit or 64-bit mode



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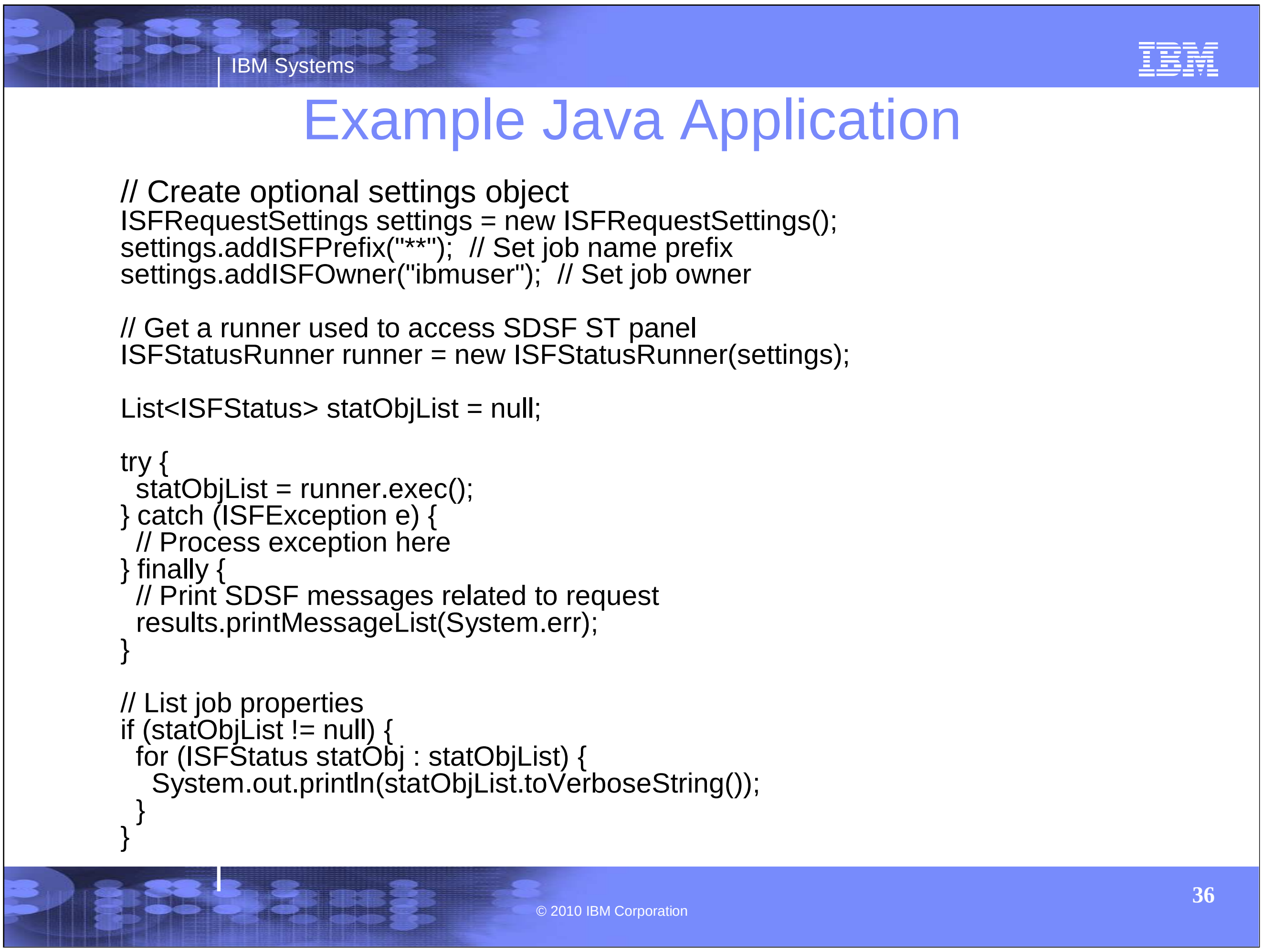
Writing a Java Application

- Create a runner that corresponds to the panel you want to work with
  - A runner is a Java class that provides access to SDSF
  - Contains a results object describing completion of request
- Create request settings and associate it with runner
- Invoke SDSF to create a list of objects
- Process the returned objects and obtain column values for each row
- Invoke methods on a row object to retrieve information or modify the object



IBM Systems

Example Java Application

```
// Create optional settings object
ISFRequestSettings settings = new ISFRequestSettings();
settings.addISFPrefix("**");  // Set job name prefix
settings.addISFOwner("ibmuser");  // Set job owner

// Get a runner used to access SDSF ST panel
ISFStatusRunner runner = new ISFStatusRunner(settings);

List<ISFStatus> statObjList = null;

try {
  statObjList = runner.exec();
} catch (ISFException e) {
  // Process exception here
} finally {
  // Print SDSF messages related to request
  results.printMessageList(System.err);
}

// List job properties
if (statObjList != null) {
  for (ISFStatus statObj : statObjList) {
    System.out.println(statObjList.toVerboseString());
  }
}
```

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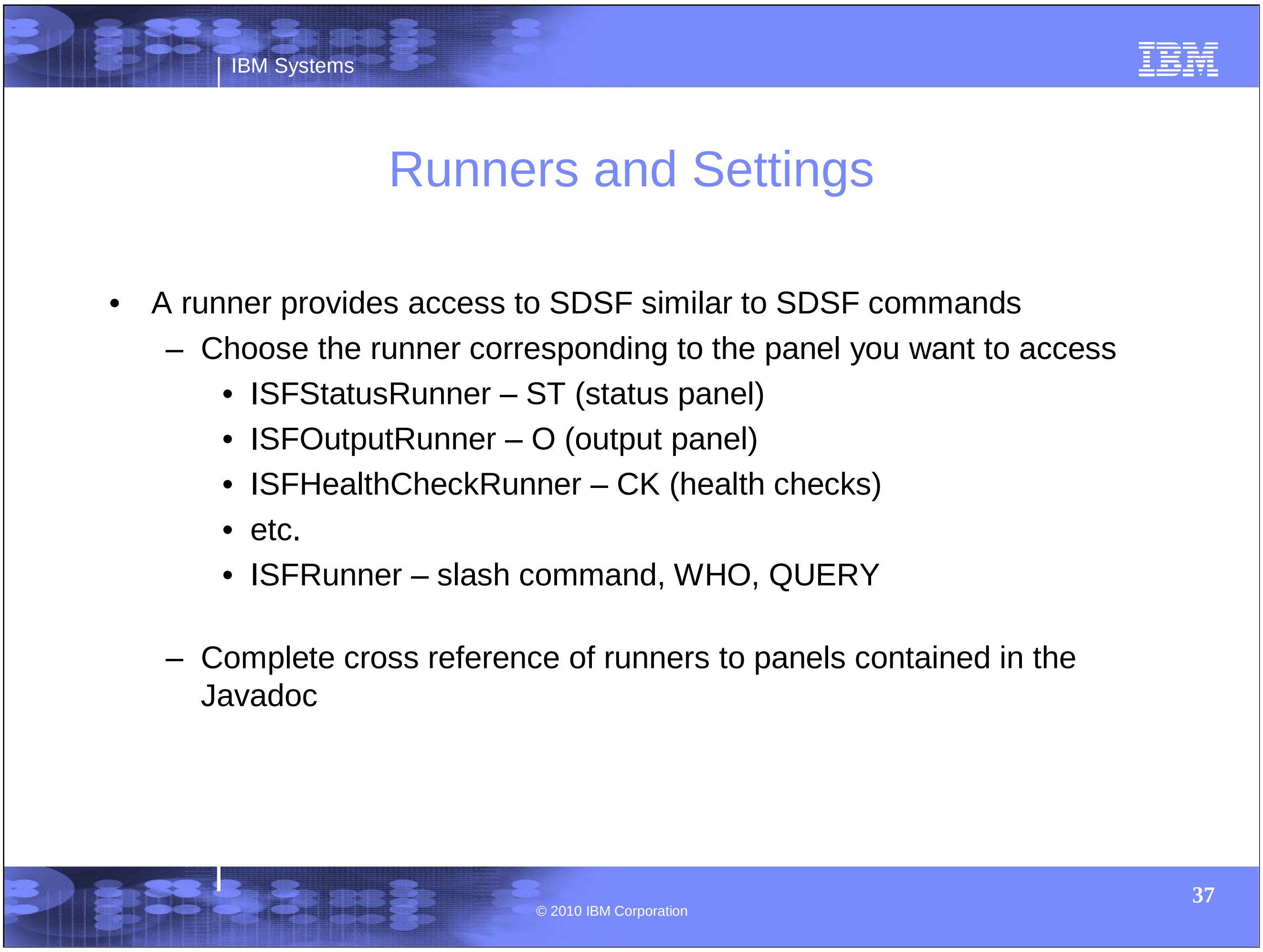
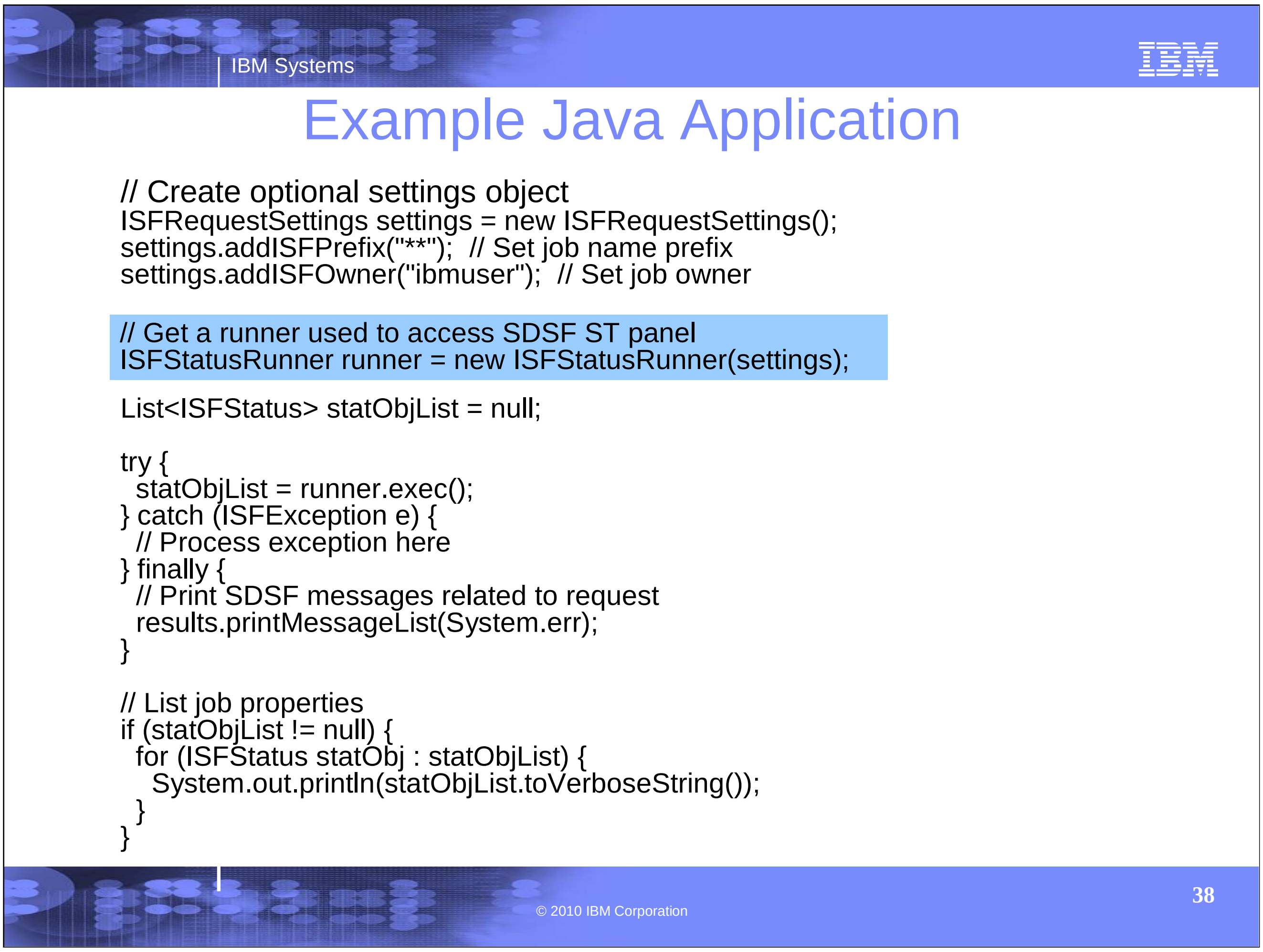
We will come back to this example later.



Runners and Settings

- A runner provides access to SDSF similar to SDSF commands
  - Choose the runner corresponding to the panel you want to access
    - ISFStatusRunner – ST (status panel)
    - ISFOutputRunner – O (output panel)
    - ISFHealthCheckRunner – CK (health checks)
    - etc.
    - ISFRunner – slash command, WHO, QUERY
  - Complete cross reference of runners to panels contained in the Javadoc



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Example Java Application

```
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try {
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} catch (ISFException e) {
  // Process exception here
} finally {
  // Print SDSF messages related to request
  results.printMessageList(System.err);
}

// List job properties
if (statObjList != null) {
  for (ISFStatus statObj : statObjList) {
    System.out.println(statObjList.toVerboseString());
  }
}
```

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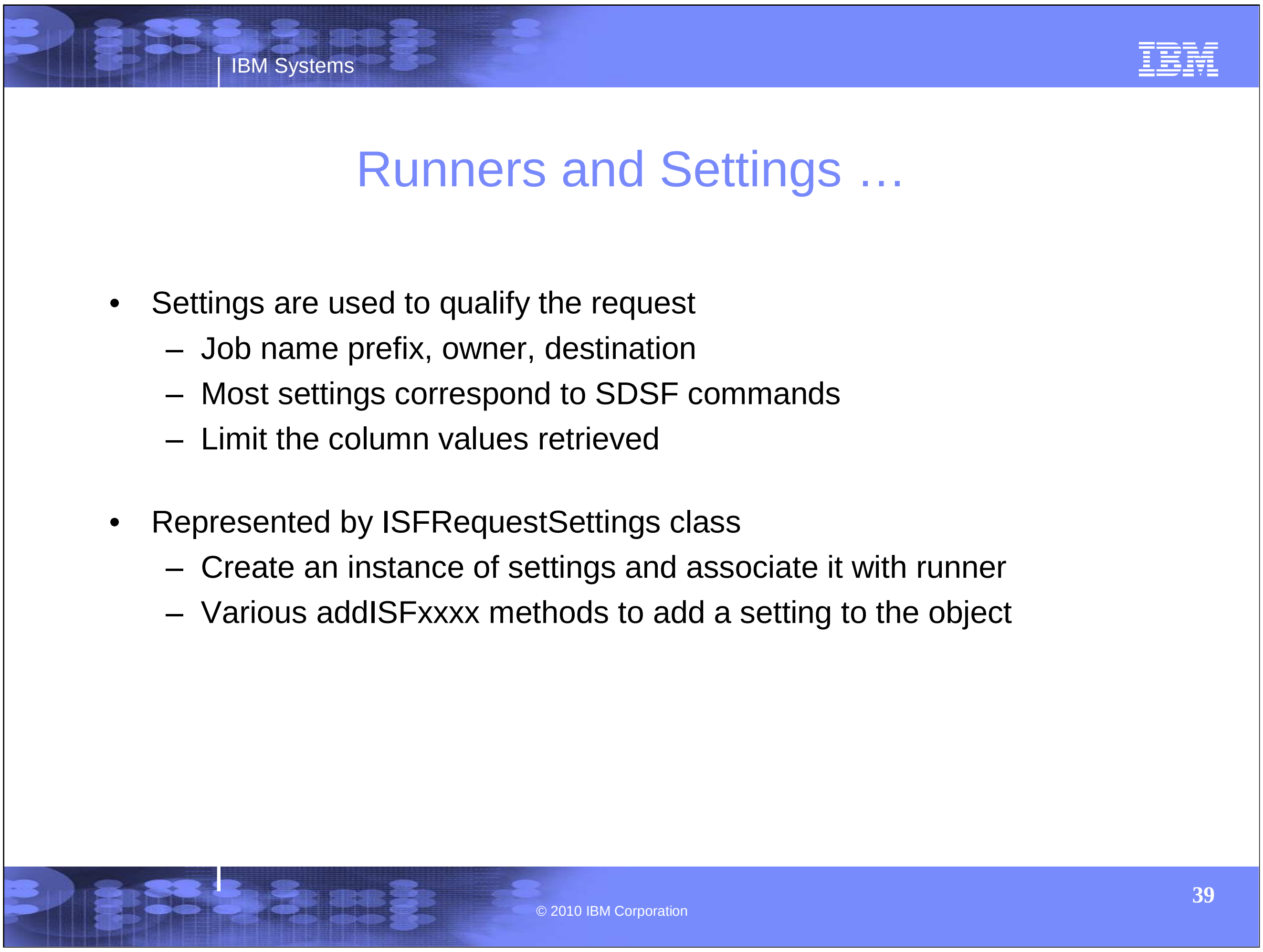
To access the rows and columns on the ST panel, we get an instance of an ISFStatusRunner.

Note the constructor references the settings object that was created above it. You can also use the setRequestSettings() method to relate settings to a runner.



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Runners and Settings …

- Settings are used to qualify the request
  - Job name prefix, owner, destination
  - Most settings correspond to SDSF commands
  - Limit the column values retrieved
- Represented by ISFRequestSettings class
  - Create an instance of settings and associate it with runner
  - Various addISFxxxx methods to add a setting to the object

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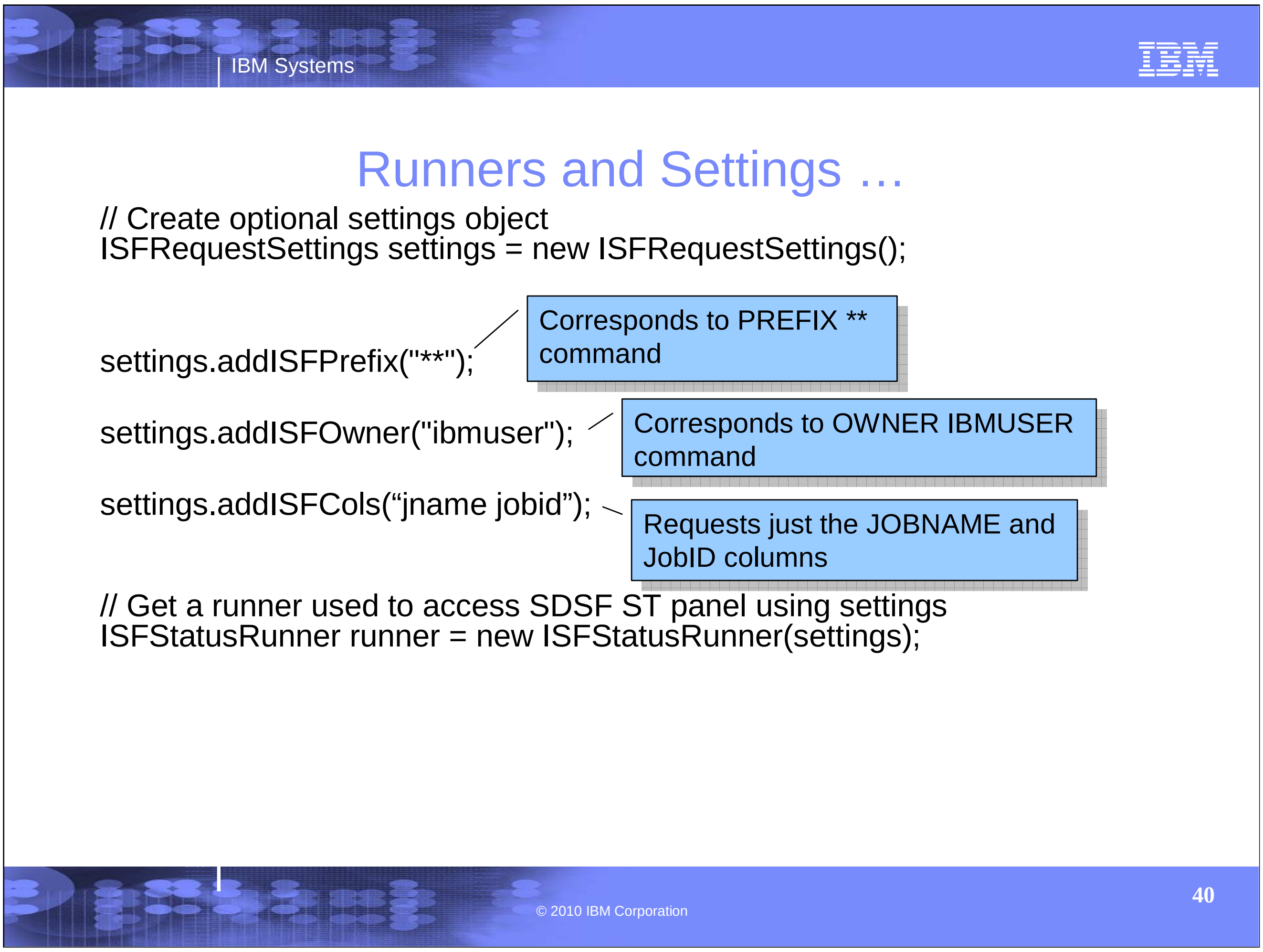
You should minimize the amount of data being returned. Always try to use the settings to limit the objects being returned, such as through prefix, owner, and filter.

Limit the amount of data within each object to just those column values needed. The addISFCols setting is used to specify a list of column names for which data is needed.



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Runners and Settings …

```
// Create optional settings object
ISFRequestSettings settings = new ISFRequestSettings();

settings.addISFPrefix("**");

settings.addISFOwner("ibmuser");

settings.addISFCols("jname jobid");

// Get a runner used to access SDSF ST panel using settings
ISFStatusRunner runner = new ISFStatusRunner(settings);
```

Corresponds to PREFIX ** command

Corresponds to OWNER IBMUSER command

Requests just the JOBNAME and JobID columns

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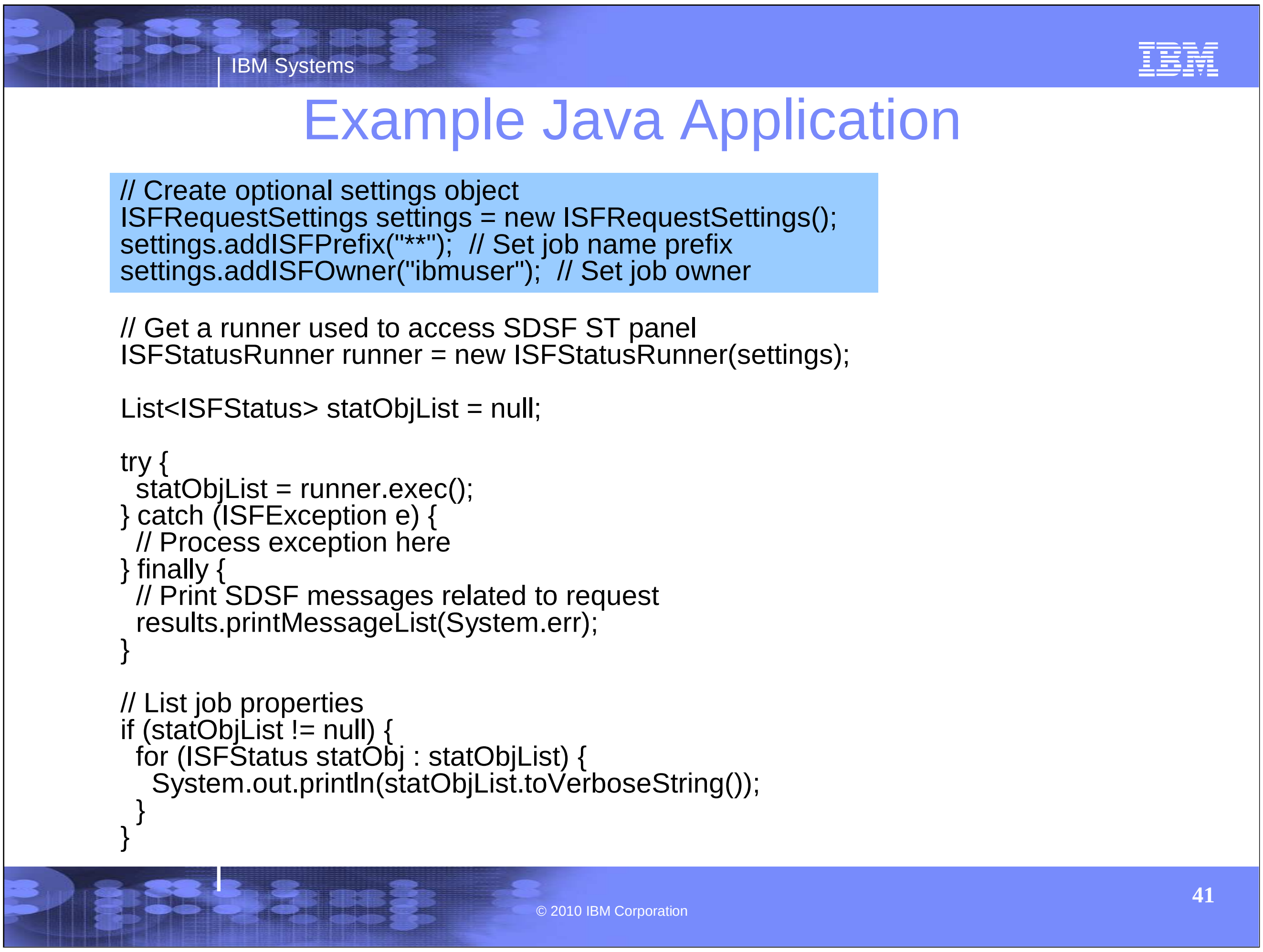
The request settings are used to qualify the request. Most settings correspond to SDSF commands, such as PREFIX and OWNER. Use the appropriate method to add a value for the setting to the request settings object.

The object limit setting can be used to cap the number of objects returned.

Settings are associated with a runner. They remain in effect unless they are changed or reset.



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Example Java Application

```
// Create optional settings object
ISFRequestSettings settings = new ISFRequestSettings();
settings.addISFPrefix("**");  // Set job name prefix
settings.addISFOwner("ibmuser");  // Set job owner

// Get a runner used to access SDSF ST panel
ISFStatusRunner runner = new ISFStatusRunner(settings);

List<ISFStatus> statObjList = null;

try {
  statObjList = runner.exec();
} catch (ISFException e) {
  // Process exception here
} finally {
  // Print SDSF messages related to request
  results.printMessageList(System.err);
}

// List job properties
if (statObjList != null) {
  for (ISFStatus statObj : statObjList) {
    System.out.println(statObjList.toVerboseString());
  }
}
```

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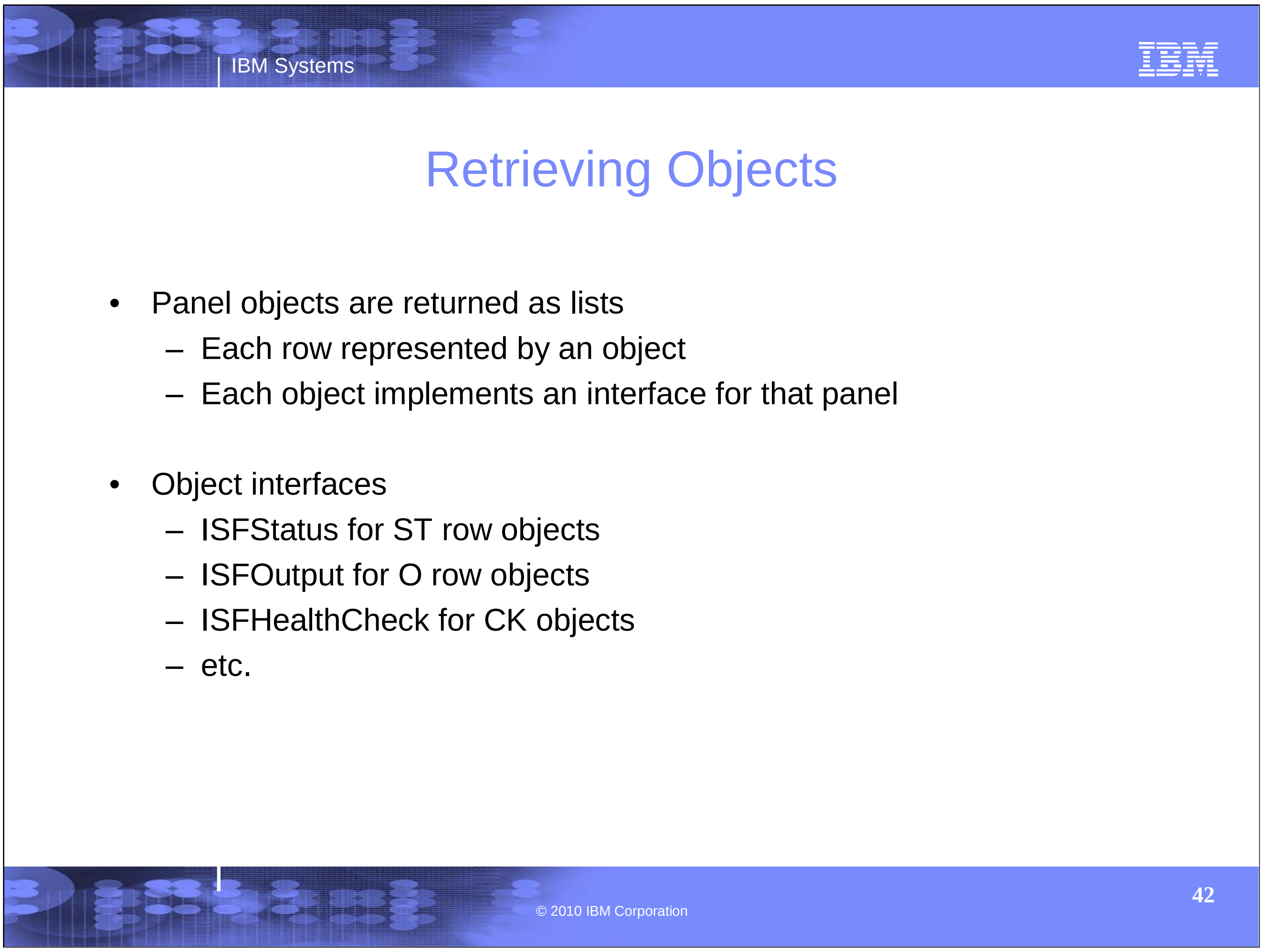
Here an ISFRequetSettings object is created.

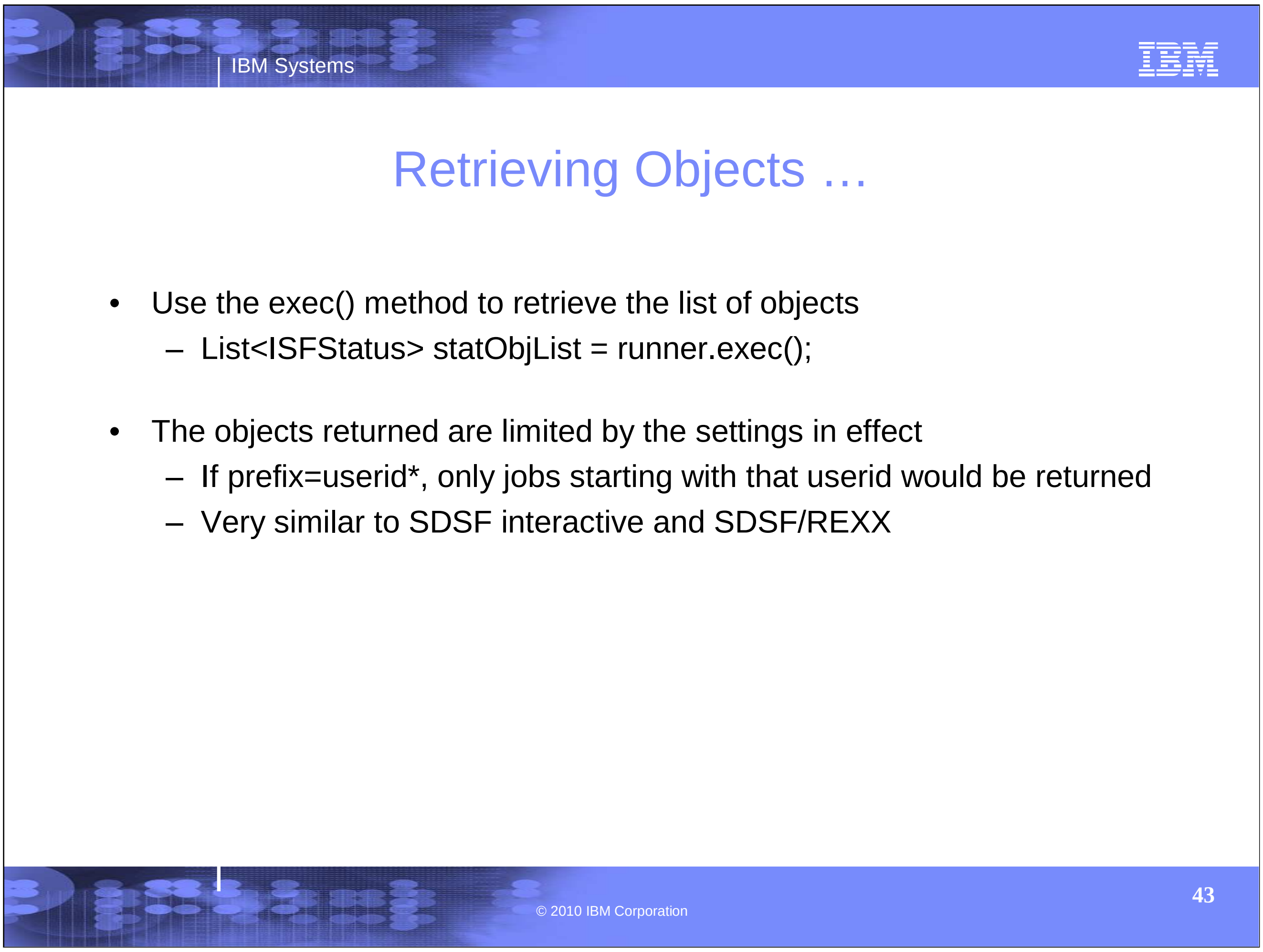
The jobname prefix is set to ** and the owner to IBMUSER. These settings correspond to the SDSF PREFIX and OWNER commands, and thus you must be authorized to change them.



Retrieving Objects

- Panel objects are returned as lists
  - Each row represented by an object
  - Each object implements an interface for that panel
- Object interfaces
  - ISFStatus for ST row objects
  - ISFOutput for O row objects
  - ISFHealthCheck for CK objects
  - etc.

There is an interface for each object type. Refer to the Javadoc for the complete set of object interfaces.



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Retrieving Objects …

- Use the exec() method to retrieve the list of objects
  - List<ISFStatus> statObjList = runner.exec();
- The objects returned are limited by the settings in effect
  - If prefix=userid*, only jobs starting with that userid would be returned
  - Very similar to SDSF interactive and SDSF/REXX

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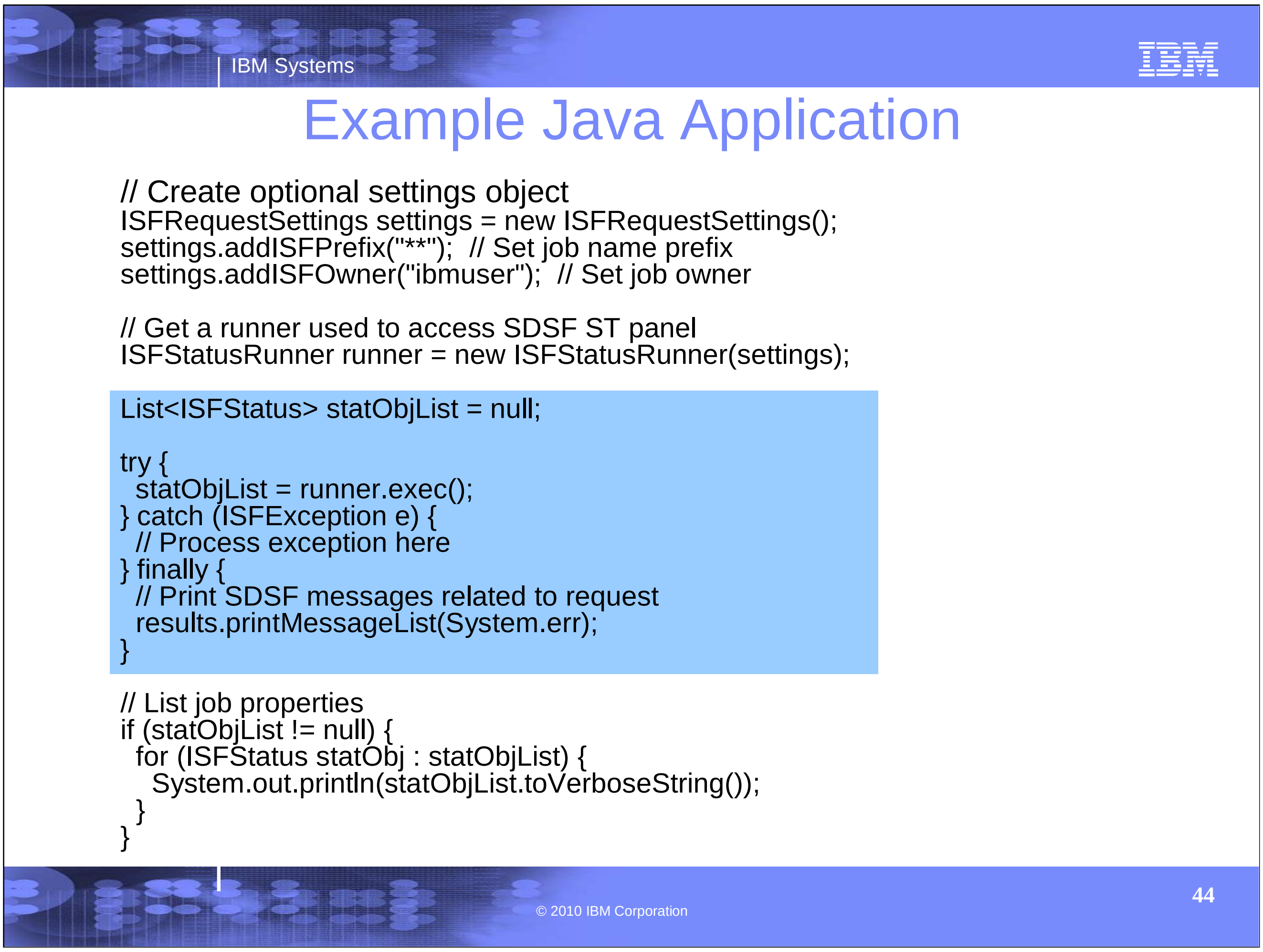
The runner exec() method retrieves the objects and returns them in a List. Then use standard list methods to traverse the objects being returned.

If the list cannot be created, an exception will be thrown. Explanatory messages will be returned in the ISFRequestResults object.



IBM Systems

Example Java Application

```
// Create optional settings object
ISFRequestSettings settings = new ISFRequestSettings();
settings.addISFPrefix("**");  // Set job name prefix
settings.addISFOwner("ibmuser");  // Set job owner

// Get a runner used to access SDSF ST panel
ISFStatusRunner runner = new ISFStatusRunner(settings);

List<ISFStatus> statObjList = null;

try {
  statObjList = runner.exec();
} catch (ISFException e) {
  // Process exception here
} finally {
  // Print SDSF messages related to request
  results.printMessageList(System.err);
}

// List job properties
if (statObjList != null) {
  for (ISFStatus statObj : statObjList) {
    System.out.println(statObjList.toVerboseString());
  }
}
```

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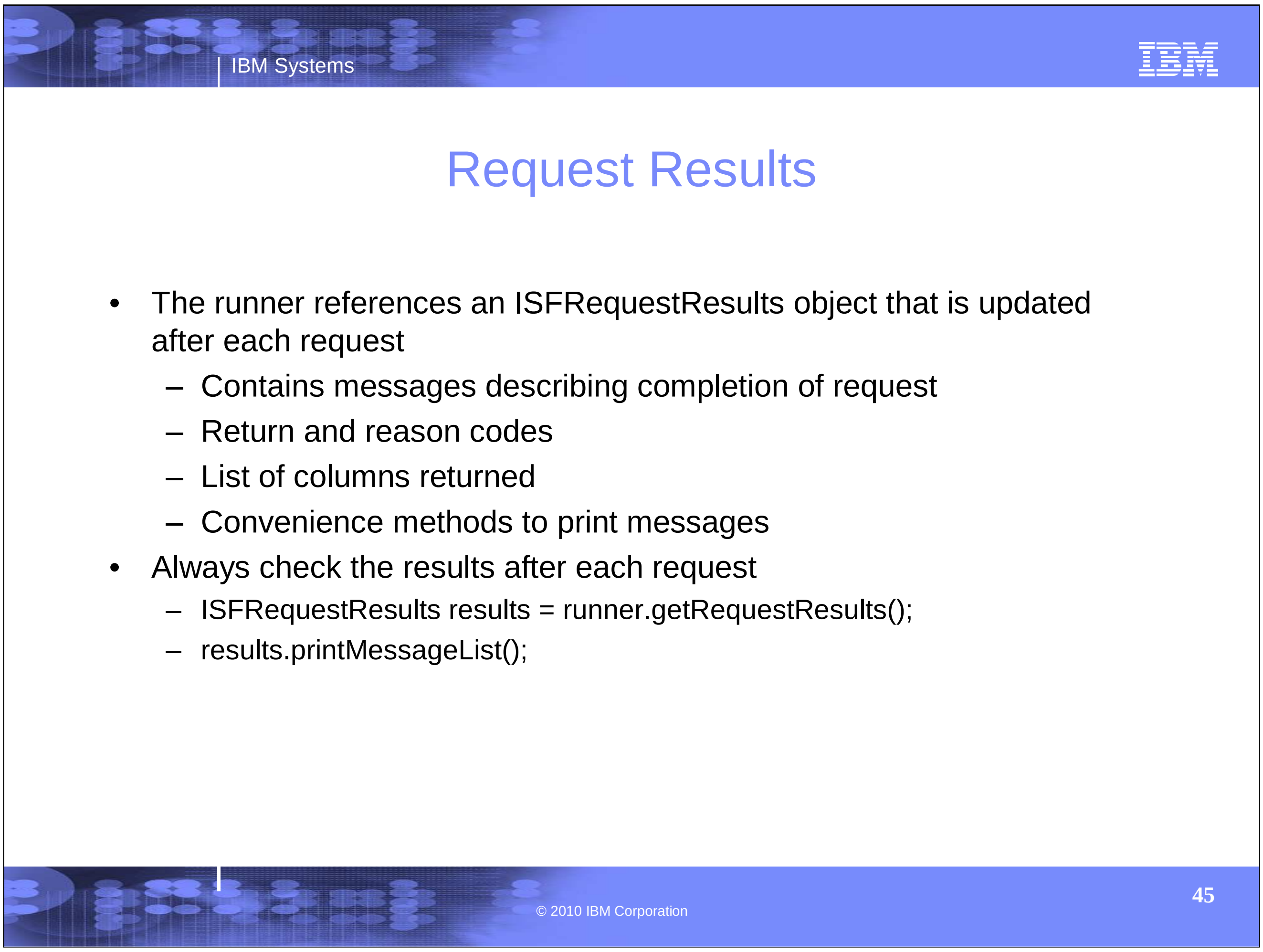
Notice the runner.exec() method to create the object list (of type ISFStatus).



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Request Results

- The runner references an ISFRequestResults object that is updated after each request
  - Contains messages describing completion of request
  - Return and reason codes
  - List of columns returned
  - Convenience methods to print messages
- Always check the results after each request
  - ISFRequestResults results = runner.getRequestResults();
  - results.printMessageList();

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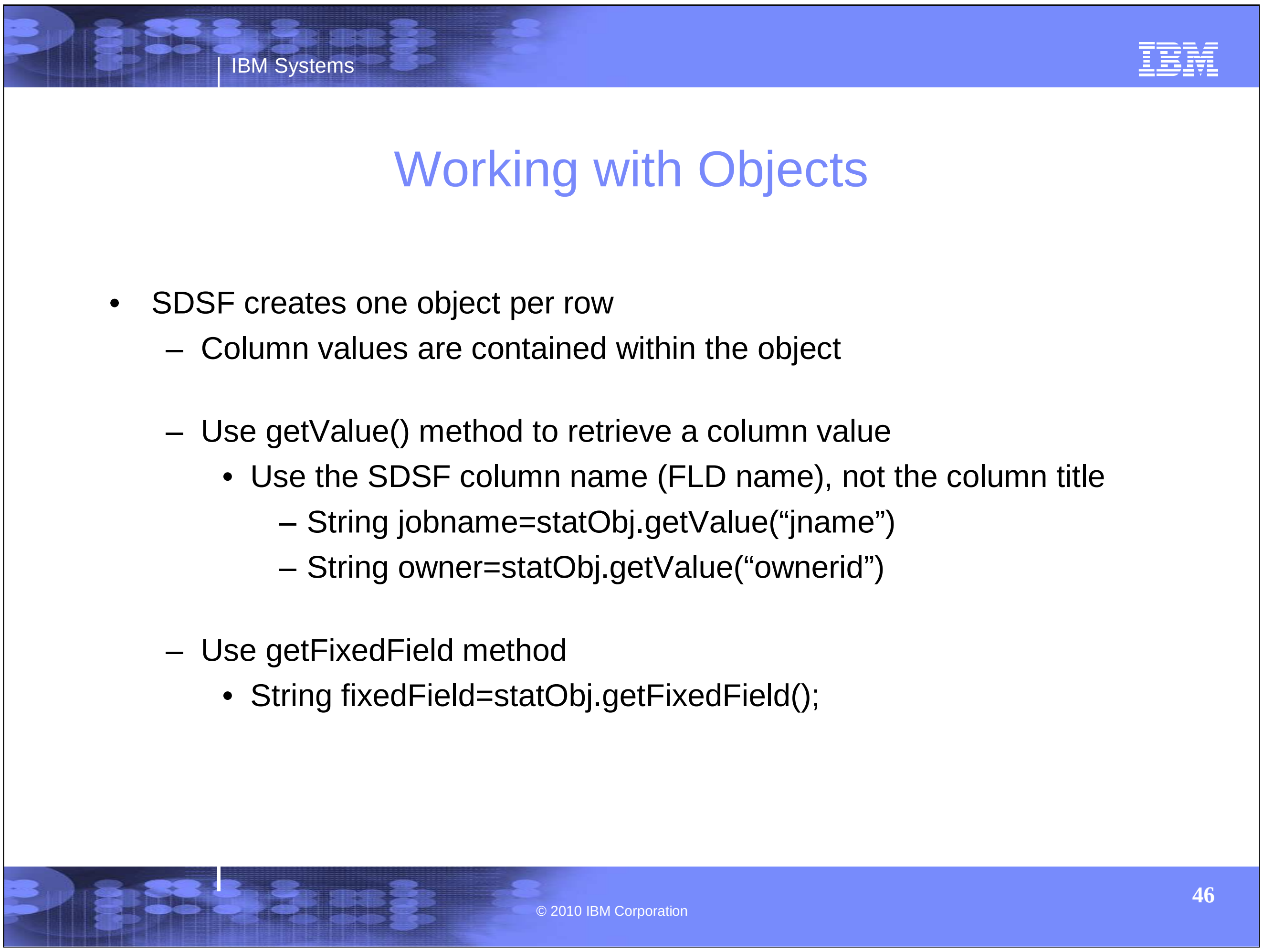

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Working with Objects

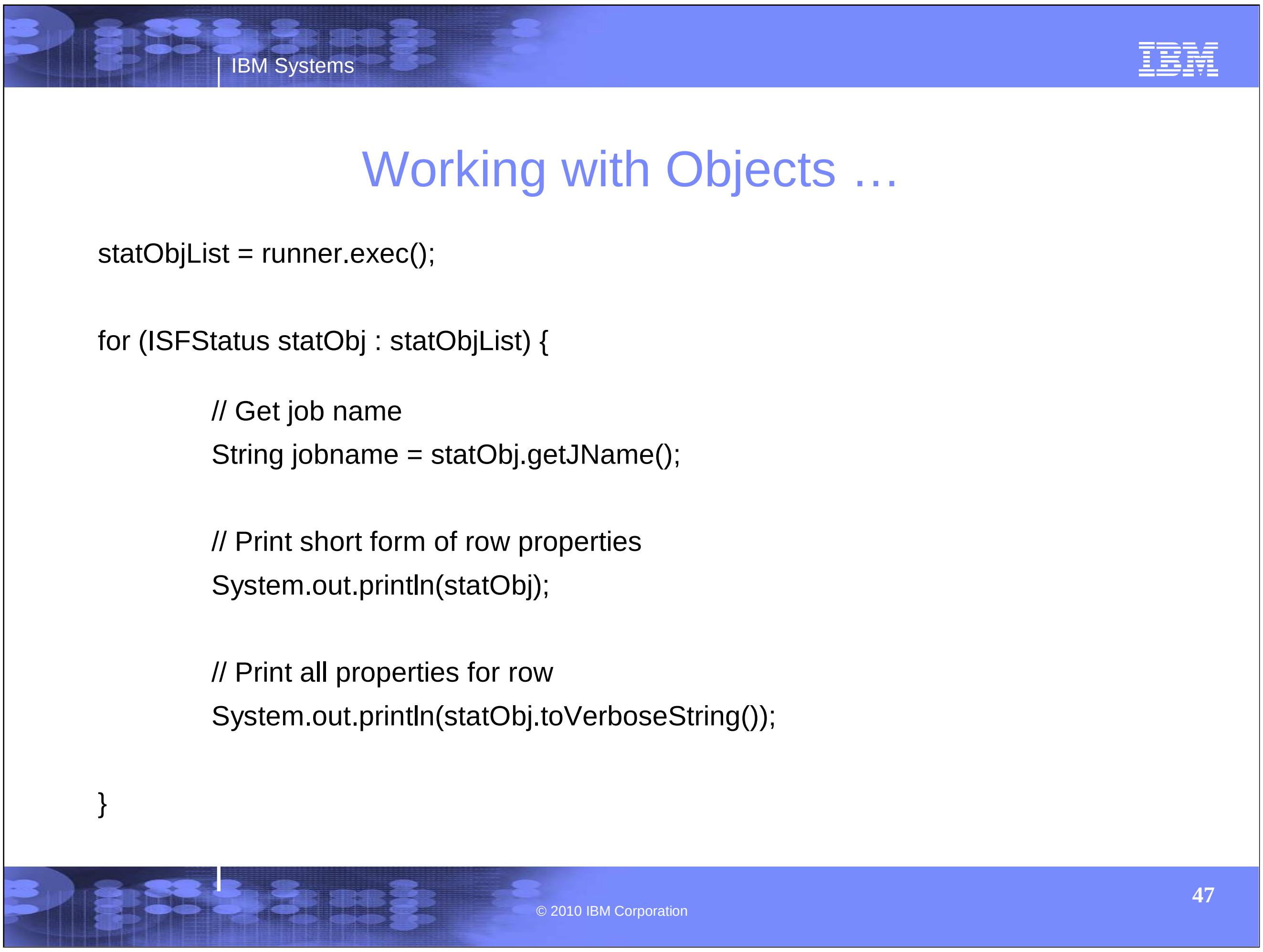
- SDSF creates one object per row
  - Column values are contained within the object
  - Use getValue() method to retrieve a column value
    - Use the SDSF column name (FLD name), not the column title
      - String jobname=statObj.getValue(“jname”)
      - String owner=statObj.getValue(“ownerid”)
  - Use getFixedField method
    - String fixedField=statObj.getFixedField();

getValue always returns a formatted, string value for the column. Other methods available are:

getValueBytes – returns column value as a byte array

getRelatedValue – returns an array of related values when a column contains multiple values

getRelatedValueBytes – returns an array of related values as byte arrays



Working with Objects …

```
statObjList = runner.exec();

for (ISFStatus statObj : statObjList) {

          // Get job name
          String jobname = statObj.getJName();

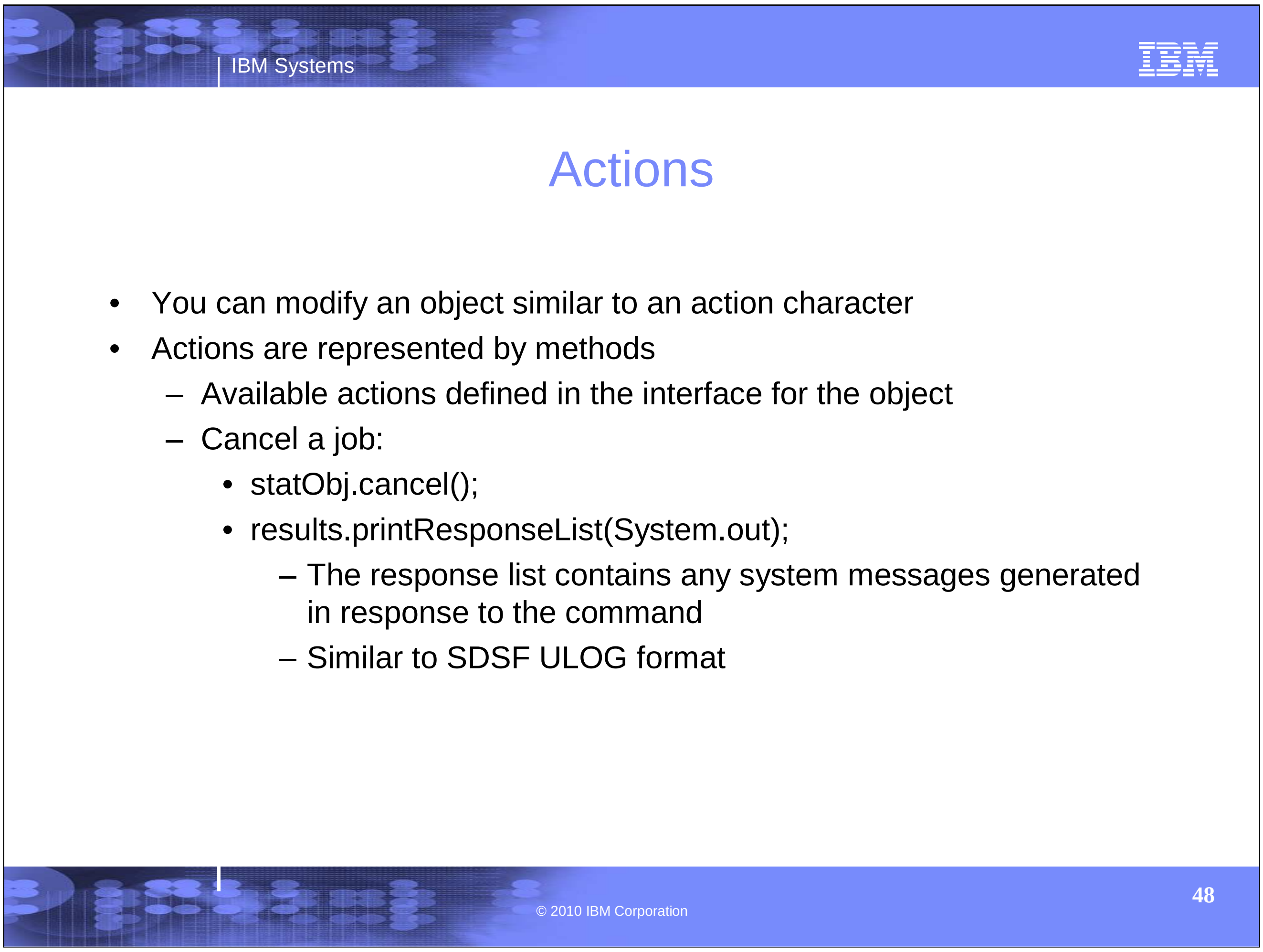
          // Print short form of row properties
          System.out.println(statObj);

          // Print all properties for row
          System.out.println(statObj.toVerboseString());

}
```

Many panels have convenience methods to retrieve commonly used columns.

Here we see the getJName() method to obtain the job name and is equivalent to getValue(“jname”).



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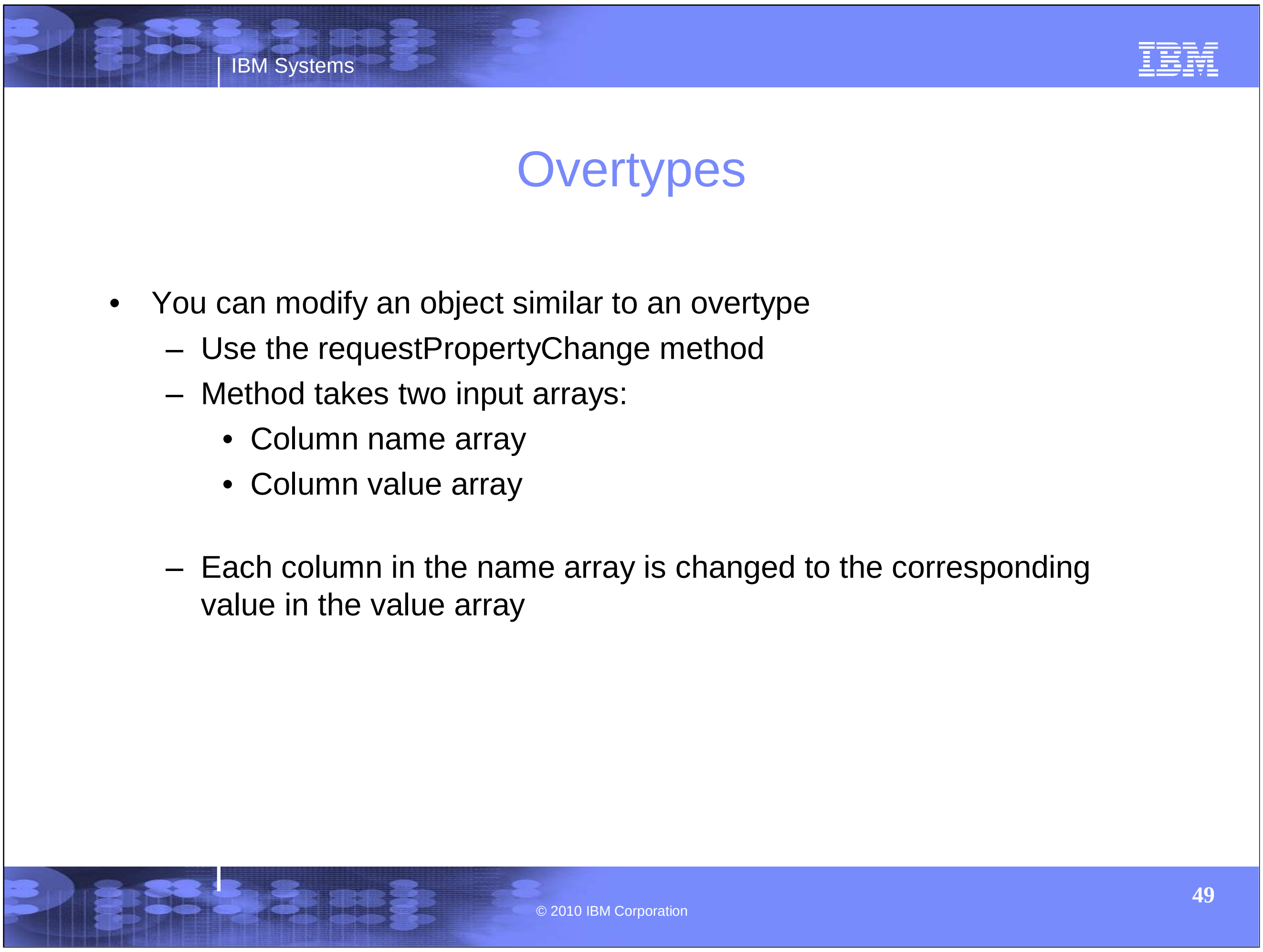
Actions

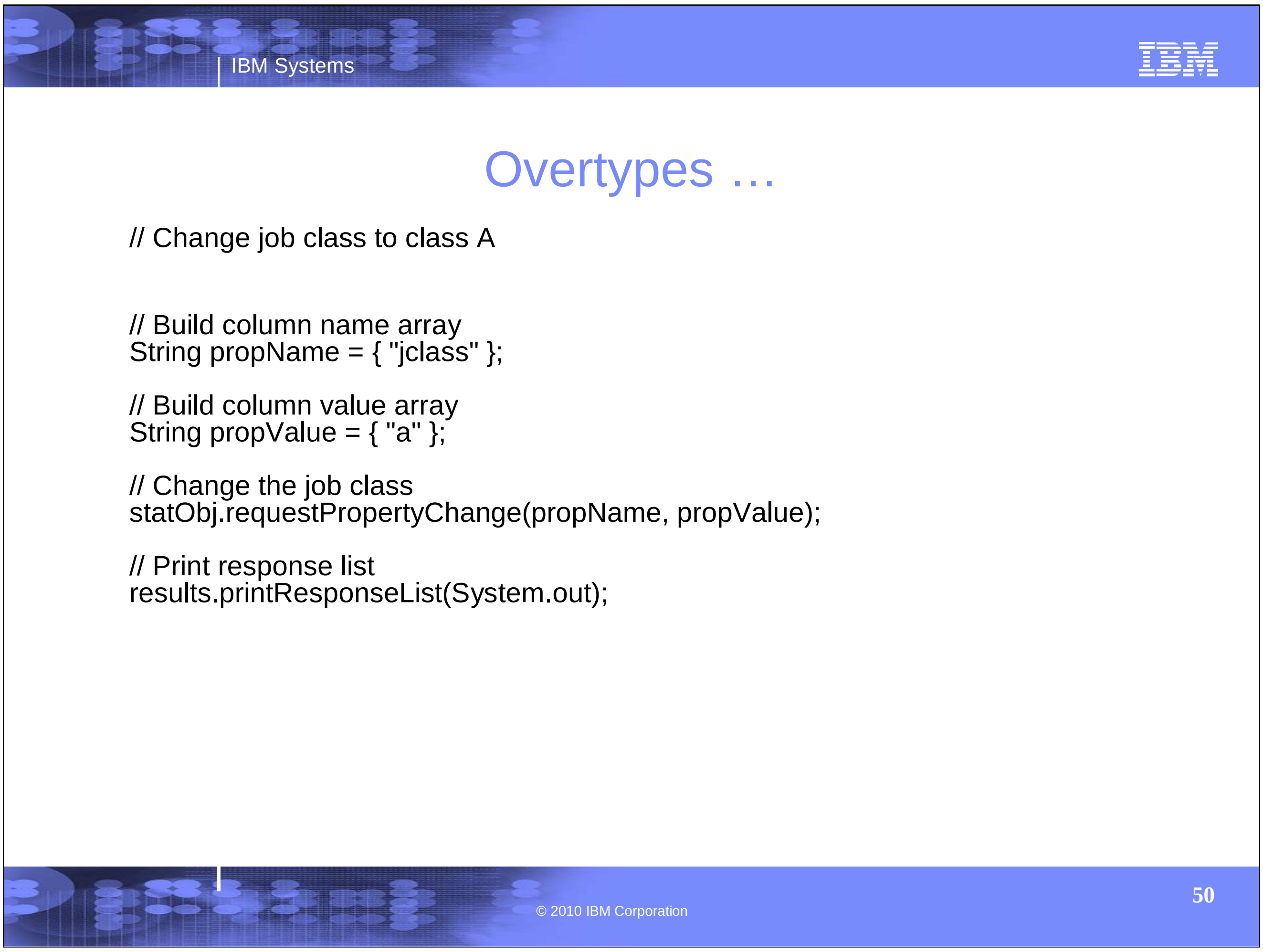
- You can modify an object similar to an action character
- Actions are represented by methods
  - Available actions defined in the interface for the object
  - Cancel a job:
    - statObj.cancel();
    - results.printResponseList(System.out);
      - The response list contains any system messages generated in response to the command
      - Similar to SDSF ULOG format

The response list contains a list of system messages generated as a result of the cancel command.



Overtypes

- You can modify an object similar to an overtype
  - Use the requestPropertyChange method
  - Method takes two input arrays:
    - Column name array
    - Column value array
  - Each column in the name array is changed to the corresponding value in the value array



IBM Systems

Overtypes …

```
// Change job class to class A


// Build column name array
String propName = { "jclass" };

// Build column value array
String propValue = { "a" };

// Change the job class
statObj.requestPropertyChange(propName, propValue);

// Print response list
results.printResponseList(System.out);
```

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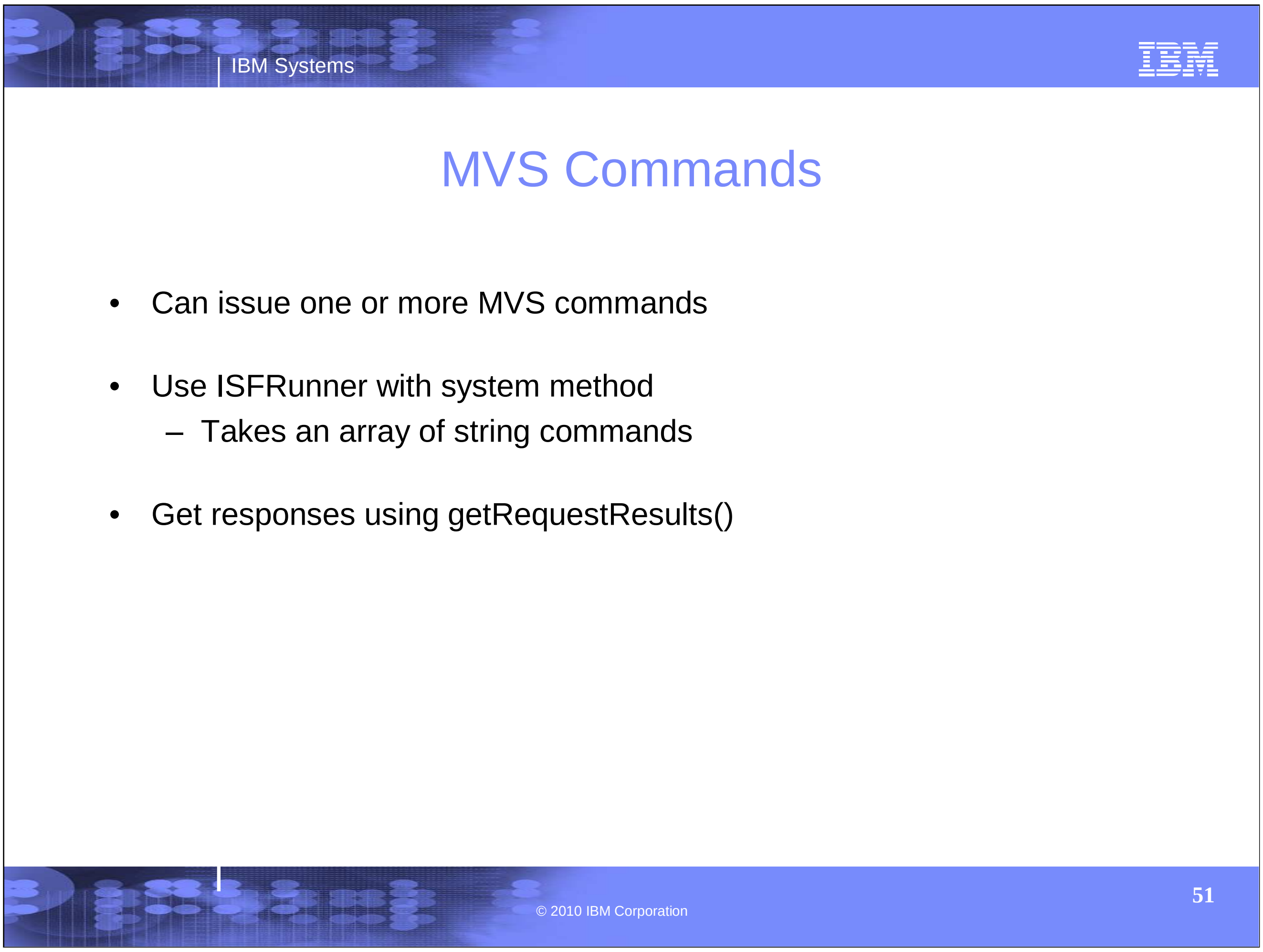
In this example, the job class for a job is changed to class A.



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MVS Commands

- Can issue one or more MVS commands
- Use ISFRunner with system method
  - Takes an array of string commands
- Get responses using getRequestResults()

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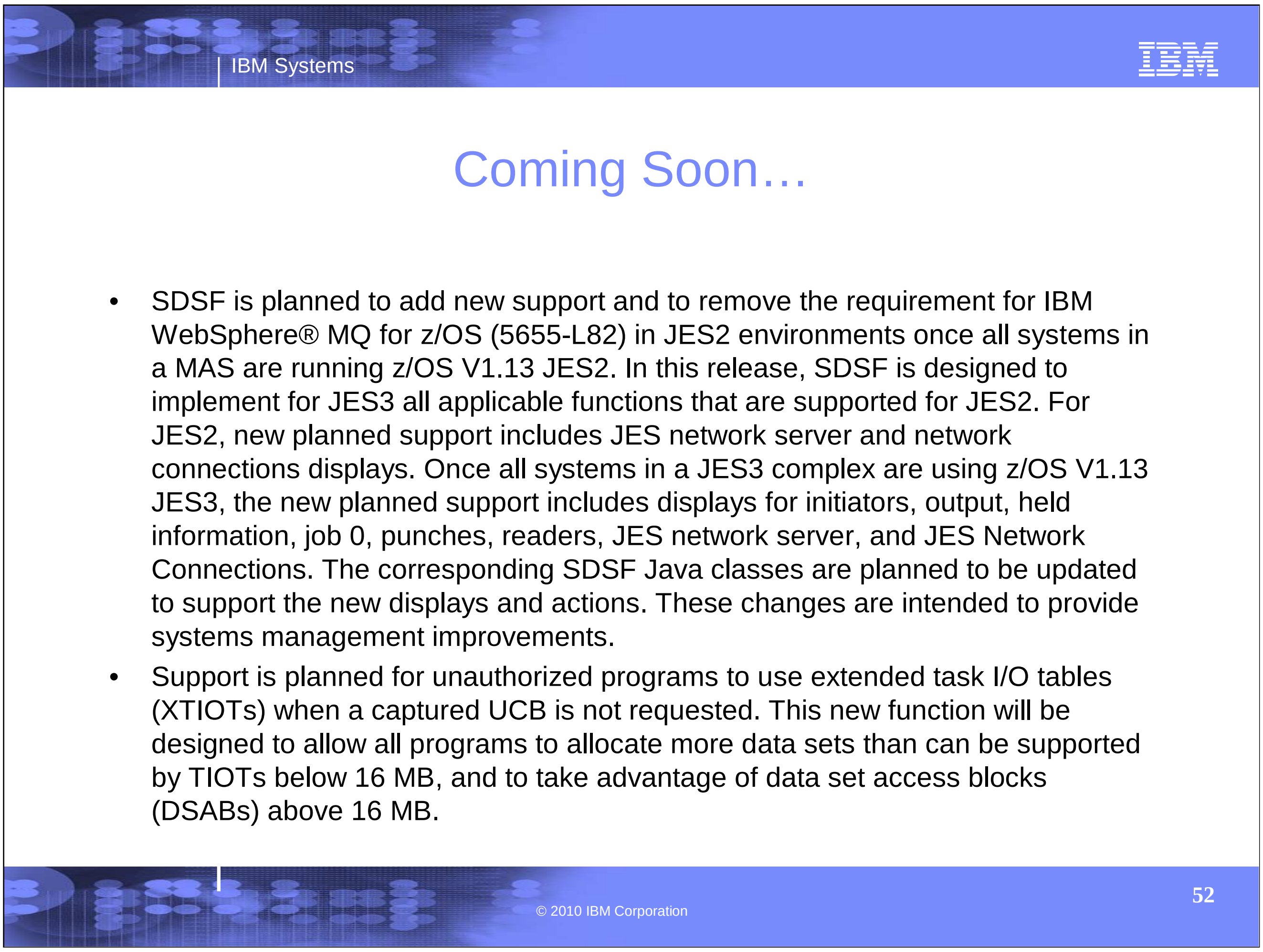
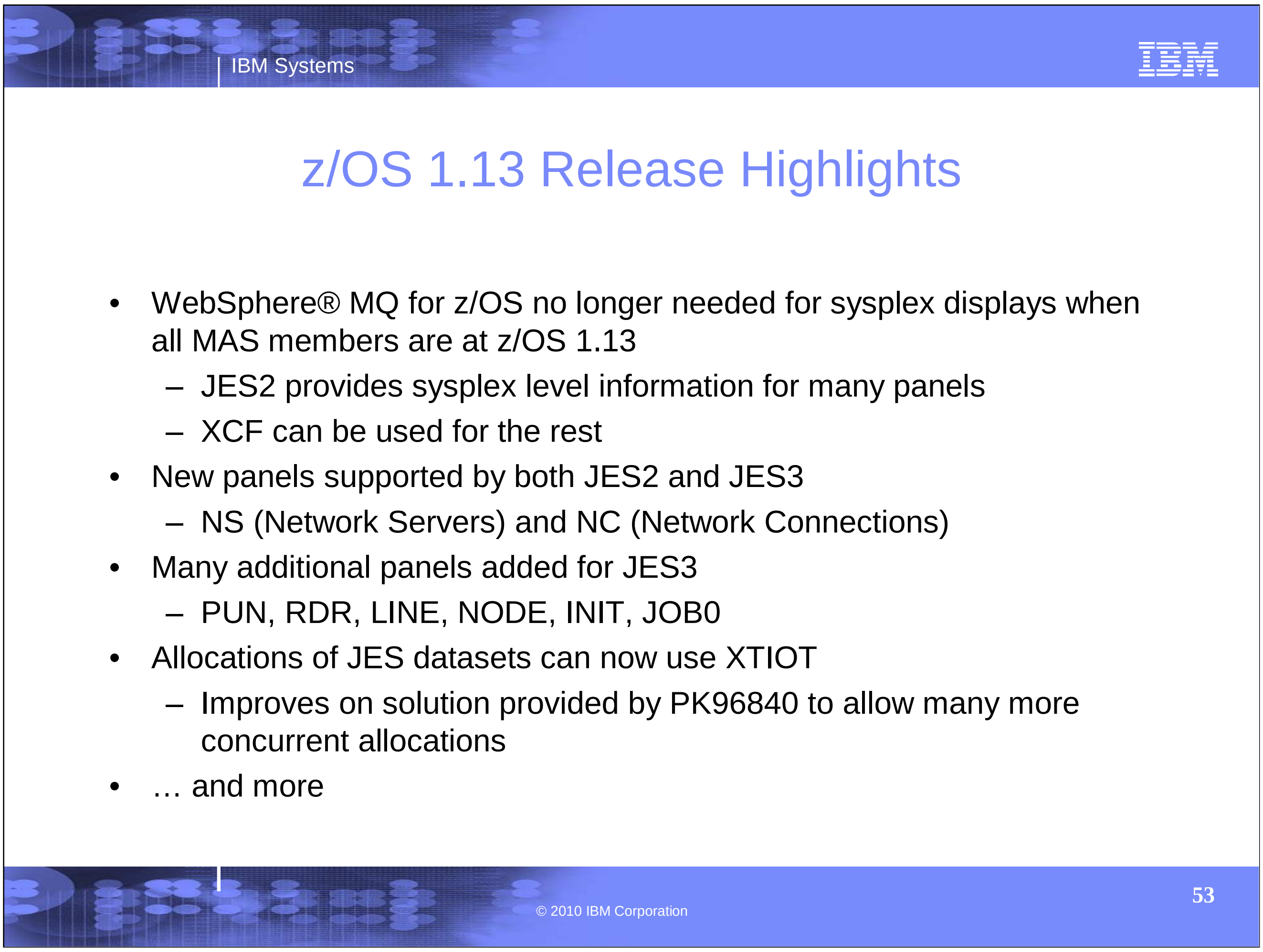


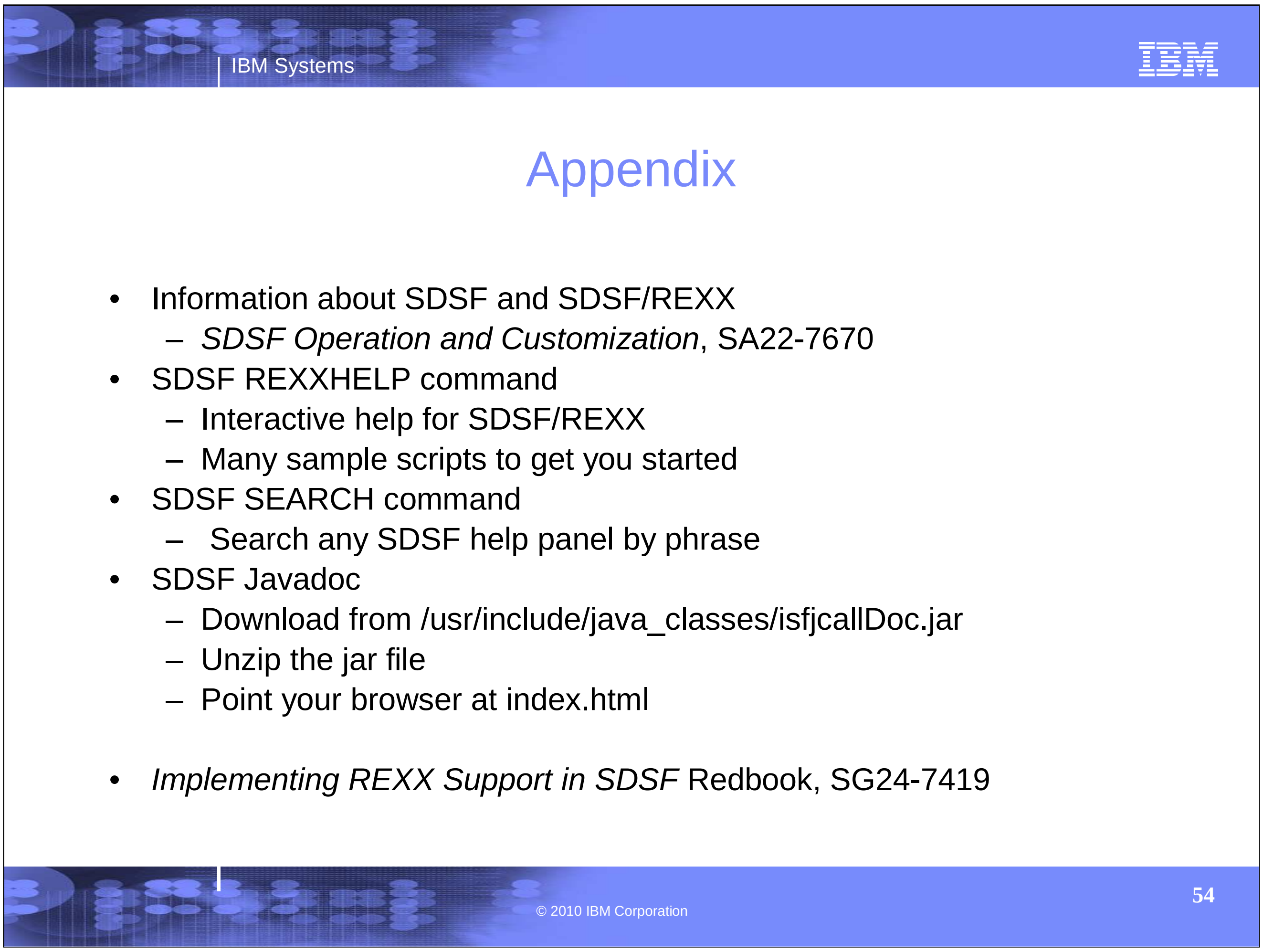
Coming Soon…

- SDSF is planned to add new support and to remove the requirement for IBM WebSphere® MQ for z/OS (5655-L82) in JES2 environments once all systems in a MAS are running z/OS V1.13 JES2. In this release, SDSF is designed to implement for JES3 all applicable functions that are supported for JES2. For JES2, new planned support includes JES network server and network connections displays. Once all systems in a JES3 complex are using z/OS V1.13 JES3, the new planned support includes displays for initiators, output, held information, job 0, punches, readers, JES network server, and JES Network Connections. The corresponding SDSF Java classes are planned to be updated to support the new displays and actions. These changes are intended to provide systems management improvements.
- Support is planned for unauthorized programs to use extended task I/O tables (XTIOTs) when a captured UCB is not requested. This new function will be designed to allow all programs to allocate more data sets than can be supported by TIOTs below 16 MB, and to take advantage of data set access blocks (DSABs) above 16 MB.



z/OS 1.13 Release Highlights

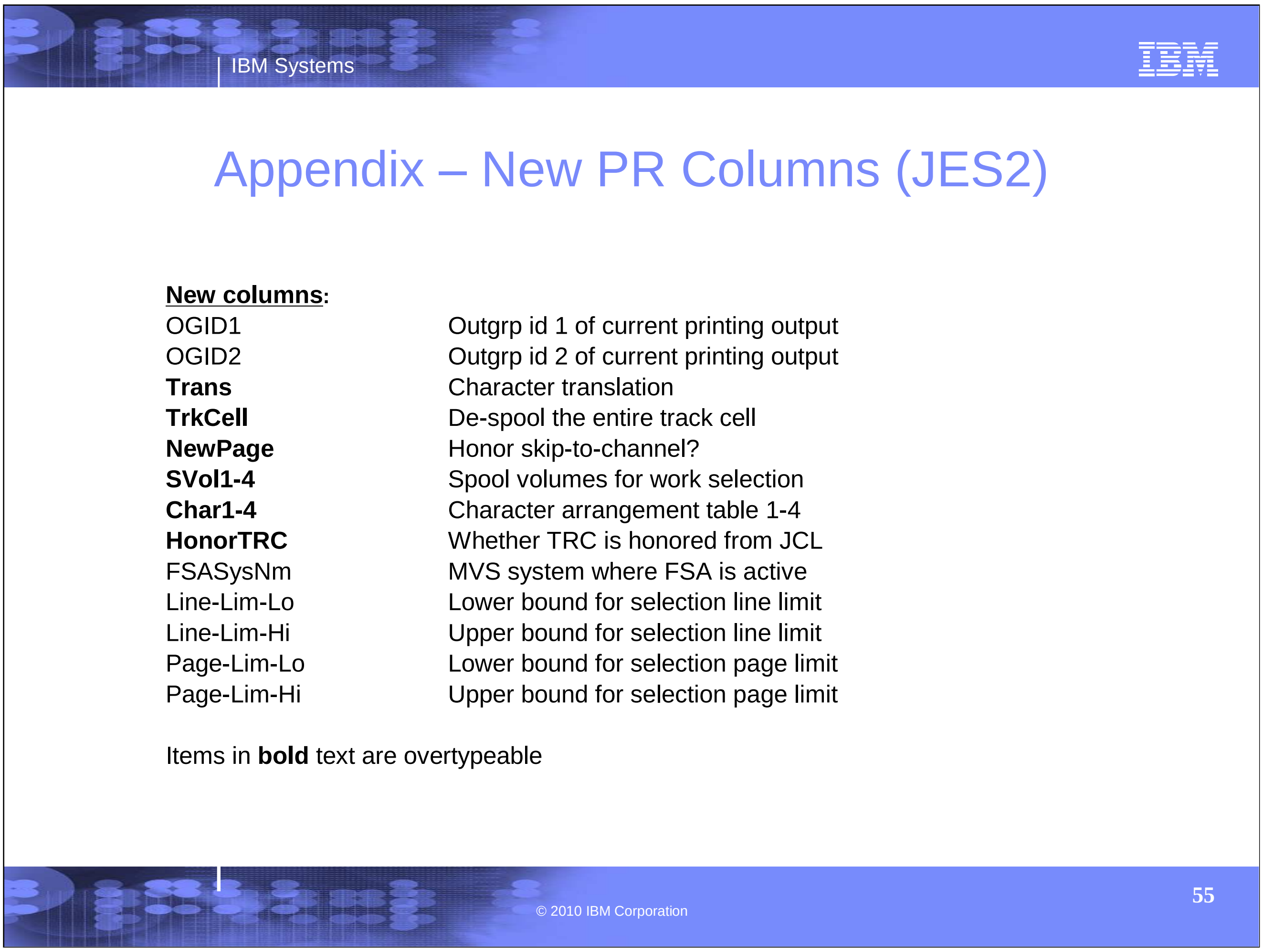
- WebSphere® MQ for z/OS no longer needed for sysplex displays when all MAS members are at z/OS 1.13
  - JES2 provides sysplex level information for many panels
  - XCF can be used for the rest
- New panels supported by both JES2 and JES3
  - NS (Network Servers) and NC (Network Connections)
- Many additional panels added for JES3
  - PUN, RDR, LINE, NODE, INIT, JOB0
- Allocations of JES datasets can now use XTIOT
  - Improves on solution provided by PK96840 to allow many more concurrent allocations
- … and more



Appendix

- Information about SDSF and SDSF/REXX
  - *SDSF Operation and Customization*, SA22-7670
- SDSF REXXHELP command
  - Interactive help for SDSF/REXX
  - Many sample scripts to get you started
- SDSF SEARCH command
  - Search any SDSF help panel by phrase
- SDSF Javadoc
  - Download from /usr/include/java_classes/isfjcallDoc.jar
  - Unzip the jar file
  - Point your browser at index.html

- *Implementing REXX Support in SDSF* Redbook, SG24-7419



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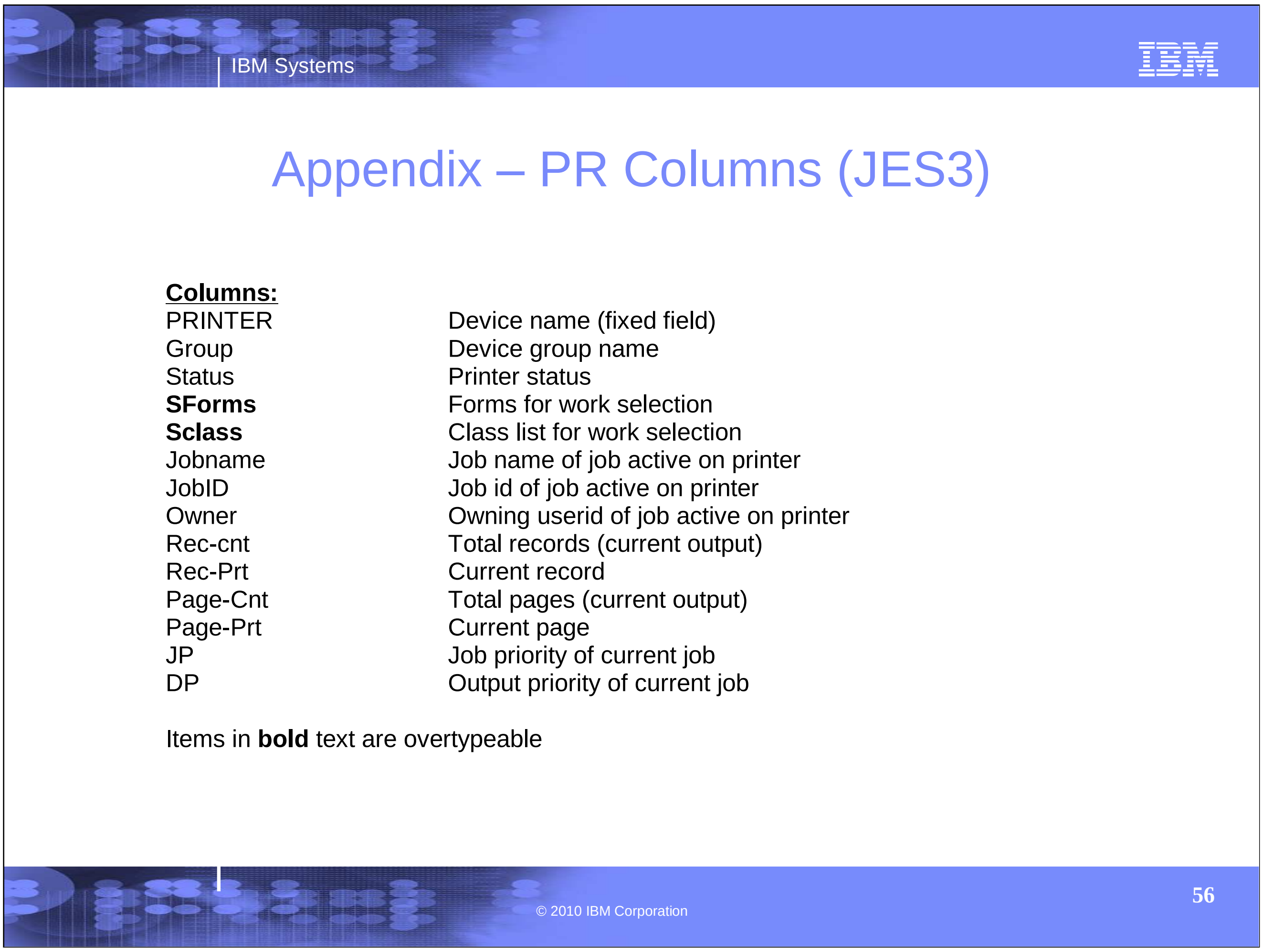
Appendix – New PR Columns (JES2)

New columns:

OGID1	Outgrp id 1 of current printing output
OGID2	Outgrp id 2 of current printing output
Trans	Character translation
TrkCell	De-spool the entire track cell
NewPage	Honor skip-to-channel?
SVol1-4	Spool volumes for work selection
Char1-4	Character arrangement table 1-4
HonorTRC	Whether TRC is honored from JCL
FSASysNm	MVS system where FSA is active
Line-Lim-Lo	Lower bound for selection line limit
Line-Lim-Hi	Upper bound for selection line limit
Page-Lim-Lo	Lower bound for selection page limit
Page-Lim-Hi	Upper bound for selection page limit

Items in **bold** text are overtypeable



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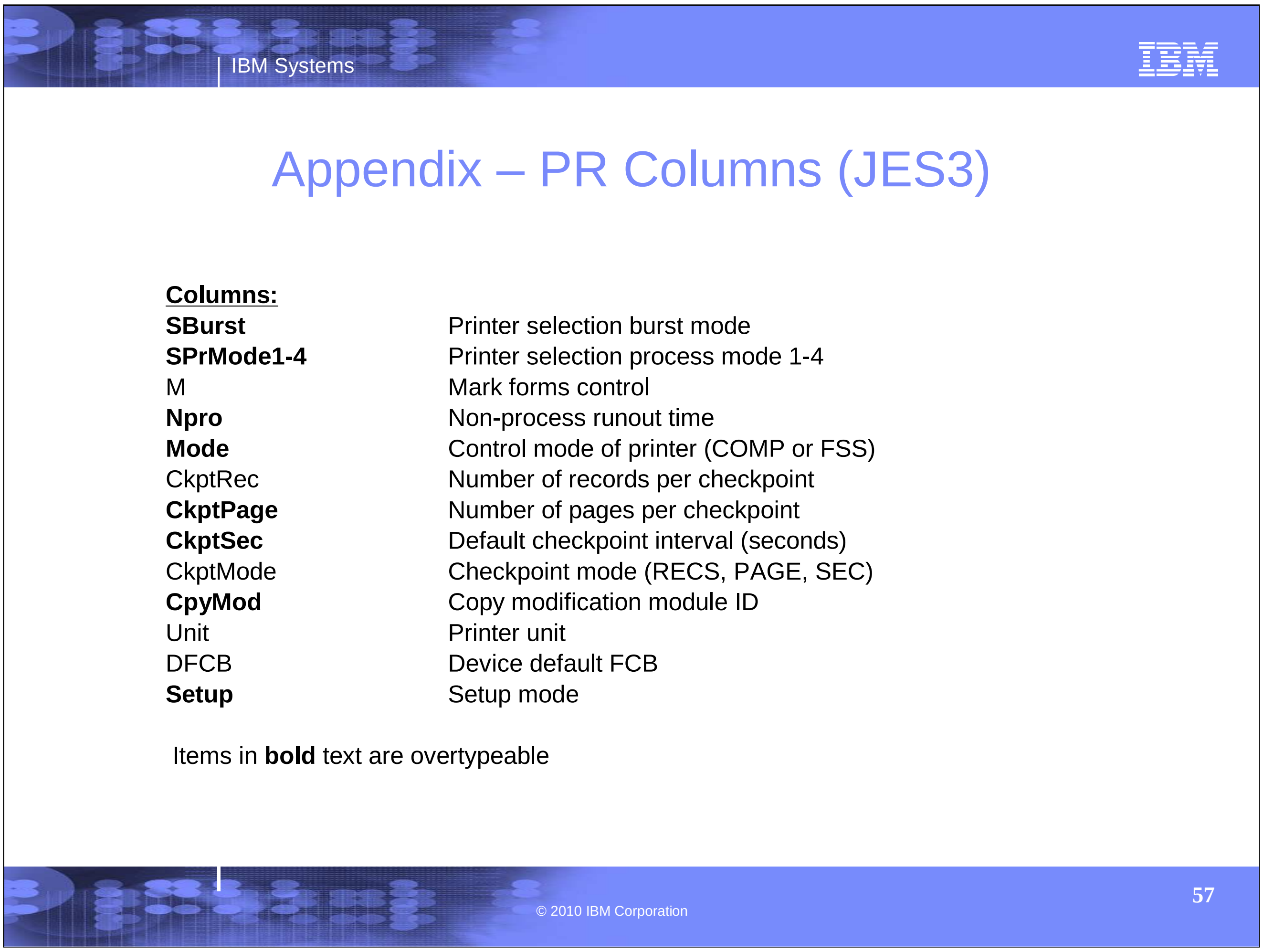
Appendix – PR Columns (JES3)

Columns:

PRINTER	Device name (fixed field)
Group	Device group name
Status	Printer status
SForms	Forms for work selection
Sclass	Class list for work selection
Jobname	Job name of job active on printer
JobID	Job id of job active on printer
Owner	Owning userid of job active on printer
Rec-cnt	Total records (current output)
Rec-Prt	Current record
Page-Cnt	Total pages (current output)
Page-Prt	Current page
JP	Job priority of current job
DP	Output priority of current job

Items in **bold** text are overtypeable



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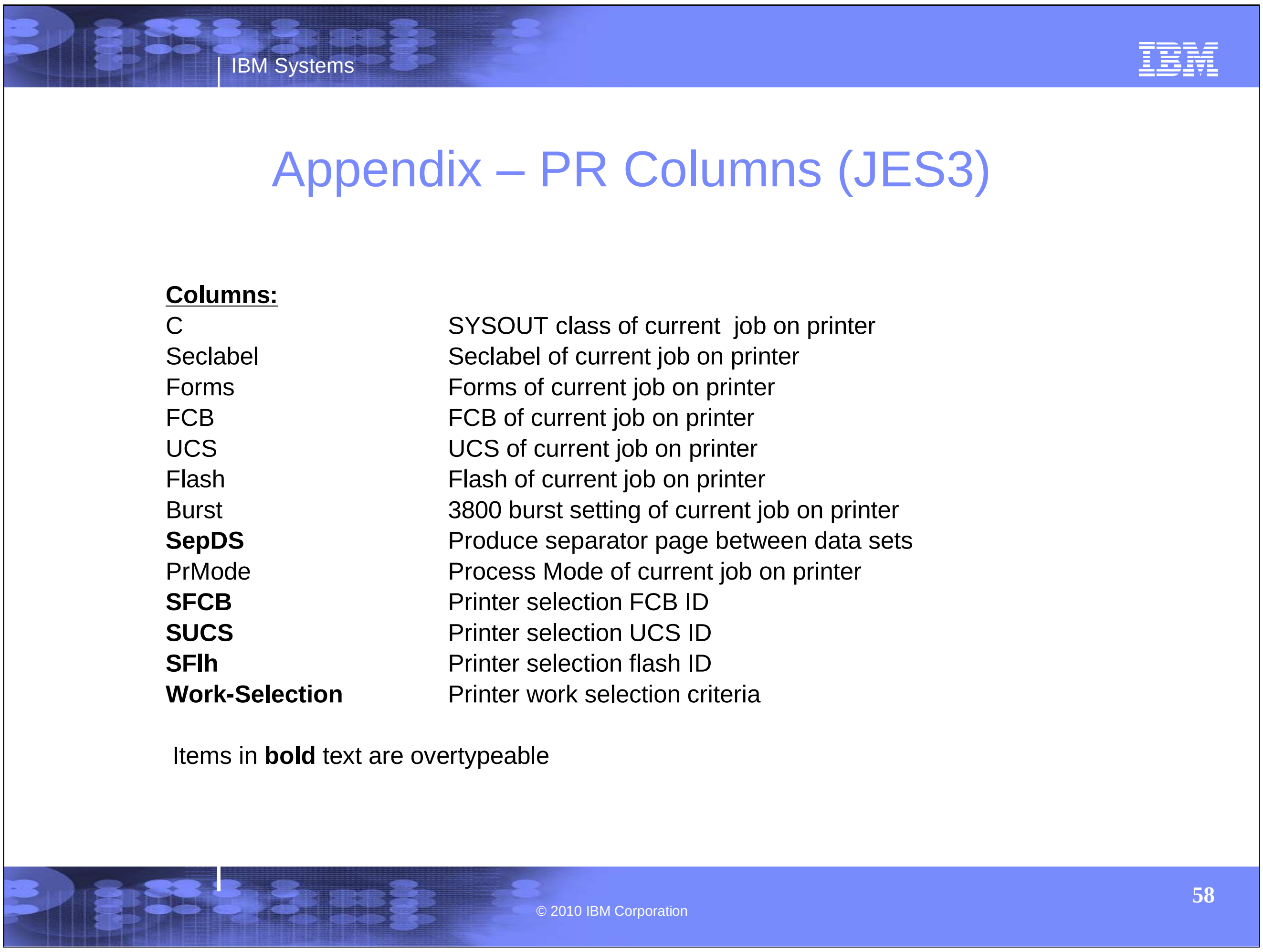
Appendix – PR Columns (JES3)

Columns:	
SBurst	Printer selection burst mode
SPrMode1-4	Printer selection process mode 1-4
M	Mark forms control
Npro	Non-process runout time
Mode	Control mode of printer (COMP or FSS)
CkptRec	Number of records per checkpoint
CkptPage	Number of pages per checkpoint
CkptSec	Default checkpoint interval (seconds)
CkptMode	Checkpoint mode (RECS, PAGE, SEC)
CpyMod	Copy modification module ID
Unit	Printer unit
DFCB	Device default FCB
Setup	Setup mode

Items in **bold** text are overtypeable



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Appendix – PR Columns (JES3)

Columns:	
C	SYSOUT class of current job on printer
Seclabel	Seclabel of current job on printer
Forms	Forms of current job on printer
FCB	FCB of current job on printer
UCS	UCS of current job on printer
Flash	Flash of current job on printer
Burst	3800 burst setting of current job on printer
SepDS	Produce separator page between data sets
PrMode	Process Mode of current job on printer
SFCB	Printer selection FCB ID
SUCS	Printer selection UCS ID
SFlh	Printer selection flash ID
Work-Selection	Printer work selection criteria

Items in **bold** text are overtypeable

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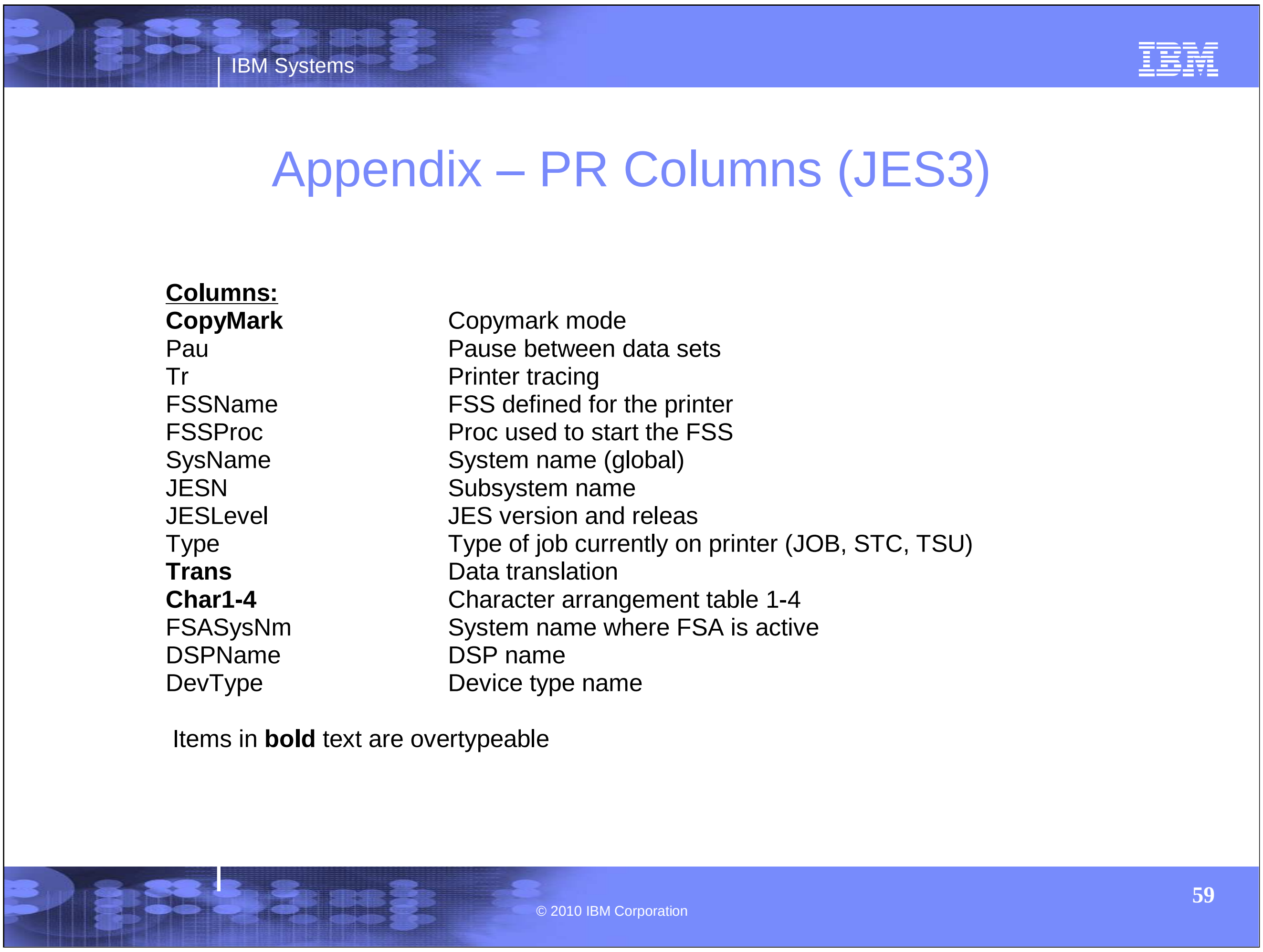
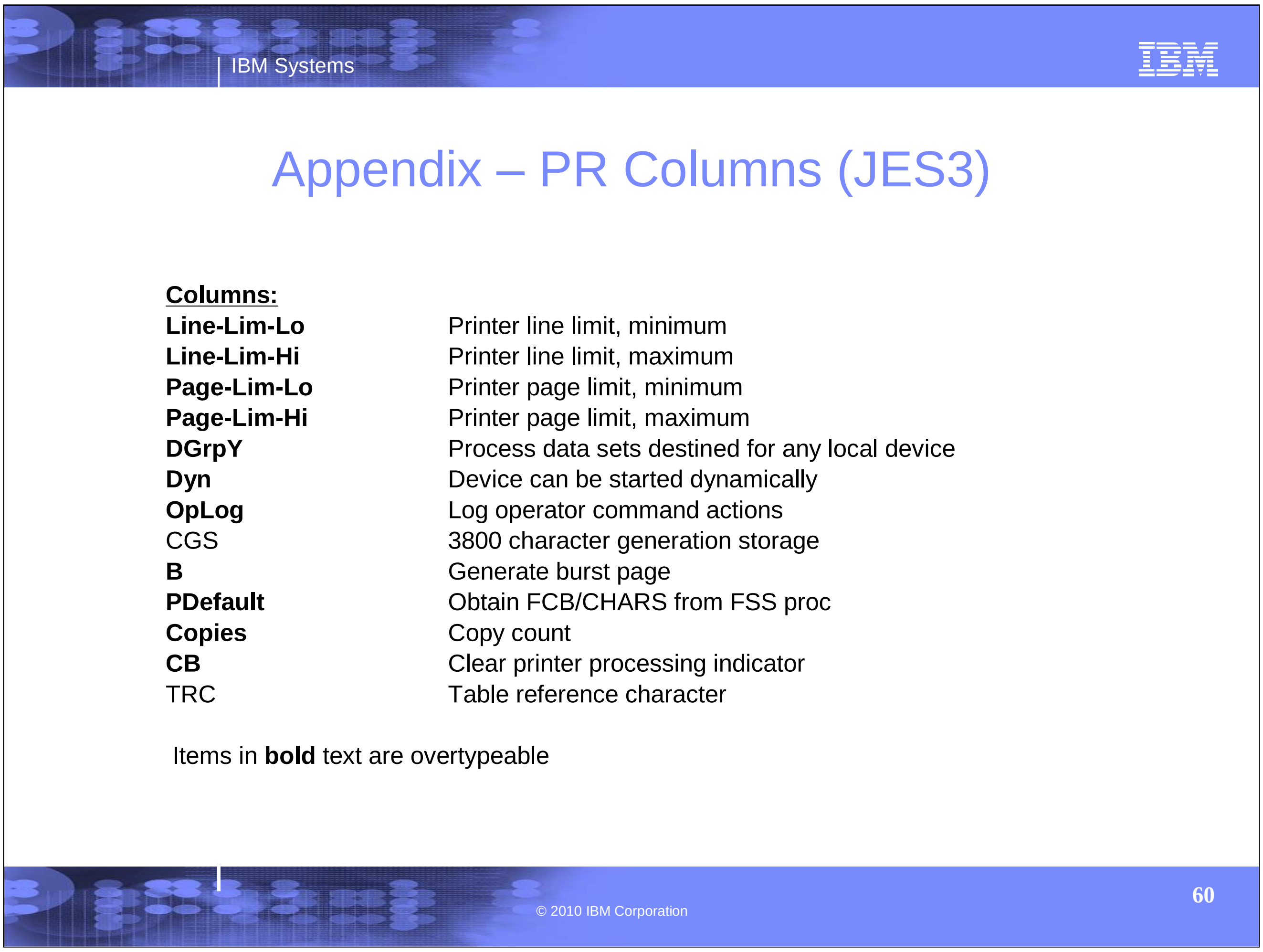


Appendix – PR Columns (JES3)

Columns:

CopyMark	Copymark mode
Pau	Pause between data sets
Tr	Printer tracing
FSSName	FSS defined for the printer
FSSProc	Proc used to start the FSS
SysName	System name (global)
JESN	Subsystem name
JESLevel	JES version and releas
Type	Type of job currently on printer (JOB, STC, TSU)
Trans	Data translation
Char1-4	Character arrangement table 1-4
FSASysNm	System name where FSA is active
DSPName	DSP name
DevType	Device type name

Items in **bold** text are overtypeable

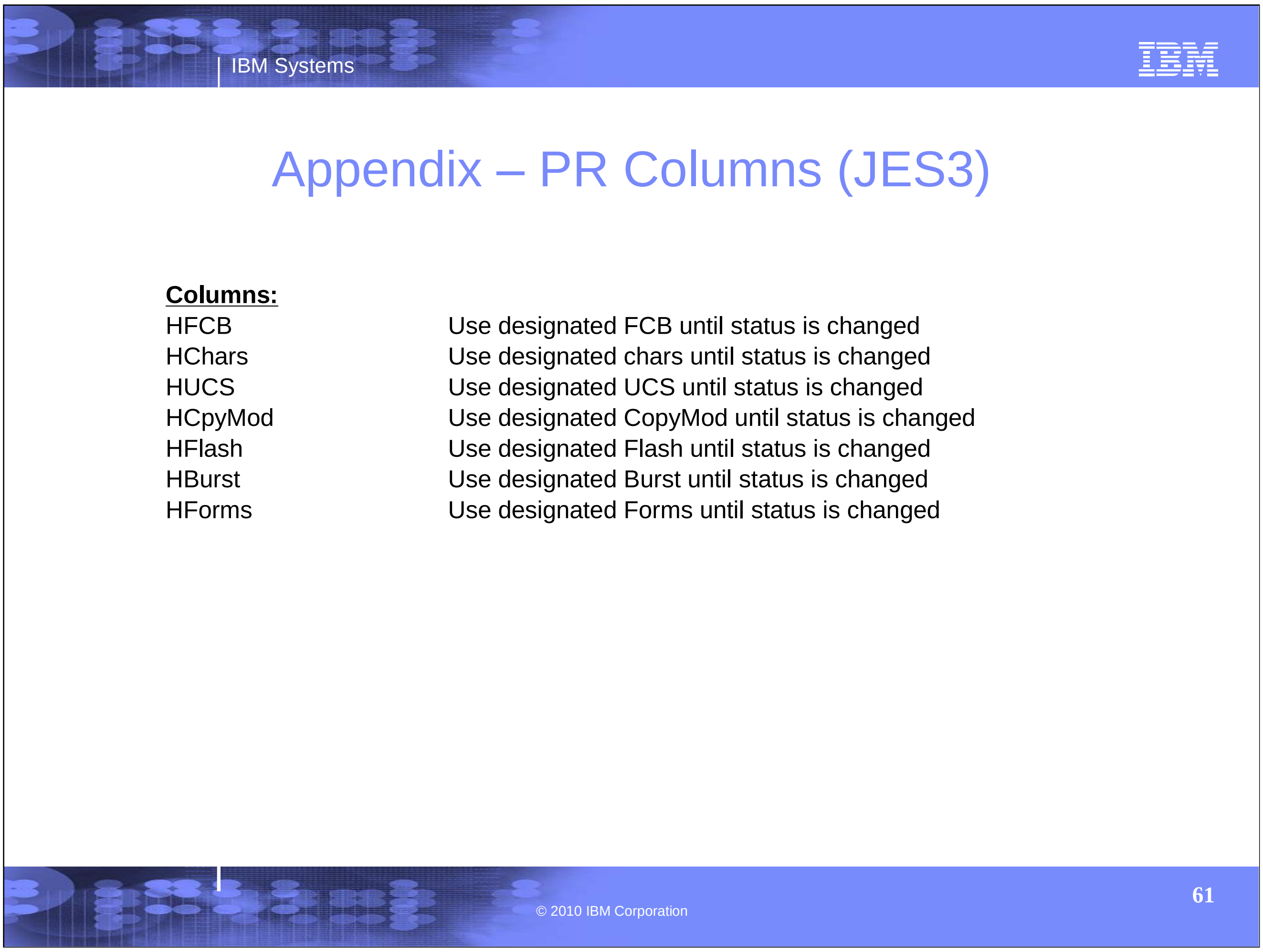


Appendix – PR Columns (JES3)

Columns:

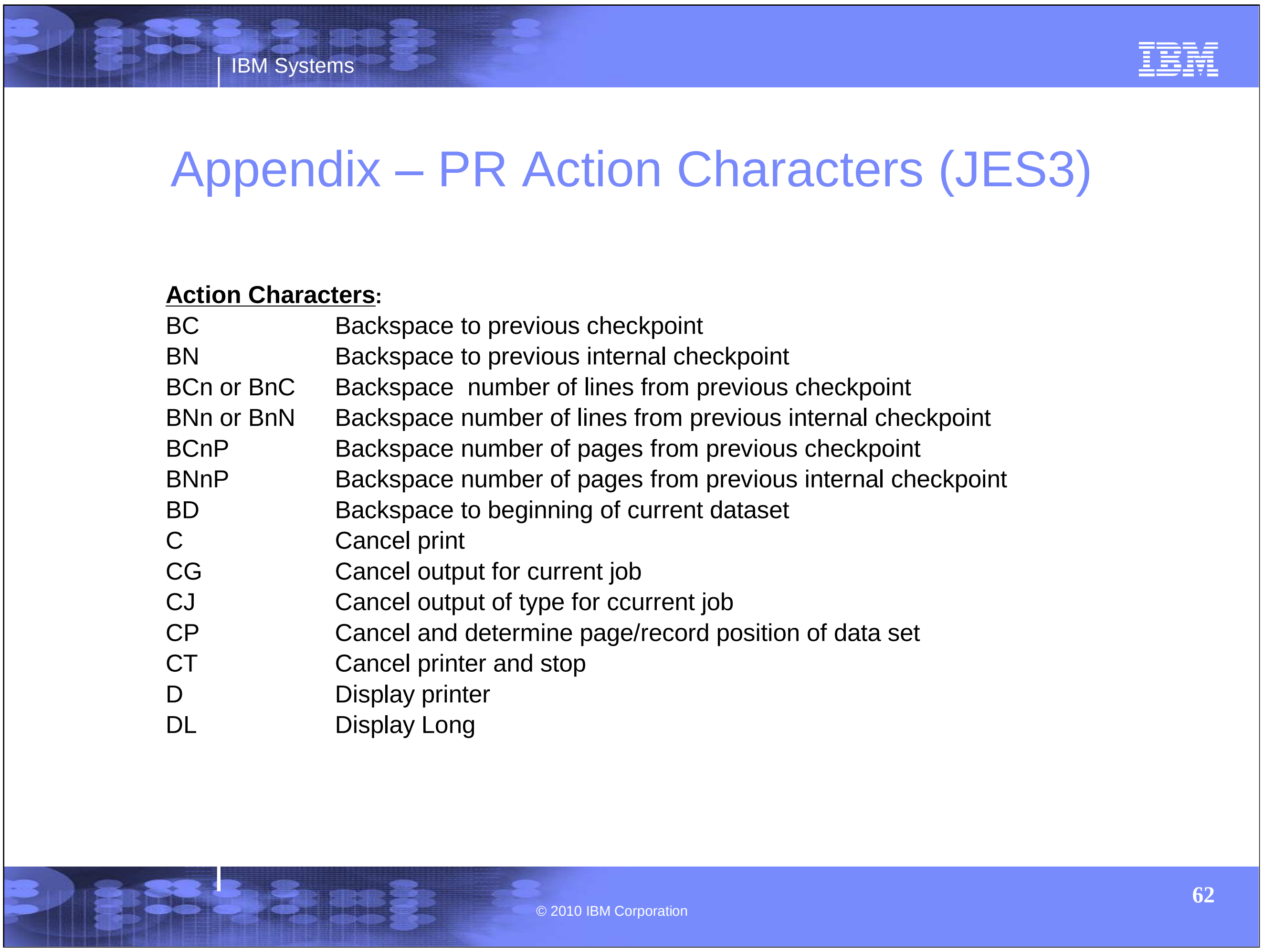
Line-Lim-Lo	Printer line limit, minimum
Line-Lim-Hi	Printer line limit, maximum
Page-Lim-Lo	Printer page limit, minimum
Page-Lim-Hi	Printer page limit, maximum
DGrpY	Process data sets destined for any local device
Dyn	Device can be started dynamically
OpLog	Log operator command actions
CGS	3800 character generation storage
B	Generate burst page
PDefault	Obtain FCB/CHARS from FSS proc
Copies	Copy count
CB	Clear printer processing indicator
TRC	Table reference character

Items in **bold** text are overtypeable



Appendix – PR Columns (JES3)

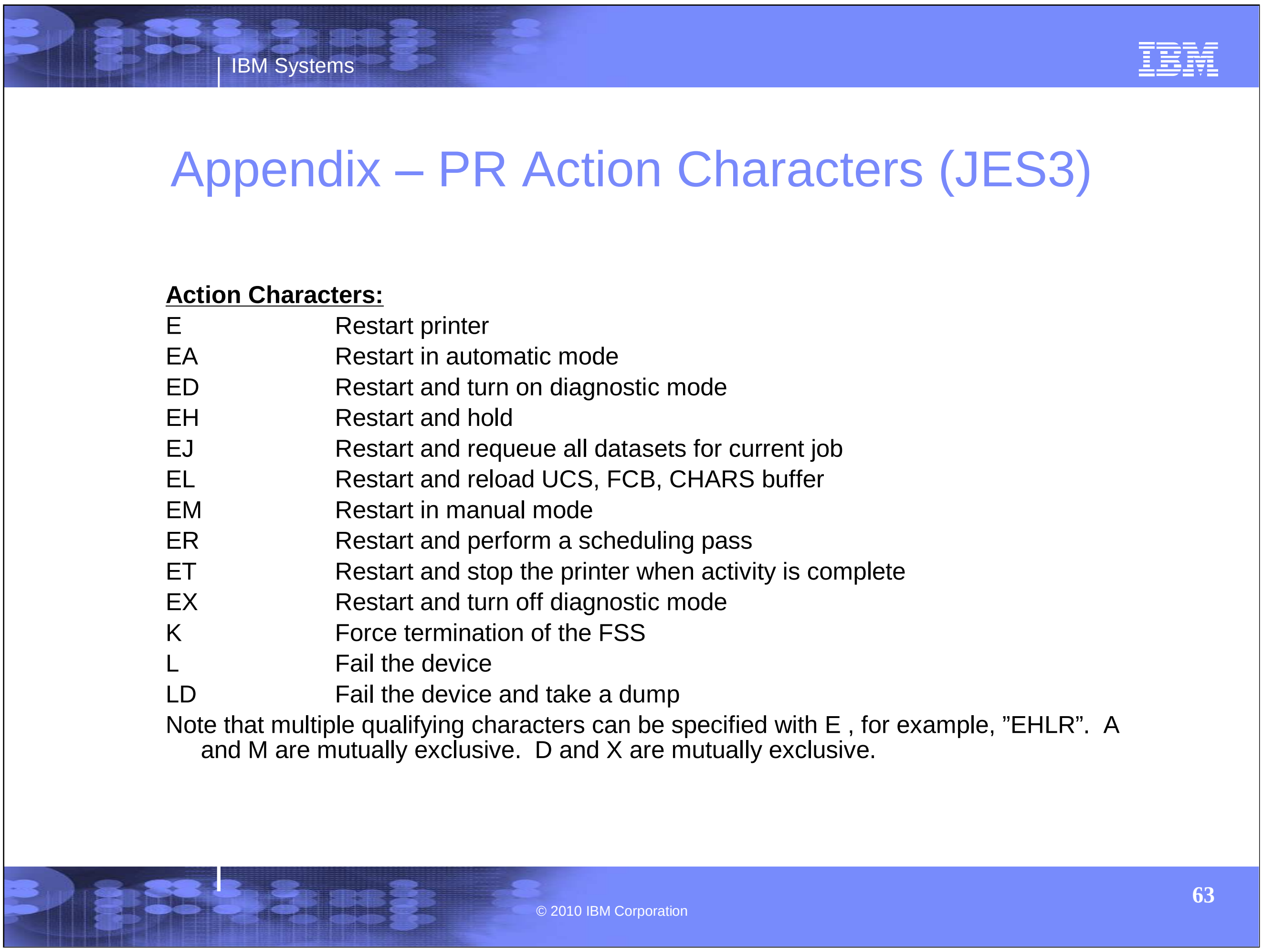
Columns:	
HFCB	Use designated FCB until status is changed
HChars	Use designated chars until status is changed
HUCS	Use designated UCS until status is changed
HCpyMod	Use designated CopyMod until status is changed
HFlash	Use designated Flash until status is changed
HBurst	Use designated Burst until status is changed
HForms	Use designated Forms until status is changed



Appendix – PR Action Characters (JES3)

Action Characters:

BC	Backspace to previous checkpoint
BN	Backspace to previous internal checkpoint
BCn or BnC	Backspace number of lines from previous checkpoint
BNn or BnN	Backspace number of lines from previous internal checkpoint
BCnP	Backspace number of pages from previous checkpoint
BNnP	Backspace number of pages from previous internal checkpoint
BD	Backspace to beginning of current dataset
C	Cancel print
CG	Cancel output for current job
CJ	Cancel output of type for ccurrent job
CP	Cancel and determine page/record position of data set
CT	Cancel printer and stop
D	Display printer
DL	Display Long

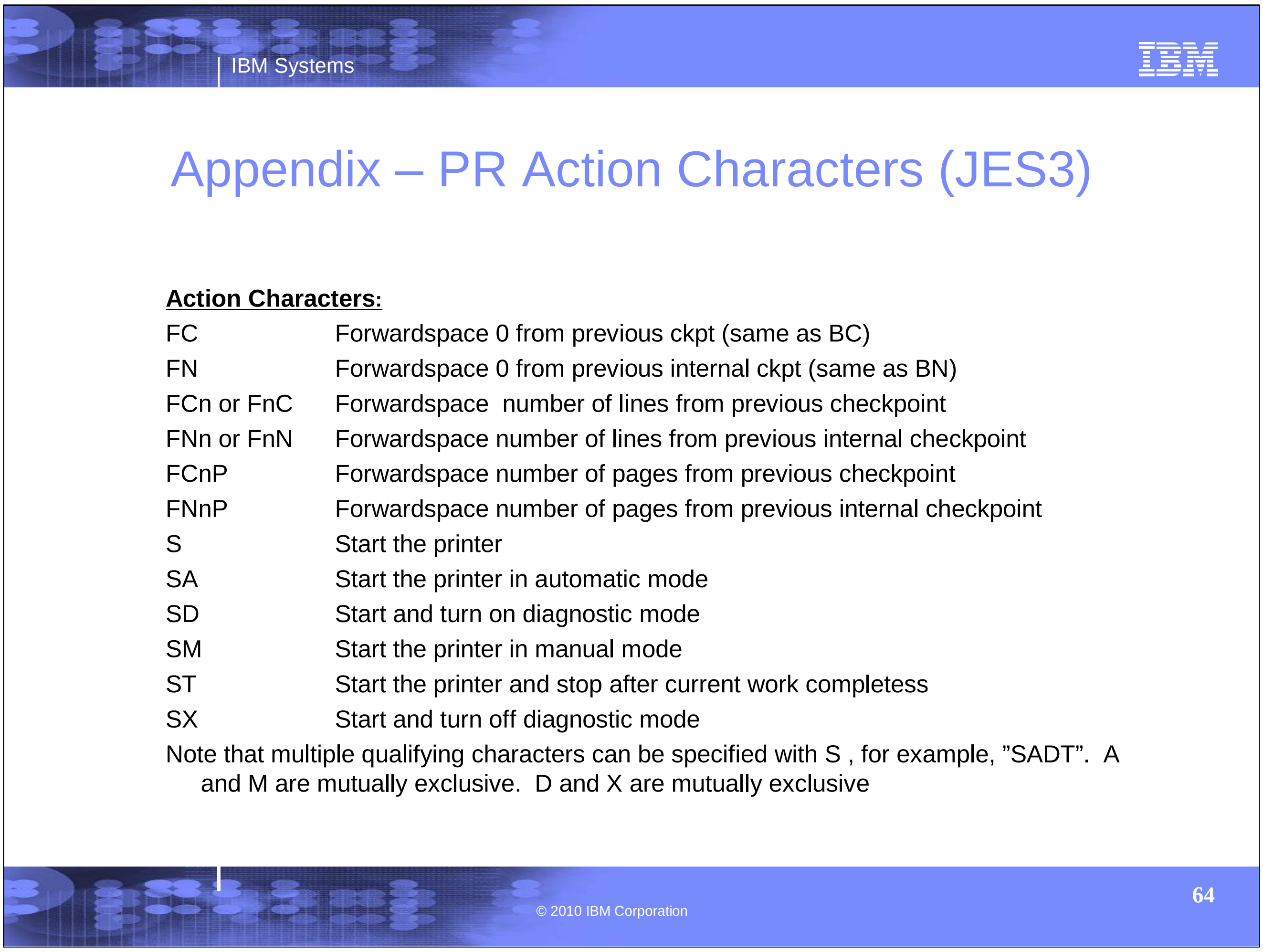


Appendix – PR Action Characters (JES3)

Action Characters:

E	Restart printer
EA	Restart in automatic mode
ED	Restart and turn on diagnostic mode
EH	Restart and hold
EJ	Restart and requeue all datasets for current job
EL	Restart and reload UCS, FCB, CHARS buffer
EM	Restart in manual mode
ER	Restart and perform a scheduling pass
ET	Restart and stop the printer when activity is complete
EX	Restart and turn off diagnostic mode
K	Force termination of the FSS
L	Fail the device
LD	Fail the device and take a dump

Note that multiple qualifying characters can be specified with E , for example, ”EHLR”. A and M are mutually exclusive. D and X are mutually exclusive.



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Appendix – PR Action Characters (JES3)

Action Characters:

FC	Forwardspace 0 from previous ckpt (same as BC)
FN	Forwardspace 0 from previous internal ckpt (same as BN)
FCn or FnC	Forwardspace number of lines from previous checkpoint
FNn or FnN	Forwardspace number of lines from previous internal checkpoint
FCnP	Forwardspace number of pages from previous checkpoint
FNnP	Forwardspace number of pages from previous internal checkpoint
S	Start the printer
SA	Start the printer in automatic mode
SD	Start and turn on diagnostic mode
SM	Start the printer in manual mode
ST	Start the printer and stop after current work completess
SX	Start and turn off diagnostic mode

Note that multiple qualifying characters can be specified with S , for example, ”SADT”. A and M are mutually exclusive. D and X are mutually exclusive

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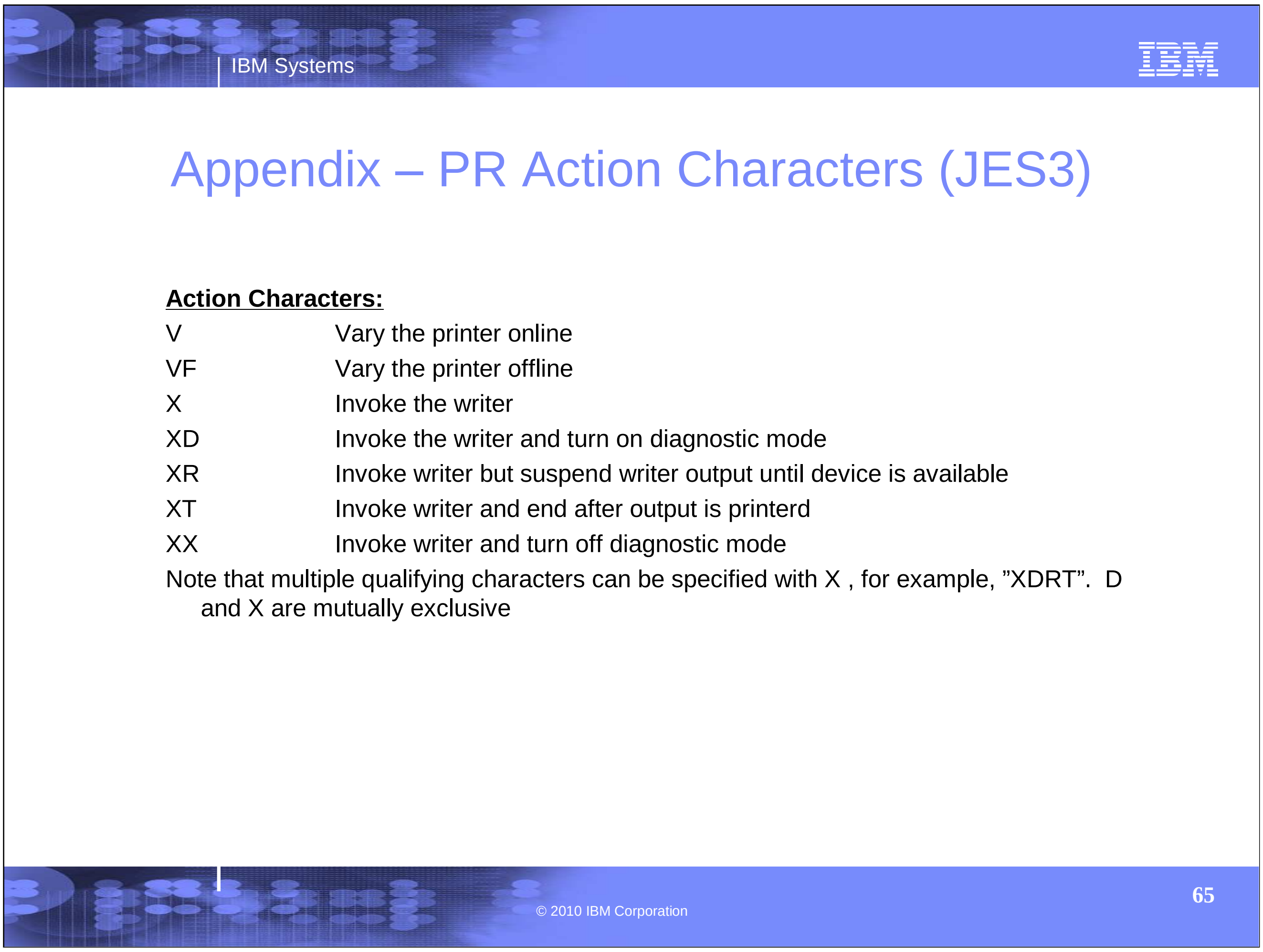

Appendix – PR Action Characters (JES3)

Action Characters:

V	Vary the printer online
VF	Vary the printer offline
X	Invoke the writer
XD	Invoke the writer and turn on diagnostic mode
XR	Invoke writer but suspend writer output until device is available
XT	Invoke writer and end after output is printerd
XX	Invoke writer and turn off diagnostic mode

Note that multiple qualifying characters can be specified with X , for example, ”XDRT”. D and X are mutually exclusive