z/OS
Resource Measurement Facility

RMF's Treasure Box - Hints and Tips

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- *Session 19667*

Motivation ...

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="include/ddsml-pp.xsl"?>
<ddsml xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xsi:noNamespaceSchemaLocation="include/ddsml.xsd">
<server>
<name>RMF-DDS-Server</name>
<version>ZOSV2R2</version>
<functionality>3202</functionality>
<platform>z/OS</platform>
</server>
<postprocessor><metric id="PCIE"><description>PCIE Activity Report</description><type>I
</resource><time-data><display-start locale="en-us">09/28/2015-15.44.35</display-start>
<segment id="1"><name>General PCIE Activity</name>
<part id="2">
<table id="3">
<column-headers><col type="T">Function ID</col><col type="T">Function PCHID</col><col ty
<col type="T">Owner Address Space ID</col><col type="N">Function Allocation Time</col><
<col type="N">Refresh PCI Translations Operations Rate</col><col type="N">DMA Address Sp
<col type="N">Packets Transmitted Rate</col><col type="N">Work Units Processed Rate</col
<row refno="1"><col>0021</col><col>037C</col><col>Hardware Accelerator</col><col>101404
<col>0</col><col/><col/><col/><col/></row>
<row refno="2"><col>0025</col><col>037C</col><col>Hardware Accelerator</col><col>101404
<col>0</col><col/><col/><col/><col/></row>
<row refno="3"><col>0028</col><col>03BC</col><col>Hardware Accelerator</col><col>101404
<col>0</col><col/><col/><col/><col/></row>
<row refno="4"><col>002B</col><col>03BC</col><col>Hardware Accelerator</col><col>101404
<col>0</col><col/><col/><col/><col/></row>
</table></part></segment>
<segment id="4"><name>Hardware Accelerator Activity</name>
<part id="5">
<table id="6">
<column-headers><col type="T">Function ID</col><col type="N">Time Busy %</col><col type
<col type="N">Std Dev for Request Queue Time</col><col type="N">Request Size</col><col t
<row refno="1"><col>0021</col><col>&lt;.001</col><col>47.4</col><col>0.759</col><col>74
<row refno="2"><col>0025</col><col>&lt;.001</col><col>43.8</col><col>4.56</col><col>689
<row refno="3"><col>0028</col><col>&lt;.001</col><col>43.3</col><col>4.59</col><col>685
<row refno="4"><col>002B</col><col>&lt;.001</col><col>41.6</col><col>6.23</col><col>657
</table></part></segment>
<segment id="7"><name>Hardware Accelerator Compression Activity</name>
<part id="8">
<table id="9">
<column-headers><col type="T">Function ID</col><col type="N">Compression Request Rate</
<col type="N">Decompression Throughput</col><col type="N">Decompression Ratio</col><col
<row refno="1"><col>0021</col><col>0.036</col><col>0.002</col><col>6.45</col><col>0</co
<row refno="2"><col>0025</col><col>0.036</col><col>0.002</col><col>6.34</col><col>0</co
<row refno="3"><col>0028</col><col>0.036</col><col>0.002</col><col>6.49</col><col>0</co
<row refno="4"><col>002B</col><col>0.053</col><col>0.003</col><col>7.42</col><col>0</co
</table></part></segment>
</postprocessor>
```

There is a new PCIE Postprocessor report in RMF?
Great!
Only in XML format?
Ohhh, how am I supposed to read that?
Never done this before ...
Doesn‘t look like clearly arranged ...

But which is better to read?

```
                                C P U  A C T I V I T Y                                    PAGE    1

            z/OS V2R2                  SYSTEM ID SYSE            DATE 09/28/2015          INTERVAL 15.00.000
                                       RPT VERSION V2R2 RMF      TIME 16.14.34            CYCLE 1.000 SECONDS
-CPU        2827   CPC CAPACITY  3665        SEQUENCE CODE 0000000000004255
 MODEL      732    CHANGE REASON=NONE        HIPERDISPATCH=YES
 H/W MODEL  H43
0---CPU---    ---------------- TIME % -----------------   --- MT % ----   LOG PROC      --I/O INTERRUPTS--
 NUM  TYPE    ONLINE    LPAR BUSY    MVS BUSY   PARKED   PROD   UTIL    SHARE %       RATE     % VIA TPI
  0    CP     100.00     1.24         1.20       0.00   100.00   1.24    32.2  MED     8.54      0.26
  1    CP     100.00     0.06         0.06       0.00   100.00   0.06     0.0  LOW     0.00      0.00
  2    CP     100.00     0.00         -----    100.00   100.00   0.00     0.0  LOW     0.00      0.00
 TOTAL/AVERAGE          0.43         0.63               100.00   0.43    32.2          8.54      0.26
0------------ MULTI-THREADING ANALYSIS ---------------
  CPU TYPE    MODE     MAX CF          CF       AVG TD
       CP        1      1.000       1.000        1.000
-
 SYSTEM ADDRESS SPACE AND WO
0  ---------NUMBER OF ADDRES
0  QUEUE TYPES              MIN

   IN                        60
   IN READY                   0

   OUT READY                  0
   OUT WAIT                   0

   LOGICAL OUT RDY            0
   LOGICAL OUT WAIT         111

   ADDRESS SPACE TYPES

   BATCH                      0
   STC                      168
   TSO                        2
   ASCH                       0
   OMVS                       3

   ---------NUMBER OF WORK U
   CPU TYPES                MIN
0  CP                         0
-
```

RMF Postprocessor Interval Report [System SYSE] : CPU Activity Report

RMF Version : z/OS V2R2 **SMF Data :** z/OS V2R2
Start : 09/28/2015-15.59.34 **End :** 09/28/2015-16.14.34 **Interval :** 14:59:998 minutes **Cycle :** 1000 milliseconds

CPU Activity

CPU : 2827 **Model :** 732 **H/W Model :** H43 **Sequence Code :** 0000000000004255 **HiperDispatch :** YES **CPC Capacity :** 3665 **Change Reason :** NONE

Core ID	Thread ID	CPU Type	Time% Online	Time% LPAR Busy	Time% MVS Busy	Time% Parked	MT% Productivity	MT% Utilization	LOG PROC Share%	HiperDispatch Priority	I/O Interrupts Rate	I/O Interrupts% via TPI
0	0	CP	100.00	1.25	1.21	0.00	100.00	1.25	32.2	MED	8.13	0.19
1	0	CP	100.00	0.06	0.06	0.00	100.00	0.06	0.0	LOW	0.00	0.00
2	0	CP	100.00	0.00	-----	100.00	100.00	0.00	0.0	LOW	0.00	0.00
TOTAL/AVERAGE		**CP**		**0.44**	**0.64**		**100.00**	**0.44**	**32.2**		**8.13**	**0.19**

Multi-Threading Analysis

CPU Type	Mode	Maximum Capacity Factor	Capacity Factor	Average Thread Density
CP	1	1.000	1.000	1.000

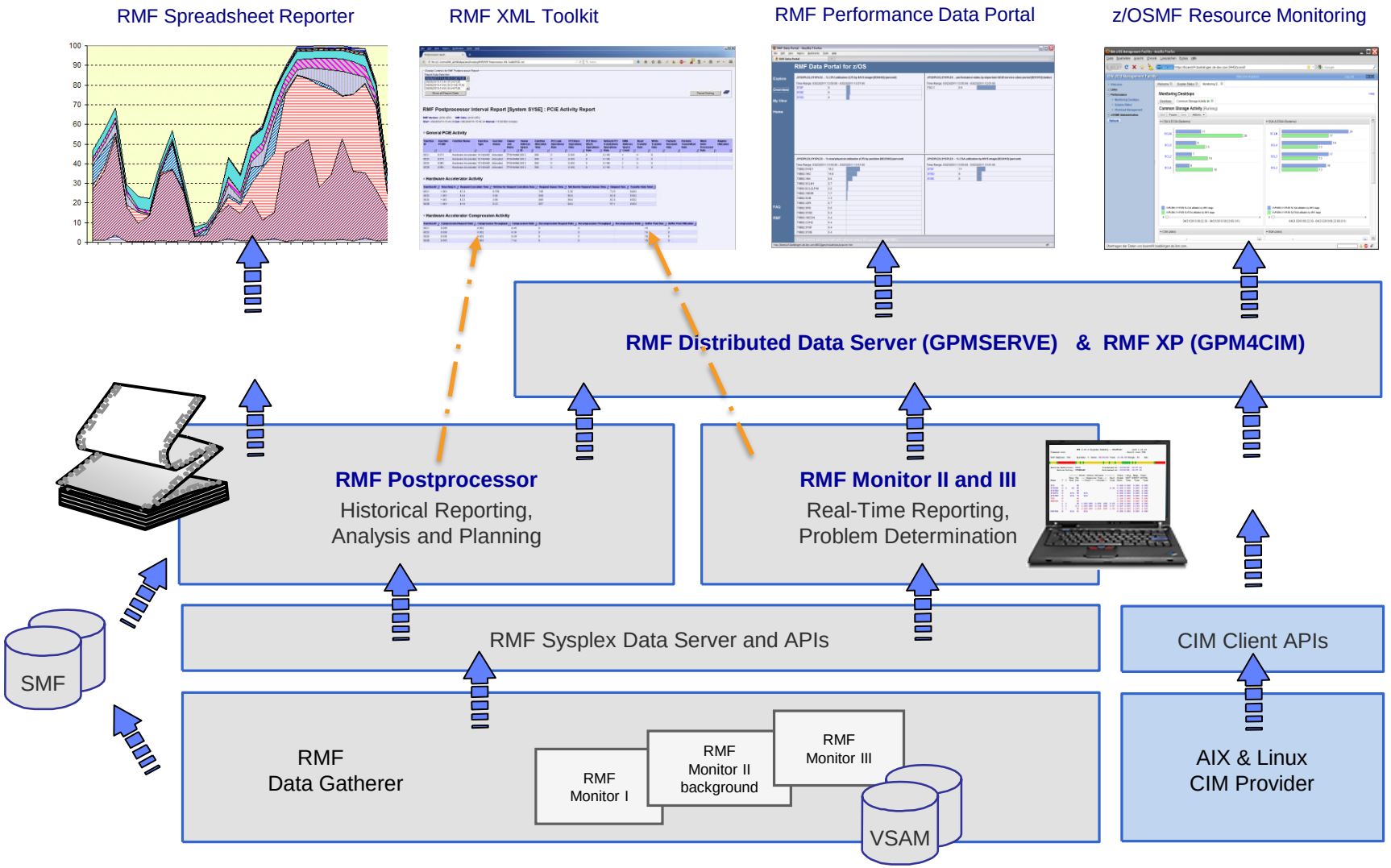
System Address Space Analysis

Type	Number of Address Spaces: MIN	Number of Address Spaces: MAX	Number of Address Spaces: AVG
IN Queue	60	62	60.4
IN READY Queue	0	5	0.0
OUT READY Queue	0	0	0.0
OUT WAIT Queue	0	0	0.0
LOGICAL OUT READY Queue	0	0	0.0
LOGICAL OUT WAIT Queue	111	113	112.6
BATCH Address Spaces	0	0	0.0
STC Address Spaces	168	168	168.0
TSO Address Spaces	2	2	2.0
ASCH Address Spaces	0	0	0.0
OMVS Address Spaces	3	3	3.0

Session objectives

- RMF Product Components
- RMF talks XML!
  - Expansion to XML format complete
  - Components dealing with XML
    - RMF Postprocessor XML formatted reports
    - RMF XML Toolkit
    - RMF Spreadsheet Reporter
    - RMF Distributed Data Server
- Take the short path!
  - RMF Postprocessor Overview Conditions
    - How to use Overview Reporting
    - RMF Spreadsheet Reporter
    - RMF Data Portal

RMF Product Overview



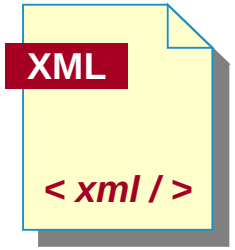
A short history of RMF XML

- z/OS ~1.5: DDS HTTP API for Monitor III data
  - Comprehensive resource model
  - Single & list-valued metrics
  - Full Monitor III report support with z/OS R1.8
- z/OS 1.11: Start of RMF Postprocessor „talking“ XML
- z/OS 1.12: Postprocessor reports can be requested via DDS HTTP API and Data Portal
- z/OS 2.1: All Postprocessor reports can formatted as XML data, new ones are only available as XML data:
  - SDELAY (z/OS 1.13)
  - PCIE (z/OS 2.1)
  - SCM (z/OS 2.2)

XML formatted RMF reports

Rationale:

- No state-of-the-art display capability of RMF reports
  - RMF No state-of-the-art Monitor III reports only available via ISPF:
    - Limited selection of data columns visible in ISPF reports
    - Data resides in VSAM data sets
  - RMF Postprocessor reports are limited to a page width of 132 characters
    - Material sometimes squeezed because of width limitations
    - Always complete data shown in report, no chance to hide parts
- No flexible sorting capability for RMF data
- No easy access to RMF data for application programs
  - cumbersome to parse the text output
  - each report has its own layout



➔RMF reports (Postprocessor and Monitor III) can be generated in XML format

Postprocessor XML formatted reports

z/OS V1R11 RMF	z/OS V1R12 RMF	z/OS V1R13 RMF	z/OS V2R1 RMF	z/OS V2R2 RMF
CPU Activity CRYPTO Activity ESS Disk Systems Activity FICON Director Activity OMVS Kernel Activity OVERVIEW Report	DEVICE Activity WORKLOAD Activity	PAGING Activity SDELAY (XML only)	CACHE Subsystem Activity CF Activity CHANNEL Path Activity ENQUEUE Avtivity HFS Statistics IOQ Activity PAGESP Activity PCIE Activity (XML only) SDEVICE Activity VSTOR Activity XCF Activity	SCM Activity (XML only)

- Summary and Exception reports as well as interval reports based on data collected by a Monitor II background session are not available in XML format.
- The XML format is the preferred RMF Postprocessor report format for the future.
- The XML format supersedes the text format. New reports might not be implemented in text format.

Postprocessor XML formatted reports ...

- The generation of Postprocessor reports in XML format is controlled by the new ddnames XPRPTS, XPXSRPTS and XPOVWRPT
- If the XML output is routed to permanent data sets rather than to SYSOUT, define the data set with RECFM=VB and LRECL between 256 and 8192. Specify an appropriate BLKSIZE

ddname	Contents	Allocations	Notes
XPRPTS	Combined **single-system** report in XML format	One ddname for one data set to contain all single system reports for each interval during the session.	There is no dynamic allocation of this ddname, you have to define it explicitly if you want to get all reports in XML format into one data set or output class. If you define this ddname, no MFRnnnnn files are created. If you define this ddname and PPRPTS, no XML output in file XPRPTS is created.
XPOVWRPT	Combined **Overview** report in XML format	One ddname for one data set to contain all overview reports for each system included in the input data.	There is no dynamic allocation of this ddname, you have to define it explicitly if you want to get all overview reports in XML format into one data set or output class. If you define this ddname, no PPORPnnn files are created.
XPXSRPTS	Combined **sysplex-wide** report in XML format	One ddname for one data set to contain all sysplex reports for each interval included in the input data.	There is no dynamic allocation of this ddname, you have to define it explicitly if you want to get all reports in XML format into one data set or output class. If you define this ddname, no MFRnnnnn files are created. If you define this ddname and PPXSRPTS, no XML output in file XPXSRPTS is created.

RMF Postprocessor JCL for XML Output

```
//ERBSAMPP JOB (ACCT),'PGMRNAME',CLASS=A,REGION=32M,...
//*
//*        RMF POSTPROCESSING
//*
//RMFPP    EXEC PGM=ERBRMFPP
//MFPINPUT DD   DISP=SHR,DSN=<Input_SMF_Data>
//MFPMSGDS DD   SYSOUT=*
//XPRPTS   DD   SYSOUT=*        CUMULATIVE OUTPUT OF INTERVAL REPORTS
//XPXSRPTS DD   SYSOUT=*
//SYSOUT   DD   SYSOUT=*
//SYSIN    DD   *
  SUMMARY(INT,TOT)
  REPORTS(ALL)
  SYSRPTS(ALL)
  SYSOUT(A)
```

- Use XPOVWRPT for Overview Conditions
- Replace X by P to generate „old“ text report output

RMF Postprocessor Job: SDSF Output

```
SDSF STATUS DISPLAY ALL CLASSES                          LINE 1-1 (1)
COMMAND INPUT ===>                                         SCROLL ===> CSR
NP   JOBNAME  JobID    Owner    Prty Queue      C  Pos  SAff  ASys Status
?    ERBSAMPP JOB07476 B...        1 PRINT      A
```

```
SDSF JOB DATA SET DISPLAY - JOB ERBSAMPP (JOB07476)    LINE 1-7 (7)
COMMAND INPUT ===>                                       SCROLL ===> CSR
NP   DDNAME   StepName ProcStep DSID Owner    C Dest              Rec-Cnt Page
     JESMSGLG JES2                2 B...     H LOCAL                  30
     JESJCL   JES2                3 B...     H LOCAL                  36
     JESYSMSG JES2                4 B...     H LOCAL                  35
     MFPMSGDS RMFPP             103 B...     H LOCAL                  23
     XPXSRPTS RMFPP             104 B...     H LOCAL             107,469
     XPRPTS   RMFPP             105 B...     H LOCAL              59,278
```

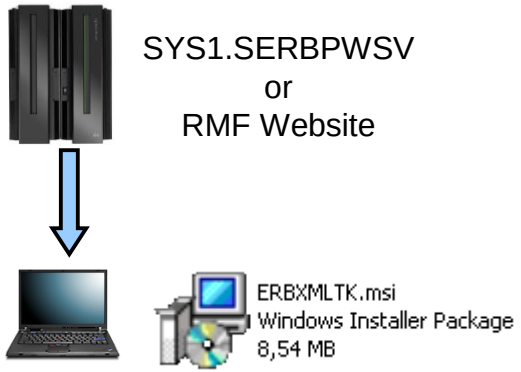
- These screen shots from SDSF show where the generated XML output for the requested system and sysplex interval reports can be found after the RMF Postprocessor job has finished.

RMF XML Toolkit

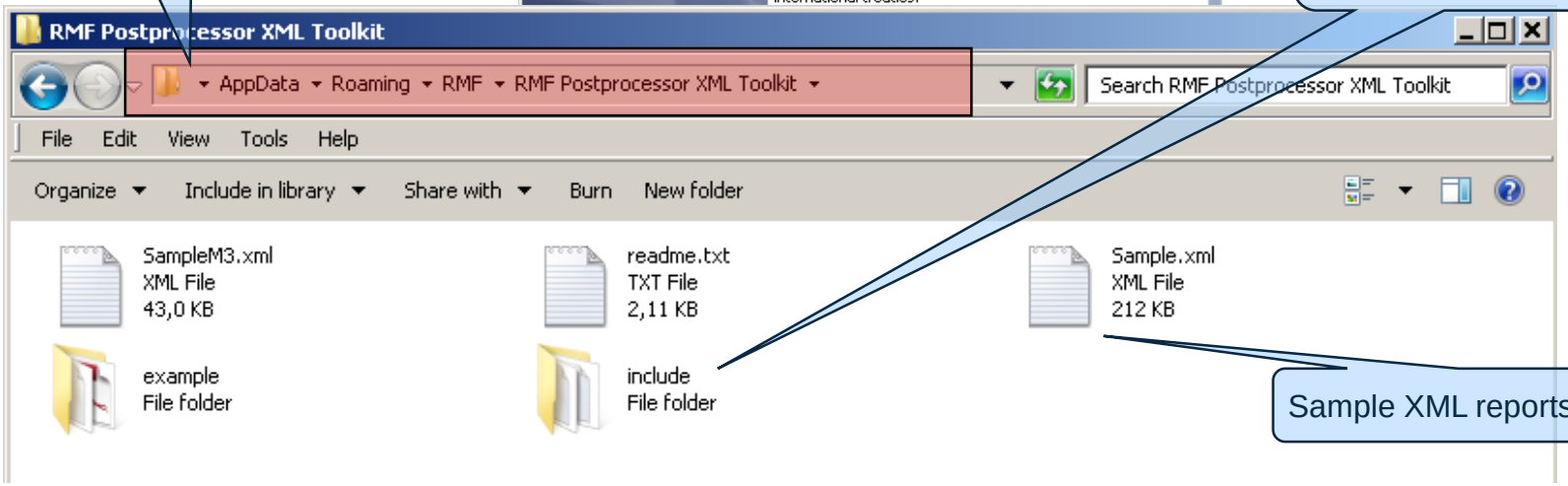
- New RMF XML Toolkit shipped with RMF since z/OS 1.13
- Simplifies display of RMF Postprocessor XML reports in a web browser

⇨ Toolkit Installation:

1. Download member ERBXMLTK as binary file erbxmltk.msi
2. Install MSI Package



Default Installation Directory



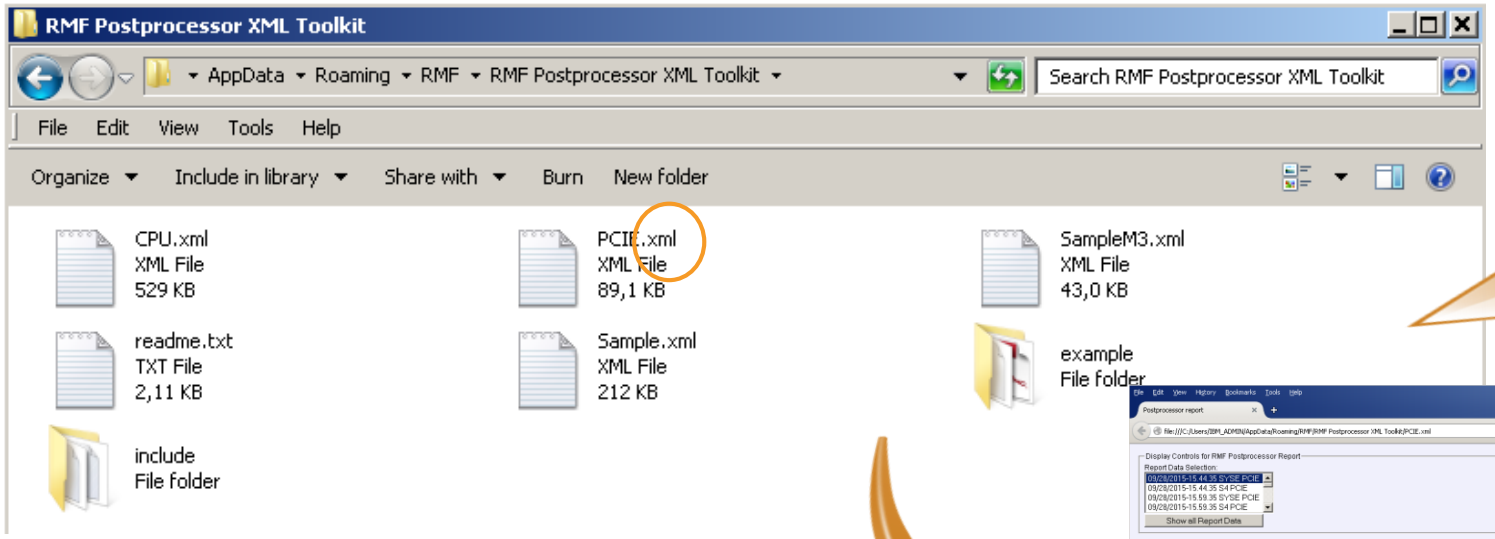
⇨ XSL stylesheet files
⇨ Java script file
⇨ Bitmap files

Sample XML reports (PP, M3)

RMF XML Toolkit ...

Toolkit Usage:

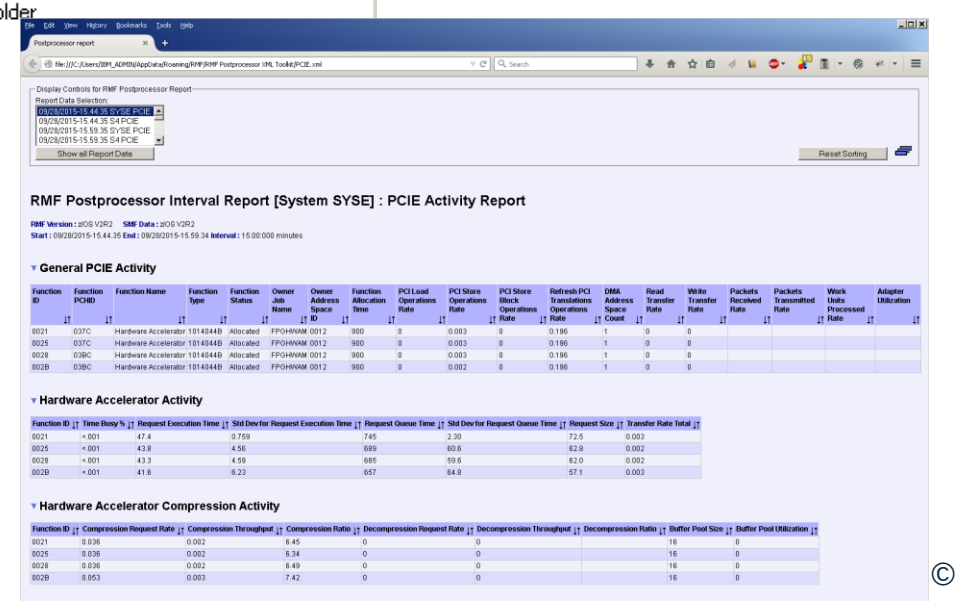
1. Download Postprocessor XML report into Toolkit directory



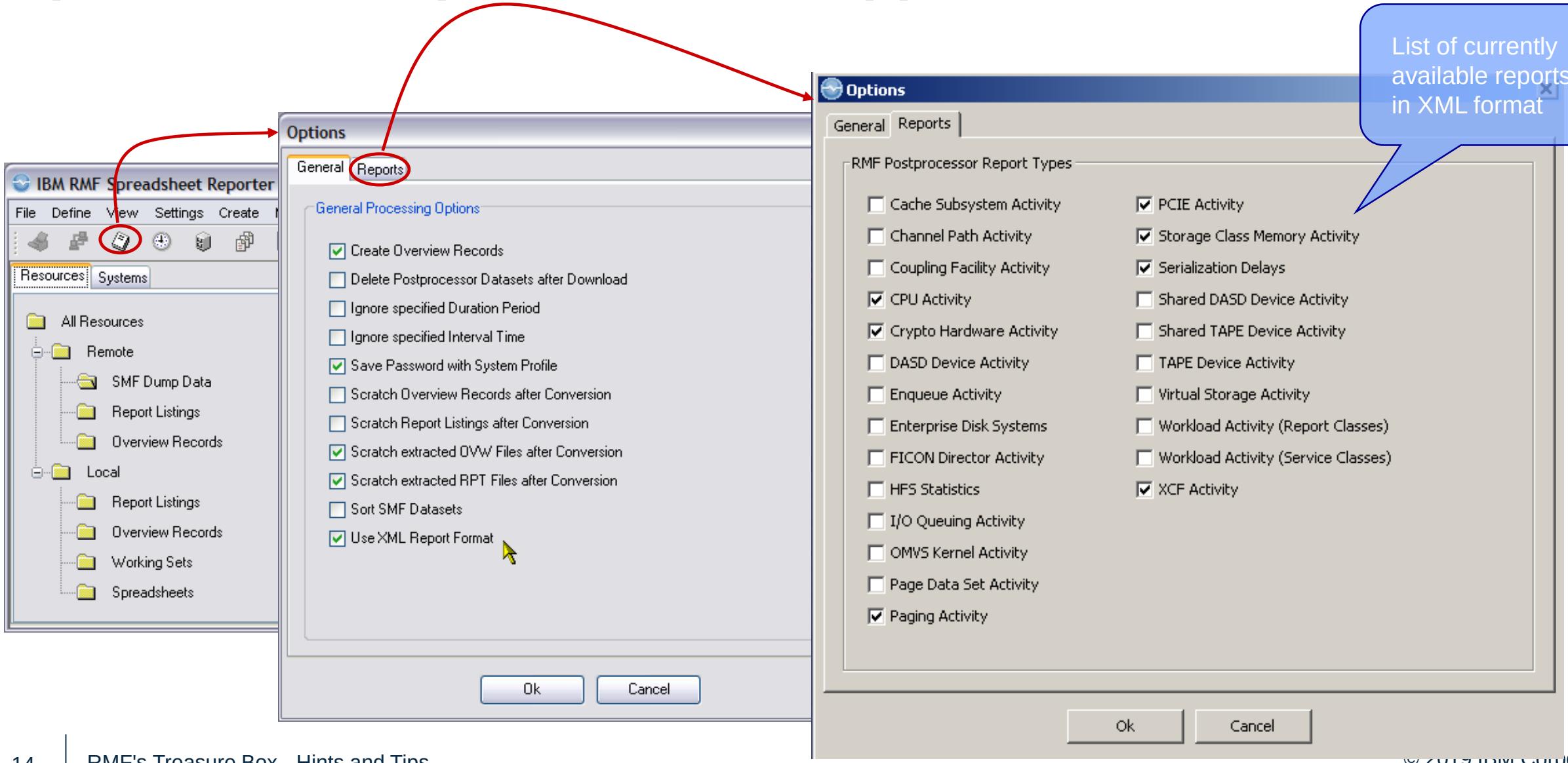
BKGE.PCIE.XML

Download in ASCII format

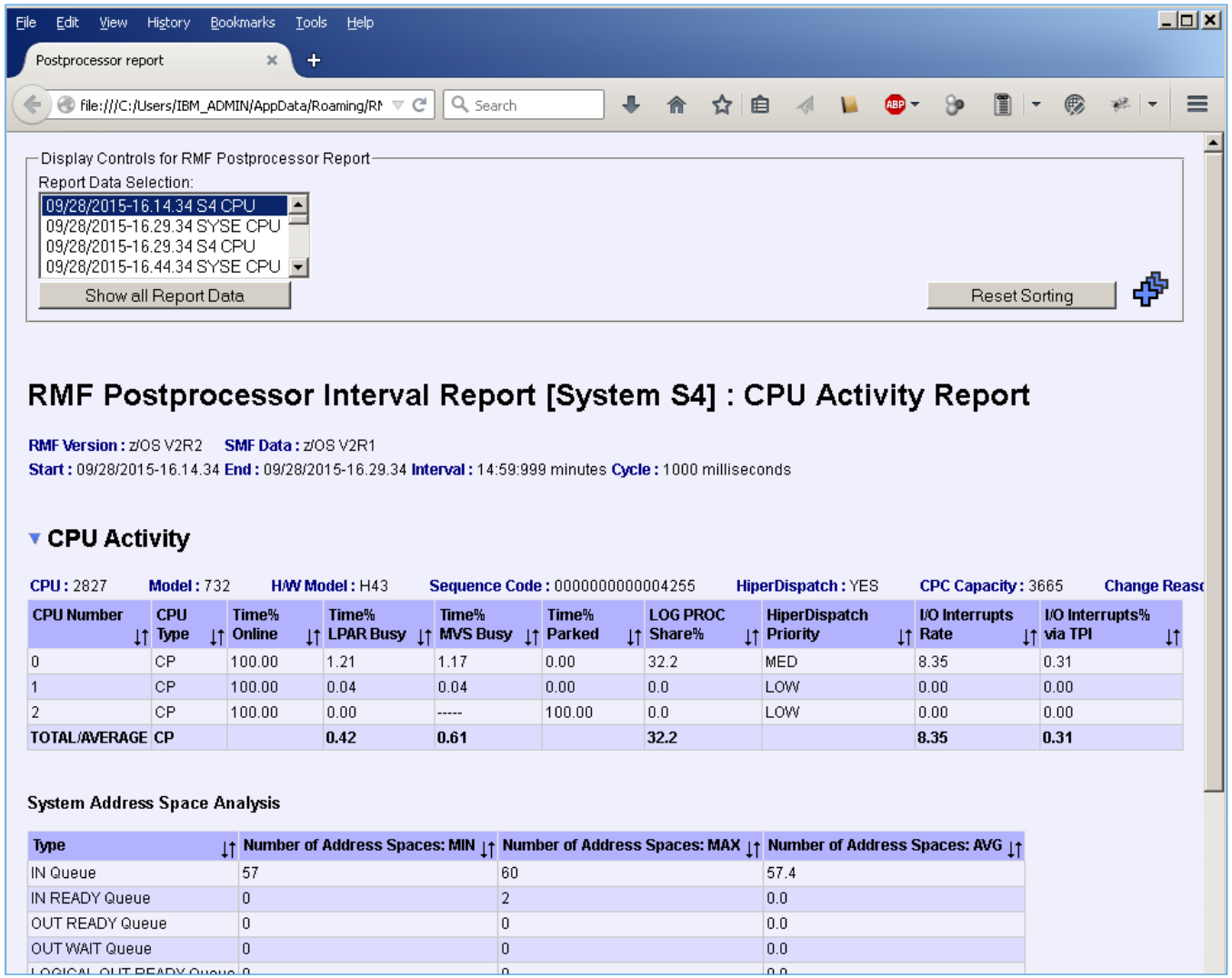
2. Open XML report with web browser

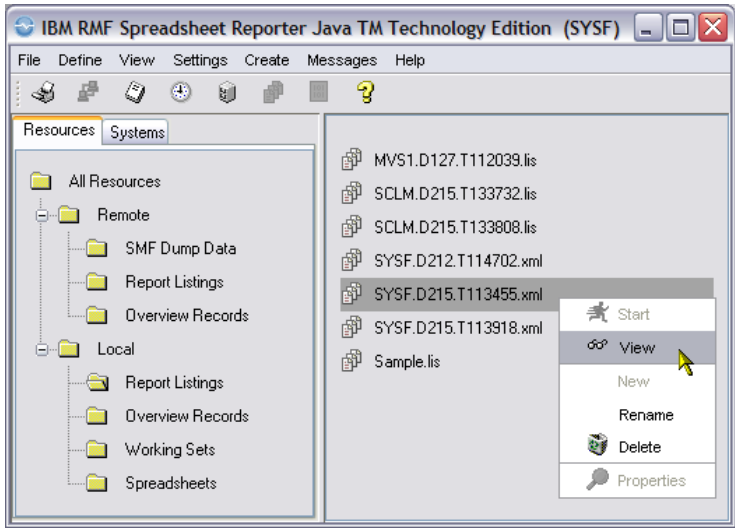


Spreadsheet Reporter – XML Support



Spreadsheet Reporter XML Support...





HTTP API to access RMF Interactive & Historical Data

- Application programs can use Distributed Data Server (DDS) HTTP API to retrieve RMF Monitor III & Postprocessor XML reports
- All RMF Postprocessor XML formatted reports supported
- Web browser can be used as Monitor III & Postprocessor Data Portal

File Edit View History Bookmarks Tools Help

Postprocessor report

file:///C:/Users/IBM_ADMIN/AppData/Roaming/RMF/RMF Postprc

Search

Display Controls for RMF Postprocessor Report

Report Data Selection:

04/21/2015-01.15.00 CB8E CPU
04/21/2015-01.15.00 CB8D CPU
04/21/2015-01.30.00 CB8A CPU
04/21/2015-01.30.00 CB8C CPU

Show all Report Data

Reset Sorting

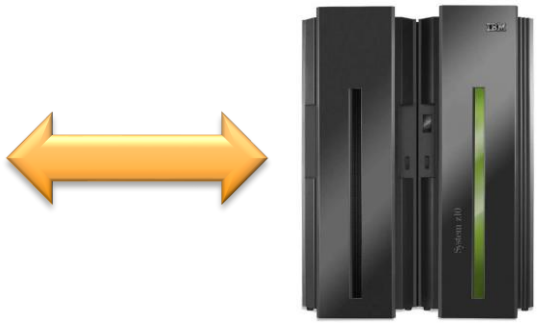
RMF Postprocessor Interval Report [System CB8E] : CPU Activity Report

RMF Version : z/OS V2R2 **SMF Data :** z/OS V2R2
Start : 04/21/2015-01.15.00 **End :** 04/21/2015-01.30.00 **Interval :** 15:00:013 minutes **Cycle :** 1000 milliseconds

CPU Activity

CPU : 2964 **Model :** 762 **H/W Model :** N96 **Sequence Code :** 000000000009CB07 **HiperDispatch :** YES **CPC Capacity :** 6938 **Change Reason :** NONE

CPU Number	CPU Type	Time% Online	Time% LPAR Busy	Time% MVS Busy	Time% Parked	LOG PROC Share%	HiperDispatch Priority	I/O Interrupts Rate	I/O Interrupts% via TPI
0	CP	100.00	59.77	59.76	0.00	100.0	HIGH	583.1	23.88
1	CP	100.00	60.15	60.20	0.00	74.7	MED	9.19	16.54
2	CP	100.00	62.54	62.59	0.00	74.7	MED	407.6	4.61
3	CP	100.00	1.30	15.03	91.33	0.0	LOW	0.00	0.00
4	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
5	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
6	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
7	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
8	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
9	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
A	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
B	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
C	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
D	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
TOTAL/AVERAGE	**CP**		**13.13**	**59.57**		**249.4**		**999.9**	**15.96**
E	IIP	100.00	0.18	0.18	0.00	54.0	MED		
F	IIP	100.00	0.04	0.04	0.00	54.0	MED		
TOTAL/AVERAGE	**IIP**		**0.11**	**0.11**		**108.0**			

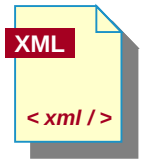


HTTP API to access Historical Data ...

Client Application

HTTP Request

XML Response



RMF Distributed Data Server

```
//STEP1 EXEC PGM=GPMDDSRV
...
//GPMPPJCL  DD DSN=SYS1.SERBPWSV(GPMPPJCL)
...
```

Submit PP JOB

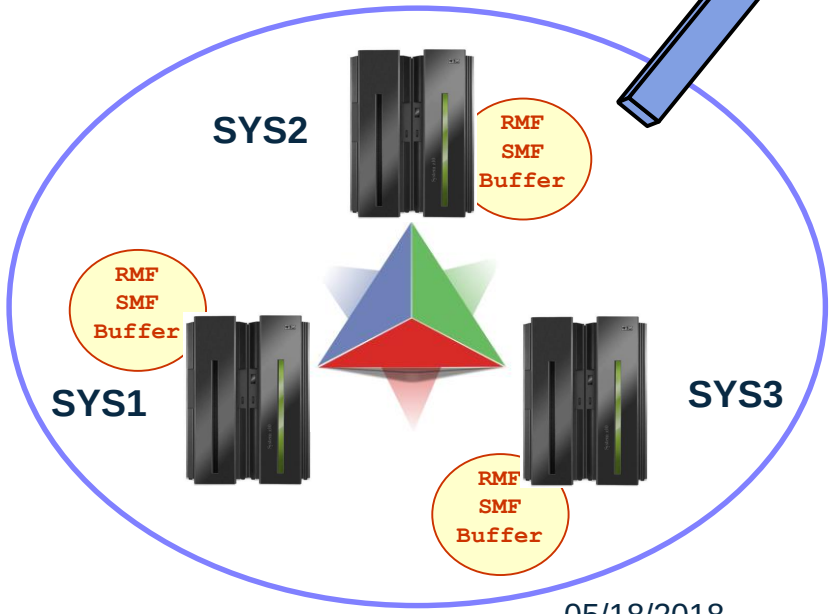
PP JOB Output

GPMDDSPP
RMF Postprocessor JOB

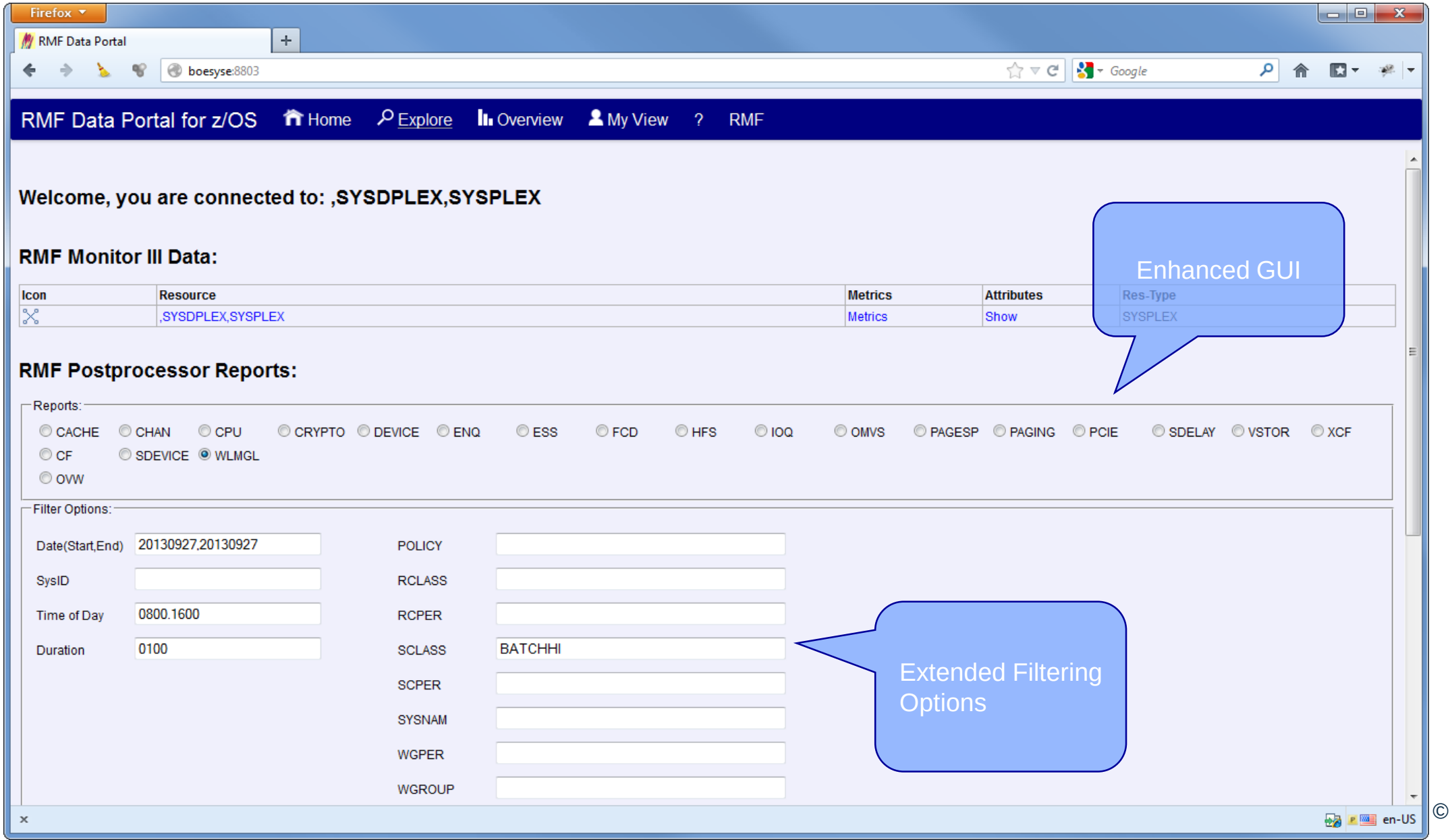
```
//RMFPP   EXEC PGM=ERBRMFPP
//MFPMSGDS DD SYSOUT=*
//XPRPTS   DD SYSOUT=*
//XPXSRPTS DD SYSOUT=*
//XPOVWRPT DD SYSOUT=*
//SYSOUT   DD SYSOUT=*
//SYSIN    DD   *
  DATE(07022010,07022010)
  REPORTS(CPU)
  SYSOUT(H)
```

JCL Template: SYS1.SERBPWSV(GPMPPJCL)

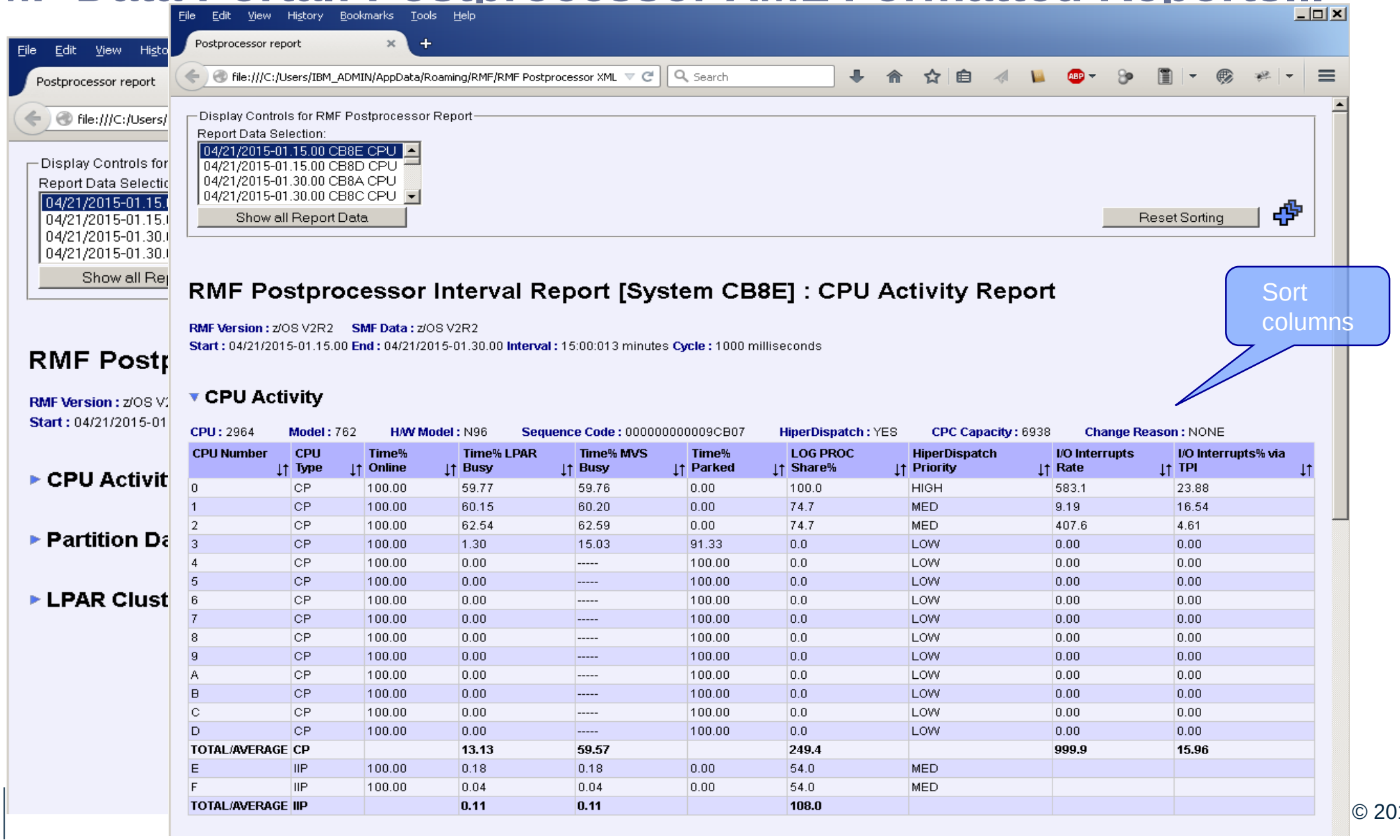
```
//GPMDDSPP JOB MSGCLASS=H,CLASS=A,
//         MSGLEVEL=(1,1)
/*JOBPARM  SYSAFF=*
//RMFPP    EXEC   PGM=ERBRMFPP
//MFPMSGDS DD     SYSOUT=*
//XPRPTS   DD     SYSOUT=*
//XPXSRPTS DD     SYSOUT=*
//XPOVWRPT DD     SYSOUT=*
//SYSOUT   DD     SYSOUT=*
//SYSIN    DD     *
```



RMF Data Portal: Postprocessor XML Formatted Reports...



RMF Data Portal: Postprocessor XML Formatted Reports...



CPU Number	CPU Type	Time% Online	Time% LPAR Busy	Time% MVS Busy	Time% Parked	LOG PROC Share%	HiperDispatch Priority	I/O Interrupts Rate	I/O Interrupts% via TPI
0	CP	100.00	59.77	59.76	0.00	100.0	HIGH	583.1	23.88
1	CP	100.00	60.15	60.20	0.00	74.7	MED	9.19	16.54
2	CP	100.00	62.54	62.59	0.00	74.7	MED	407.6	4.61
3	CP	100.00	1.30	15.03	91.33	0.0	LOW	0.00	0.00
4	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
5	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
6	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
7	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
8	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
9	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
A	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
B	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
C	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
D	CP	100.00	0.00	-----	100.00	0.0	LOW	0.00	0.00
TOTAL/AVERAGE	**CP**		**13.13**	**59.57**		**249.4**		**999.9**	**15.96**
E	IIP	100.00	0.18	0.18	0.00	54.0	MED		
F	IIP	100.00	0.04	0.04	0.00	54.0	MED		
TOTAL/AVERAGE	**IIP**		**0.11**	**0.11**		**108.0**			

Postprocessor XML Formatted Reports...

```
//PRGRNnnX JOB (DE03141,,),'PGMRNAME',CLASS=A,USER=SHARAnn,
//         MSGCLASS=H,MSGLEVEL=(1,1),NOTIFY=SHARAnn
//*
//XMLPP    PROC REPORT=
//RMFPP    EXEC PGM=ERBRMFPP
//MFPINPUT DD   DISP=SHR,DSN=<SMF_Input_Data>
//MFPMSGDS DD   SYSOUT=*
//XPRPTS   DD   PATH='/ppxml/2012-04-04/14.30.00/&REPORT..xml',
//         PATHOPTS=(OWRONLY,OCREAT,OTRUNC),
//         PATHMODE=(SIRUSR,SIWUSR,SIRGRP),FILEDATA=TEXT
//XPXSRPTS DD   PATH='/ppxml/2012-04-04/14.30.00/&REPORT..xml',
//         PATHOPTS=(OWRONLY,OCREAT,OTRUNC),
//         PATHMODE=(SIRUSR,SIWUSR,SIRGRP),FILEDATA=TEXT
//         PEND
//PPCPU    EXEC PROC=XMLPP,REPORT=CPU
//RMFPP.SYSIN DD   *
  REPORTS(CPU)
//PPWLMGL  EXEC PROC=XMLPP,REPORT=WLMGL
//RMFPP.SYSIN DD   *
  SYSRPTS(WLMGL(SCPER,POLICY))
//
```

Execute the Postprocessor JCL and redirect the output to any HFS directory

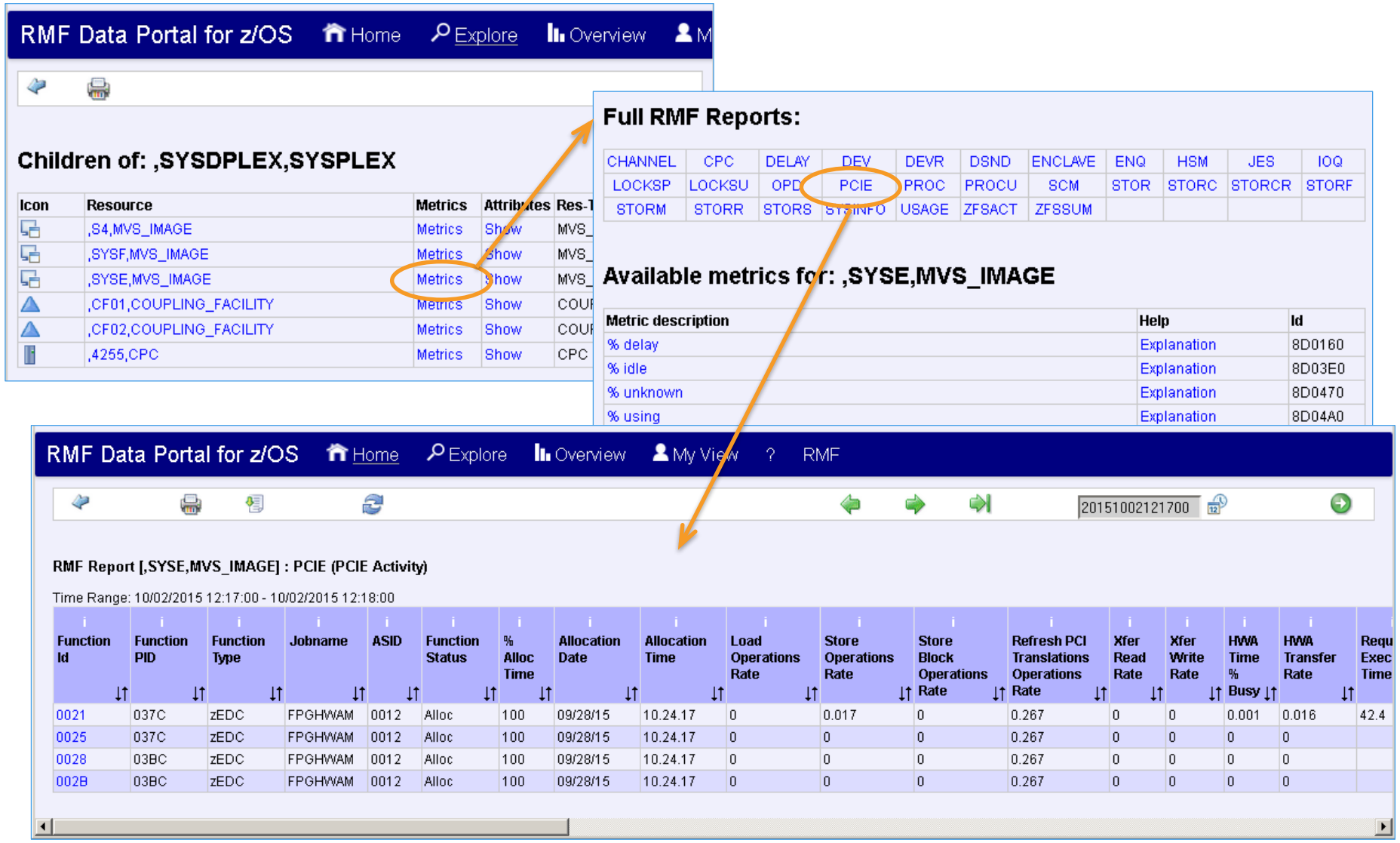
The RMF Data Portal is currently limited to the SMF Buffer of the RMF Sysplex Data Server.
No SMF Dump Data Sets can be specified

Postprocessor XML Report Access via HTTP Server

- Instant access to all reports
- No maintenance of raw data archives

- Alternative: Use SMB Service to map USS directory

RMF Data Portal: Monitor III data



RMF Data Portal: Monitor III data

RMF Report - One Row [,SYSF,MVS_IMAGE] : PCIE (PCIE Activity)

Time Range: 05/04/2015 10:02:00 - 05/04/2015 10:03:00

Function Id	0022
Function PID	037C
Function Type	zEDC
Jobname	FPGHWAM
ASID	0012
Function Status	Alloc
% Alloc Time	100
Allocation Date	04/30/15
Allocation Time	16.02.43
Load Operations Rate	0
Store Operations Rate	0
Store Block Operations Rate	0
Refresh PCI Translations Operations Rate	0
Xfer Read Rate	0
Xfer Write Rate	0
HWA Time % Busy	0
HWA Transfer Rate	0
Request Execution Time	
Request Queue Time	
Request Size	
Request Execution Time StdDev	
Request Queue Time StdDev	
Compression Request Rate	0
Decompression Request Rate	0
Compression Throughput	0
Decompression Throughput	0
Compression Ratio	
Decompression Ratio	
Buffer Pool Memory Size	16
Buffer Pool % Utilization	
# DMA AS	1
HWA Type	zCompression
Received Packets Rate	
Transmitted Packets Rate	
Work Unit Rate	
Adapter Utilization	

ISPF Fields

http://hostname:8803/gpm/rmfm3.xml?report=PCIE&resource=,sysid,MVS_IMAGE

RMF Data Portal for z/OS | Home | Explore | Overview | My View | ?

RMF Report [,SYSF,MVS_IMAGE] : PCIE (PCIE Activity)

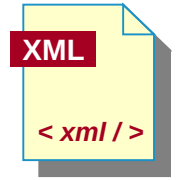
Sort Rows

Time Range: 05/04/2015 10:02:00 - 05/04/2015 10:03:00

Function Id	Function PID	Function Type	Jobname	ASID	Function Status	% Alloc Time	Allocation Date	Allocation Time	Load Operations Rate
0022	037C	zEDC	FPGHWAM	0012	Alloc	100	04/30/15	16.02.43	0
0026	037C	zEDC	FPGHWAM	0012	Alloc	100	04/30/15	16.02.43	0
0029	03BC	zEDC	FPGHWAM	0012	Alloc	100	04/30/15	16.02.43	0
002C	03BC	zEDC	FPGHWAM	0012	Alloc	100	04/30/15	16.02.43	0

Hyperlink to vertical View

Problems solved ... with XML formatted RMF reports



- No state-of-the-art display capability of RMF reports
  - RMF Monitor III reports only available via ISPF, data in VSAM data sets

    ➔ use zOSMF, Data Portal, XML Toolkit, DDS HTTP API
  - RMF Postprocessor reports are limited to a page width of 132 characters

    ➔ use Spreadsheet Reporter, Data Portal, XML Toolkit, DDS HTTP API
- No flexible sorting capability for RMF data

  ➔ use Data Portal, XML Toolkit, Spreadsheet Reporter
- No easy access to RMF data for application programs
  - cumbersome to parse the text output
  - each report has its own layout

  ➔ use DDS HTTP API (like e.g. zOSMF and OMEGAMON XE)

Session objectives

- RMF Product Components
- RMF talks XML!
  - Expansion to XML format complete
  - Components dealing with XML
    - RMF Postprocessor XML formatted reports
    - RMF XML Toolkit
    - RMF Spreadsheet Reporter
    - RMF Distributed Data Server
- Take the short path!
  - RMF Postprocessor Overview Conditions
    - How to use Overview Reporting
    - RMF Spreadsheet Reporter
    - RMF Data Portal

Motivation

```
                                W O R K L O A D   A C T I V I T Y
                                                                                                  PAGE    1
      z/OS V2R2              SYSPLEX UTCPLXCB          DATE 04/21/2015          INTERVAL 15.00.013   MODE = GOAL
                             RPT VERSION V2R2 RMF      TIME 01.15.00

                                      POLICY ACTIVATION DATE/TIME 04/03/2015 00.08.43

------------------------------------------------------------------------------------------------------------- SERVICE CLASS(ES)

REPORT BY: POLICY=BASEPOL    WORKLOAD=SYSTEM     SERVICE CLASS=SYSSTC     RESOURCE GROUP=*NONE
                                                 CRITICAL     =NONE
                                                 DESCRIPTION  =STARTED TASK DEFAULT

-TRANSACTIONS-  TRANS-TIME HHH.MM.SS.TTT  --DASD I/O--  ---SERVICE---   SERVICE TIME  ---APPL %---  --PROMOTED--  ----STORAGE----
AVG     253.29  ACTUAL              1.311  SSCHRT 474.2  IOC      2237K  CPU 6153.266  CP    672.77  BLK     0.000  AVG     53003.11
MPL     253.29  EXECUTION             143  RESP     3.3  CPU    356803K  SRB   70.355  AAPCP   0.00  ENQ     0.002  TOTAL   13425085
ENDED       28  QUEUED              1.167  CONN     2.5  MSO          0  RCT    0.325  IIPCP   0.01  CRM     0.000  SHARED 95538.02
END/S     0.03  R/S AFFIN               0  DISC     0.6  SRB      4123K  IIT   11.223                LCK     8.443
#SWAPS    2828  INELIGIBLE              0  Q+PEND   0.1  TOT    363163K  HST    0.000  AAP     0.00  SUP     0.000  -PAGE-IN RATES-
EXCTD        0  CONVERSION            224  IOSQ     0.0  /SEC   403512   AAP    0.000  IIP    20.02                SINGLE      0.0
AVG ENC   0.00  STD DEV               465                                 IIP  180.186                              BLOCK       0.0
REM ENC   0.00                                          ABSRPTN  1593                                              SHARED      0.0
MS ENC    0.00                                          TRX SERV 1593                                              HSP         0.0

-------------------------------------------------SERVICE CLASSES BEING SERVED-------------------------------------------------
IMSLOW

REPORT BY: POLICY=BASEPOL    WORKLOAD=SYSTEM     SERVICE CLASS=SYSTEM     RESOURCE GROUP=*NONE
                                                 CRITICAL     =NONE
                                                 DESCRIPTION  =HIGH PRIORITY SYSTEM WORK

-TRANSACTIONS-  TRANS-TIME HHH.MM.SS.TTT  --DASD I/O--  ---SERVICE---   SERVICE TIME  ---APPL %---  --PROMOTED--  ----STORAGE----
AVG     224.00  ACTUAL                  0  SSCHRT  6809  IOC    769142   CPU 1645.944  CP    448.40  BLK     0.000  AVG     60068.93
MPL     224.00  EXECUTION               0  RESP     1.3  CPU     92376K  SRB 2367.668  AAPCP   0.00  ENQ     0.000  TOTAL   13455308
ENDED        0  QUEUED                  0  CONN     0.8  MSO          0  RCT    0.000  IIPCP   0.00  CRM     0.000  SHARED    103.00
END/S     0.00  R/S AFFIN               0  DISC     0.4  SRB    136665K  IIT   22.044                LCK     0.000
#SWAPS       0  INELIGIBLE              0  Q+PEND   0.1  TOT    229810K  HST    0.000  AAP     0.00  SUP     0.000  -PAGE-IN RATES-
EXCTD        0  CONVERSION              0  IOSQ     0.0  /SEC   255344   AAP    0.000  IIP     0.00                SINGLE      0.0
AVG ENC   0.00  STD DEV                 0                                 IIP    0.000                              BLOCK       0.0
REM ENC   0.00                                          ABSRPTN  1140                                              SHARED      0.0
MS ENC    0.00                                          TRX SERV 1140                                              HSP         0.0
```

On which page do I find the data for this service class for 2 hours later?

RMF Overview Conditions

Problem(s):

- Important data is spread over many intervals, thus over many pages
- Important data is surrounded by lots of other data which is not so important for the investigation

Solution:

Use RMF Overview Conditions!

- Data points recorded by RMF can be retrieved individually

  → Allows easier analysis of specific data points from multiple reports in one step
- Duration reports can be generated for periods longer than default RMF interval by using DINTV

RMF Overview Conditions: Example from WLMGL

TRANSAVG
TRANSMPL
TRANSTOT
TRANS
SPERTRA
ENCAVG
ENCREM
ENCMS

RTIMETOT
RTIME
RTIMEQUE
TRANSADT
TRANSIQT
TRANSCVT

IOSRV
CPUSRV
MSOSRV
SRBSRV
TOTSRV
ABSRPTN
TRXSERV

TCBSEC
SRBSEC
RCTSEC
IITSEC
HSTSEC
AAPSEC
IIPSEC

APPLSEC/APPLPER
APPLIFCP
APPLIPCP
APPLAAP
APPLIIP
AAPCPSEC

```
                                                                                      PAGE    1

                                                                                      CLASS(ES)

REPORT BY: POLICY=BASEPOL     WORKLOAD=SYSTEM     SERVICE CLASS=SYSSTC    RESOURCE GROUP=*NONE
                                                  CRITICAL      =NONE
                                                  DESCRIPTION   =STARTED TASK DEFAULT

-TRANSACTIONS-  TRANS-TIME HHH.MM.SS.TTT  --DASD I/O--  ---SERVICE---  SERVICE TIME  ---APPL %---  --PROMOTED--  ----STORAGE----
AVG      253.29  ACTUAL             1.311  SSCHRT 474.2  IOC     2237K  CPU 6153.266  CP    672.77  BLK   0.000  AVG     53003.11
MPL      253.29  EXECUTION            143  RESP     3.3  CPU   356803K  SRB   70.355  AAPCP   0.00  ENQ   0.002  TOTAL   13425085
ENDED        28  QUEUED             1.167  CONN     2.5  MSO         0  RCT    0.325  IIPCP   0.01  CRM   0.000  SHARED  95538.02
END/S      0.03  R/S AFFIN              0  DISC     0.5  SRB     4123K  IIT   11.223                LCK   8.443
#SWAPS     2828  INELIGIBLE             0  Q+PEND   0.1  TOT   363163K  HST    0.000  AAP     0.00  SUP   0.000  -PAGE-IN RATES-
EXCTD         0  CONVERSION           224  IOSQ     0.0  /SEC   403512  AAP    0.000  IIP    20.02                SINGLE       0.0
AVG ENC    0.00  STD DEV              465                               IIP  180.186                              BLOCK        0.0
REM ENC    0.00                                          ABSRPTN  1593                                            SHARED       0.0
MS ENC     0.00                                          TRX SERV 1593                                            HSP          0.0

---------------------------------------------SERVICE CLASSES BEING SERVED-----------------------------------------------------
IMSLOW

REPORT BY: POLICY=BASEPOL     WORKLOAD=SYSTEM     SERVICE CLASS=SYSTEM     RESOURCE GROUP=*NONE
                                                  CRITICAL      =NONE
                                                  DESCRIPTION   =HIGH PRIORITY SYSTEM WORK

-TRANSACTIONS-  TRANS-TIME HHH.MM.SS.TTT  --DASD I/O--  ---SERVICE---  SERVICE TIME  ---APPL %---  --PROMOTED--  ----STORAGE----
AVG      224.00  ACTUAL                 0  SSCHRT  6809  IOC    769142  CPU 1645.944  CP    448.40  BLK   0.000  AVG     60068.93
MPL      224.00  EXECUTION              0  RESP     1.3  CPU    92376K  SRB 2367.668  AAPCP   0.00  ENQ   0.000  TOTAL   13455308
ENDED         0  QUEUED                 0  CONN     0.8  MSO         0  RCT    0.000  IIPCP   0.00  CRM   0.000  SHARED    103.00
END/S      0.00  R/S AFFIN              0  DISC     0.4  SRB   136665K  IIT   22.044                LCK   0.000
#SWAPS        0  INELIGIBLE             0  Q+PEND   0.1  TOT   229810K  HST    0.000  AAP     0.00  SUP   0.000  -PAGE-IN RATES-
EXCTD         0  CONVERSION             0  IOSQ     0.0  /SEC   255344  AAP    0.000  IIP     0.00                SINGLE       0.0
AVG ENC    0.00  STD DEV                0                               IIP    0.000                              BLOCK        0.0
REM ENC    0.00                                          ABSRPTN  1140                                            SHARED       0.0
MS ENC     0.00                                          TRX SERV 1140                                            HSP          0.0
```

RMF Overview Conditions: Example from CPU Activity

CPUBSY
AAPBSY
IIPBSY

```
                                C P U  A C T I V I T Y
                                                                        PAGE    1
          z/OS V                SYSTEM ID CB88          DATE 04/21/2015          INTERVAL 14.59.994
                                RPT VERSION V2R2 RMF    TIME 01.30.00            CYCLE 1.000 SECONDS
CPU        2964                6938       SEQUENCE CODE 000000000009CB07
MODEL      762                 NONE       HIPERDISPATCH=YES
H/W MODEL  N96
---CPU---    ---------------- TIME % ----------------    LOG PROC      --I/O INTERRUPTS--
NUM  TYPE    ONLINE    LPAR BUSY    MVS BUSY   PARKED    SHARE %       RATE     % VIA TPI
 0    CP     100.00      72.00        72.03      0.00     100.0  HIGH   147.5     38.86
 1    CP     100.00      65.67        65.71      0.00     100.0  HIGH   131.6     32.53
 2    CP     100.00      58.99        59.04      0.00     100.0  HIGH    1415     28.79
 3    CP     100.00      40.05        42.76      0.00     100.0  HIGH   726.1     11.13
 4    CP     100.00      48.12        48.15      0.00      98.8  MED    87.02     37.40
 5    CP     100.00       0.68        34.10     98.00       0.0  LOW     0.00      0.00
 6    CP     100.00       0.24       100.0      99.76       0.0  LOW     0.00      0.00
 7    CP     100.00       0.24       100.0      99.76       0.0  LOW     0.00      0.00
 8    CP     100.00       0.25       100.0      99.75       0.0
 9    CP     100.00       0.24       100.0      99.76       0.0
 A    CP     100.00       0.24       100.0      99.76       0.0
 B    CP     100.00       0.23       100.0      99.77       0.0
 C    CP     100.00       0.22       100.0      99.77       0.0
 D    CP     100.00       0.22       100.0      99.78       0.0
TOTAL/AVERAGE              20.53       57.60                 498.8
 E    IIP    100.00       0.97        0.96      0.00      54.0
 F    IIP    100.00       0.17        0.17      0.00      54.0
10    IIP    100.00       0.12       -----    100.00       0.0
11    IIP    100.00       0.12       -----    100.00       0.0
TOTAL/AVERAGE              0.34        0.68                 108.0
```

LACS

```
 z/OS  V2R2                SYSTEM ID CB88
                                     RPT VERSION V2R2 RMF

NUMBER OF INTERVALS 30              TOTAL LENGTH OF INTERVA
DATE     TIME      INT          LACS
MM/DD HH.MM.SS HH.MM.SS
04/21 01.30.00 00.14.59          286
04/21 01.45.00 00.15.00          287
04/21 02.00.00 00.14.59          293
04/21 02.15.00 00.15.00          300
04/21 02.30.00 00.15.00          305
04/21 02.45.00 00.15.00          305
04/21 03.00.00 00.14.59          304
```

NUMPROC
NUMAAP
NUMIIP

```
NUMBER OF INTERVALS 30              TOTAL LENGTH OF INTERVALS 07.30.00
DATE     TIME      INT          CPS      ZAAPS      ZIIPS
MM/DD HH.MM.SS HH.MM.SS
04/21 01.30.00 00.14.59         14.0          0          4
```

Postprocessor: Overview Reporting

OVW syntax: OVW(control-statement-name(condition-name[(qualifier)]))

```
OVERVIEW(REPORT)
OVW(PROCS(NUMPROC))
OVW(CPUBSY(CPUBSY))
OVW(APPLC(APPLPER(S.SYSSTC)))
OVW(APPLM(APPLPER(S.SYSTEM)))
OVW(TRANSC(TRANS(S.SYSSTC)))
OVW(TRANSM(TRANS(S.SYSTEM)))
OVW(RTIMEC(RTIME(S.SYSSTC)))
OVW(RTIMEM(RTIME(S.SYSTEM)))
DINTV(0100)
```

Combining data:

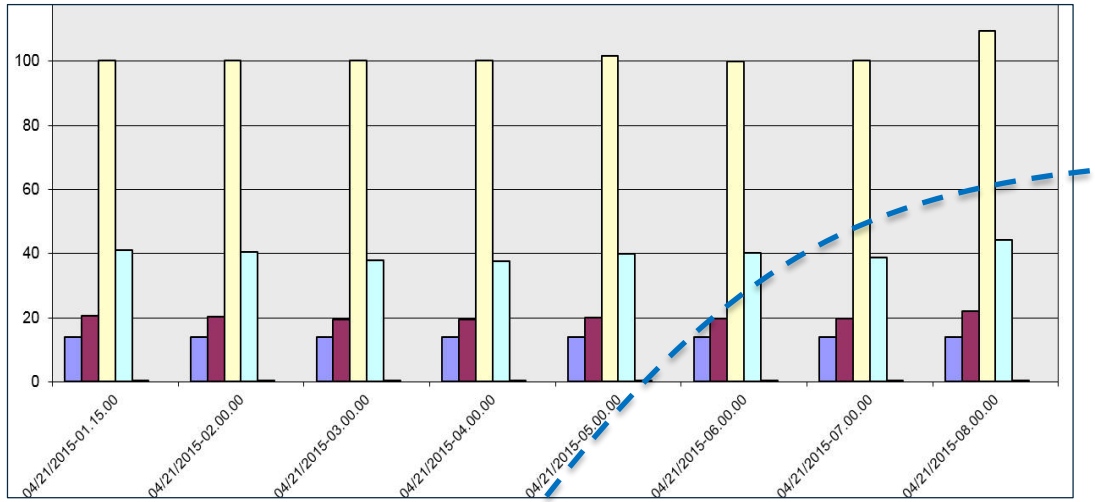
- from CPU Activity and WLMGL report
- from two service classes
- for 1 hour intervals

```
                                R M F   O V E R V I E W   R E P O R T
                                                                                PAGE   001
          z/OS  V2R2              SYSTEM ID CB88            START 04/21/2015-01.30.00  INTERVAL 00.58.07
                                  RPT VERSION V2R2 RMF      END   04/21/2015-09.00.00  CYCLE 1.000 SECONDS

NUMBER OF INTERVALS 8             TOTAL LENGTH OF INTERVALS 07.44.59

DATE     TIME      INT          PROCS     CPUBSY     APPLC     APPLM     TRANSC    TRANSM    RTIMEC    RTIMEM
MM/DD HH.MM.SS HH.MM.SS
04/21 01.15.00 00.45.00         14.0       20.6     100.2      41.0       0.01      0.00     0.198     0.000
04/21 02.00.00 01.00.00         14.0       20.3     100.3      40.5       0.01      0.00     0.178     0.000
04/21 03.00.00 01.00.00         14.0       19.3     100.1      37.9       0.01      0.00     0.163     0.000
04/21 04.00.00 01.00.00         14.0       19.3     100.3      37.7       0.01      0.00     0.214     0.000
04/21 05.00.00 01.00.00         14.0       20.1     101.5      40.0       0.01      0.00     0.176     0.000
04/21 06.00.00 01.00.00         14.0       19.8     100.0      40.3       0.01      0.00  15755.31     0.000
04/21 07.00.00 01.00.00         14.0       19.7     100.2      38.9       0.01      0.00     0.107     0.000
04/21 08.00.00 00.59.59         14.0       22.0     109.3      44.2       0.07      0.00     0.060     0.000
```

Postprocessor: Overview Reporting



(via XML)

RMF Postprocessor Duration Report [System CB8E] : RMF Overview Report

RMF Version : z/OS V2R2 SMF Data : z/OS V2R2
Start : 04/21/2015-01.15.00 End : 04/21/2015-09.00.00 Interval : 000:58:07 hours Cycle : 1000 milliseconds

Overview Report

Number of Intervals : 8 Total Length of Intervals : 07.45.00

Date (mm/dd)	Time (hh.mm.ss)	Interval Length (hh.mm.ss)	PROCS NUMPROC	CPUBSY CPUBSY	APPLC APPLPER S.SYSSTC	APPLM APPLPER S.SYSTEM	TRANSC TRANS S.SYSSTC	TRANSM TRANS S.SYSTEM	RTIMEC RTIME S.SYSSTC	RTIMEM RTIME S.SYSTEM
04/21	01.15.00	00.45.00	14.0	13.3	90.2	48.2	0.00	0.00	0.227	0.000
04/21	02.00.00	01.00.00	14.0	15.7	91.8	48.1	0.00	0.00	0.098	0.000
04/21	03.00.00	01.00.00	14.0	20.6	94.3	54.0	0.00	0.00	0.123	0.000
04/21	04.00.00	01.00.00	14.0	20.3	93.4	55.0	0.00	0.00	0.099	0.000
04/21	05.00.00	01.00.00	14.0	12.8	91.6	44.0	0.00	0.00	0.072	0.000
04/21	06.00.00	01.00.00	14.0	13.0	90.9	45.8	0.00	0.00	0.056	0.000
04/21	07.00.00	01.00.00	14.0	19.2	93.2	51.3	0.00	0.00	0.061	0.000
04/21	08.00.00	01.00.00	14.0	21.0	93.1	57.8	0.00	0.00	71685.63	0.000

(via Spreadsheet Reporter)

```
OVERVIEW(RECORD,REPORT)
OVW(PROCS(NUMPROC))
OVW(CPUBSY(CPUBSY))
OVW(APPLC(APPLPER(S.SYSSTC)))
OVW(APPLM(APPLPER(S.SYSTEM)))
OVW(TRANSC(TRANS(S.SYSSTC)))
OVW(TRANSM(TRANS(S.SYSTEM)))
OVW(RTIMEC(RTIME(S.SYSSTC)))
OVW(RTIMEM(RTIME(S.SYSTEM)))
DINTV(0100)
```

```
                                R M F   O V E R V I E W   R E P O R T
                                                                                PAGE   001
            z/OS  V2R2              SYSTEM ID CB88            START 04/21/2015-01.30.00  INTERVAL 00.58.07
                                    RPT VERSION V2R2 RMF      END   04/21/2015-09.00.00  CYCLE 1.000 SECONDS

NUMBER OF INTERVALS 8            TOTAL LENGTH OF INTERVALS 07.44.59

DATE     TIME      INT          PROCS     CPUBSY     APPLC     APPLM     TRANSC     TRANSM     RTIMEC     RTIMEM
MM/DD HH.MM.SS HH.MM.SS
04/21 01.15.00 00.45.00          14.0       20.6     100.2      41.0       0.01       0.00      0.198      0.000
04/21 02.00.00 01.00.00          14.0       20.3     100.3      40.5       0.01       0.00      0.178      0.000
04/21 03.00.00 01.00.00          14.0       19.3     100.1      37.9       0.01       0.00      0.163      0.000
04/21 04.00.00 01.00.00          14.0       19.3     100.3      37.7       0.01       0.00      0.214      0.000
04/21 05.00.00 01.00.00          14.0       20.1     101.5      40.0       0.01       0.00      0.176      0.000
04/21 06.00.00 01.00.00          14.0       19.8     100.0      40.3       0.01       0.00   15755.31      0.000
04/21 07.00.00 01.00.00          14.0       19.7     100.2      38.9       0.01       0.00      0.107      0.000
04/21 08.00.00 00.59.59          14.0       22.0     109.3      44.2       0.07       0.00      0.060      0.000
```

RMF Postprocessor JCL for Overview Conditions

```
//ERBSAMPP JOB (ACCT),'PGMRNAME',CLASS=A,REGION=0M,...
//*
//*        RMF POSTPROCESSING
//*
//RMFPP    EXEC PGM=ERBRMFPP
//MFPINPUT DD   DISP=SHR,DSN=<Input_SMF_Data>
//MFPMSGDS DD   SYSOUT=*
//SYSOUT   DD   SYSOUT=*
//SYSIN    DD   *
  OVERVIEW(REPORT)
  OVW(PROCS(NUMPROC))
  OVW(CPUBSY(CPUBSY))
  OVW(APPLC(APPLPER(S.SYSSTC)))
  OVW(APPLM(APPLPER(S.SYSTEM)))
  OVW(TRANSC(TRANS(S.SYSSTC)))
  OVW(TRANSM(TRANS(S.SYSTEM)))
  OVW(RTIMEC(RTIME(S.SYSSTC)))
  OVW(RTIMEM(RTIME(S.SYSTEM)))
  DINTV(0100)
```

⇨ Use XPOVWRPT DDNAME to generate XML output for Overview Conditions

RMF Postprocessor Job for OVW: SDSF Output

- These screen shots from SDSF show where the generated text output for the requested OVW report can be found after the RMF Postprocessor job has finished.
- XML output for DD card XPOVWRPT cumulates all data in one output file.

```
SDSF STATUS DISPLAY ALL CLASSES                          LINE 1-1 (1)
COMMAND INPUT ===>                                         SCROLL ===> CSR
NP   JOBNAME  JobID    Owner    Prty Queue      C  Pos  SAff  ASys Status
?    ERBSAMPP JOB01068 B...        1 PRINT      A
```

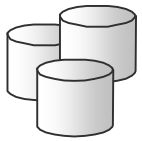
```
SDSF JOB DATA SET DISPLAY - JOB ERBSAMPP (JOB01068)    LINE 1-12 (12)
COMMAND INPUT ===>                                       SCROLL ===> CSR
NP   DDNAME   StepName ProcStep DSID Owner    C Dest              Rec-Cnt
Page
     JESJCLIN                    1 B...     H                        50
     JESMSGLG JES2               2 B...     H LOCAL                  20
     JESJCL   JES2               3 B...     H LOCAL                  51
     JESYSMSG JES2               4 B...     H LOCAL                 172
     SYSIN    RMFPP            101 B...     H                        11
     DUMMY                     102 B...     H                        18
     MFPMSGDS RMFPP            103 B...     H LOCAL                  24
     PPORP001 RMFPP            171 B...     A LOCAL                  16
     PPORP002 RMFPP            172 B...     A LOCAL                  16
     PPORP003 RMFPP            173 B...     A LOCAL                  16
     PPORP004 RMFPP            174 B...     A LOCAL                  16
     PPORP005 RMFPP            175 B...     A LOCAL                  16
```

- One ddname for each of the systems included in the input data
- One ddname for sysplex

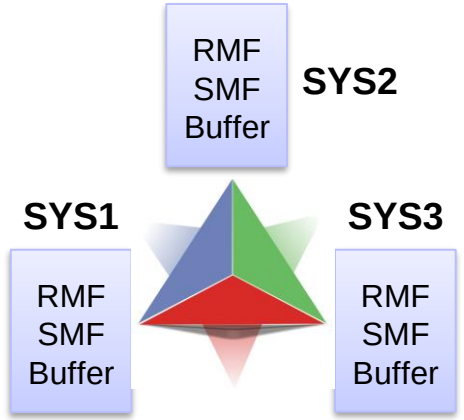
RMF Overview Reporting: Performance Tuning Tips

- RMF Postprocessor retrieves data from all available intervals in SMF input stream
- RMF Overview Reporting processes all SMF data

Resource consumption (CPU & Storage) of Postprocessor JOB directly related to amount of SMF data



SMF Data Sets




```
//ERBSAMPP JOB ...
//*
//RMFPP    EXEC PGM=ERBRMFPP
...
//MFPMSGDS DD   SYSOUT=*
//SYSOUT   DD   SYSOUT=*
//SYSIN    DD   *
  OVERVIEW(REPORT)
  OVW(PROCS(NUMPROC))
  OVW(CPUBSY(CPUBSY))
  OVW(APPLC(APPLPER(S.SYSSTC)))
```

SMF 70-1

SMF 72-3

⇨ Use pre-processing step to reduce amount of SMF data:

- SMF records from SMF buffer: ERBAPPL
- SMF records from SMF Data Sets: IFASMFDP

RMF Overview Reporting: Performance Tuning Tips …

STEP 1A Working with SMF data sets

```
//GETSMF EXEC PGM=IFASMFDP
//IDD1 DD DISP=SHR,DSN=<input_smfdata_system1>
//IDD2 DD DISP=SHR,DSN=<input_smfdata_system2>
// :
//IDDN DD DISP=SHR,DSN=<input_smfdata_systemN>
//SMFDATA DD DISP=(NEW,PASS),SPACE=(CYL,(10,10),RLSE),
// UNIT=SYSDA,DCB=(RECFM=VBS,LRECL=32760,BLKSIZE=0)
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
INDD(IDD1,OPTIONS(DUMP))
INDD(IDD2,OPTIONS(DUMP))
:
INDD(IDDN,OPTIONS(DUMP))
OUTDD(SMFDATA,TYPE(70(1),72(3)))
```

STEP 1B Working with the SMF buffer

```
//GETSMF EXEC PGM=ERBAPPL,PARM='*/*/70,72'
//SMFDATA DD DISP=(NEW,PASS),UNIT=SYSDA,SPACE=(CYL,(10,10))
//ERBLIST DD DUMMY
```

STEP 2

```
//*
//RMFPP    EXEC PGM=ERBRMFPP
//MFPINPUT DD DISP=(OLD,PASS),DSN=*.GETSMF.SMFDATA
//MFPMSGDS DD   SYSOUT=*
//SYSOUT   DD   SYSOUT=*
//SYSIN    DD   *
  OVERVIEW(REPORT)
  OVW(PROCS(NUMPROC))
  OVW(CPUBSY(CPUBSY))
  OVW(APPLC(APPLPER(S.SYSSTC)))
```

For sysplex-related overview conditions use a sort step after step 1A/1B

ERBAPPL Parameters:

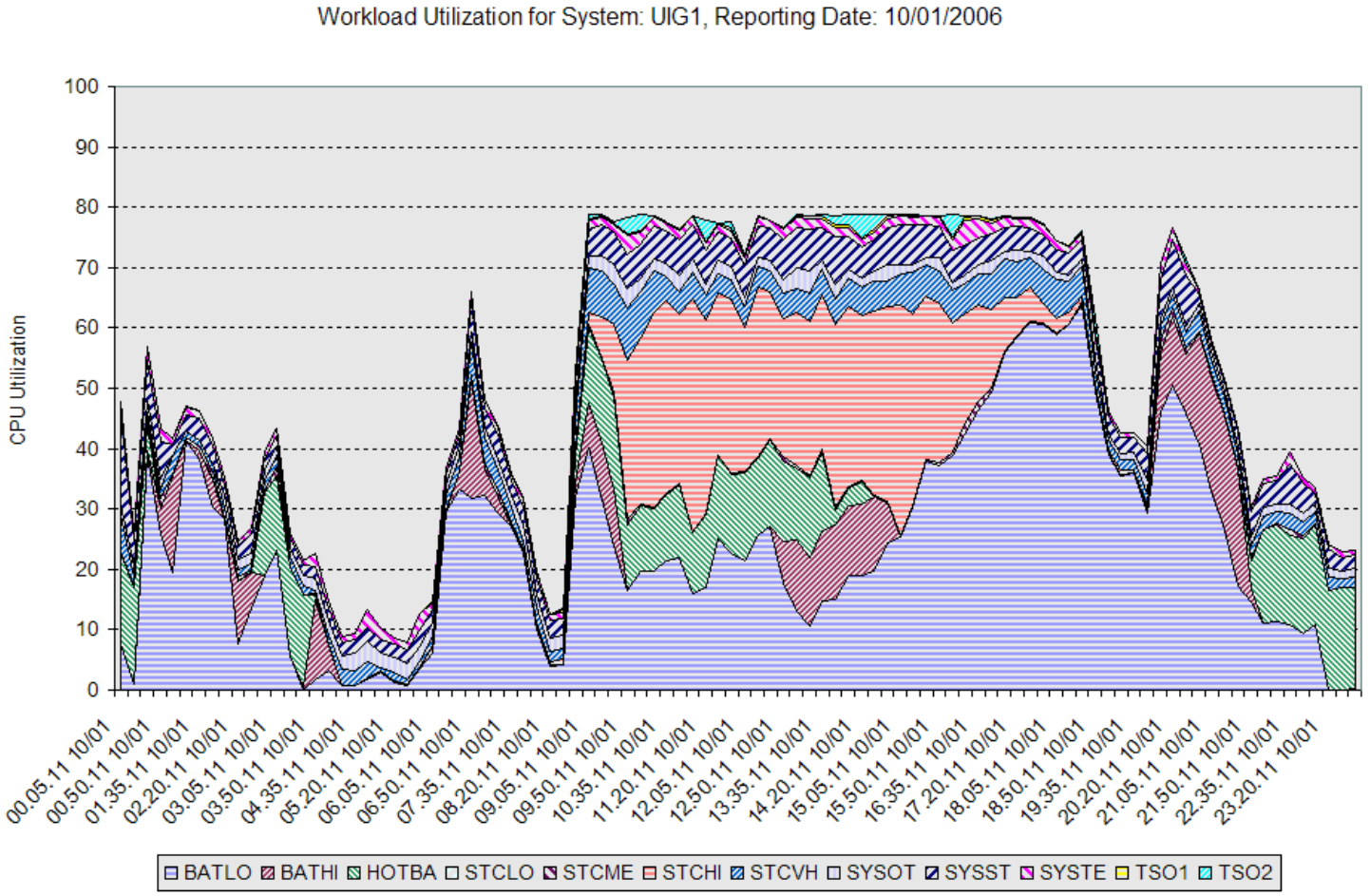
```
FORMAT OF PARAMETER STRING:
'<start>/<end>/<recordlist>'

 <start>     : - Start date and time in format
                 YYYYMMDDHHMMSS
               - * to indicate a date in the
                 past
               - ? to indicate the most
                 current SMF interval
 <end>       : - End date and time in format
                 YYYYMMDDHHMMSS
               - * to indicate "NOW"
 <recordlist>: SMF record numbers, separated
               by commas. Ranges can be defined
               in the form nn:mm

EXAMPLES:
PARM='19960101000000/19971231235959/30,42,70:79'
PARM='*/*/71,74,76'
```

RMF Spreadsheet Reporter

- converts SMF data to Spreadsheet format
- creates graphical views for Trend Analysis
- can be downloaded from the host (SYS1.SERBPWSV) or the RMF Homepage



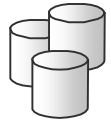
RMF Spreadsheet Reporter

SMF Dump Data

collect

Report Listings
XML Reports

Overview Records



download

Report Listings
XML Reports

Overview Records

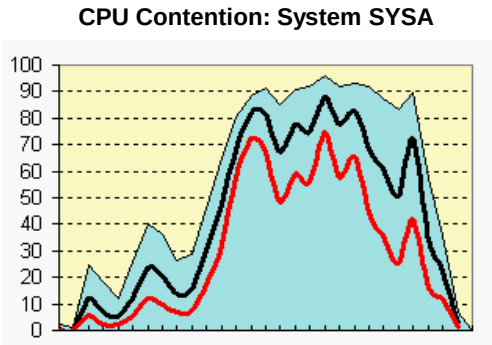
generate

Working Sets

Web Browser

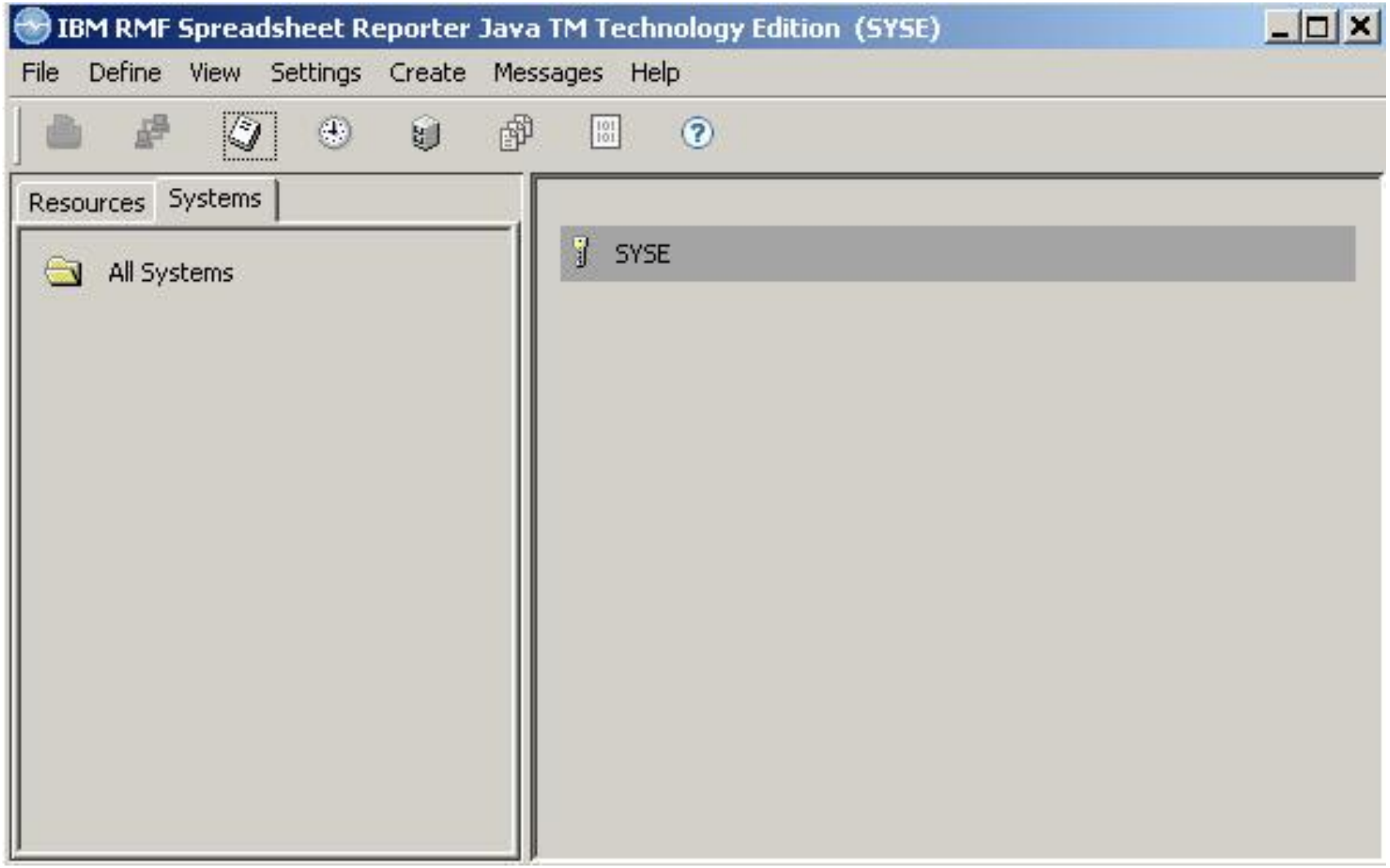
display

Spreadsheet



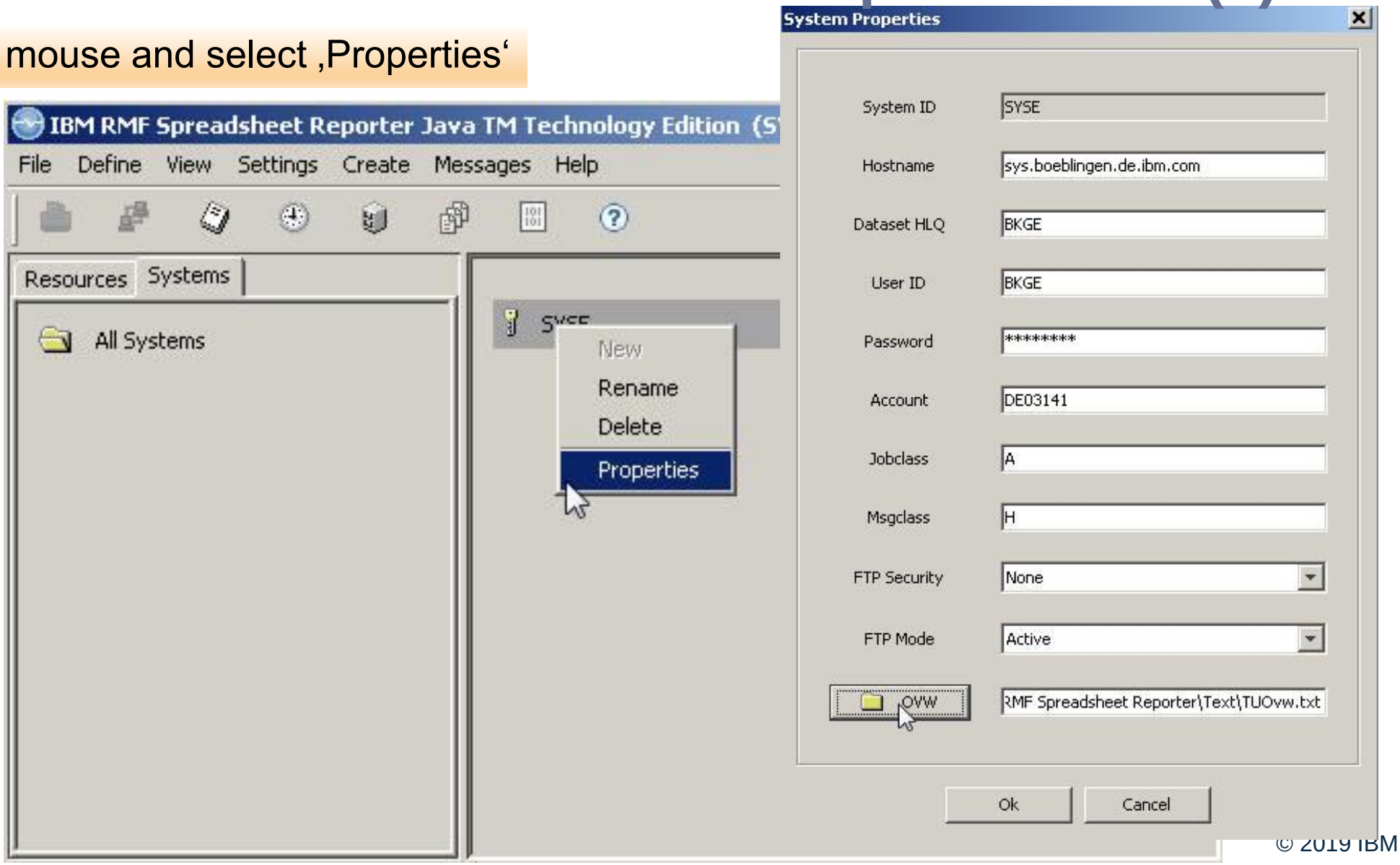
RMF SR: How to create an Overview Spreadsheet (1)

➔ Open Spreadsheet Reporter and select ‚Systems‘ tab



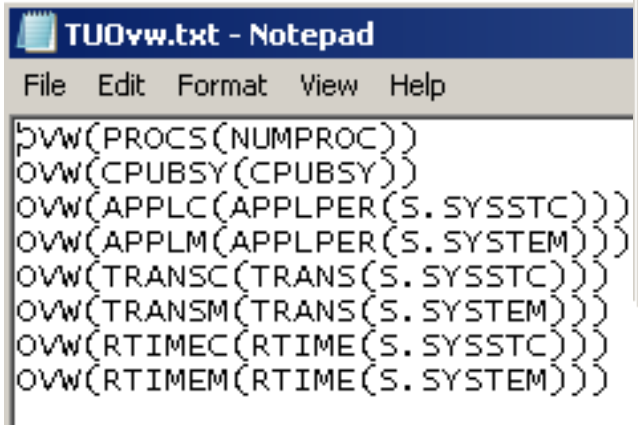
RMF SR: How to create an Overview Spreadsheet (2)

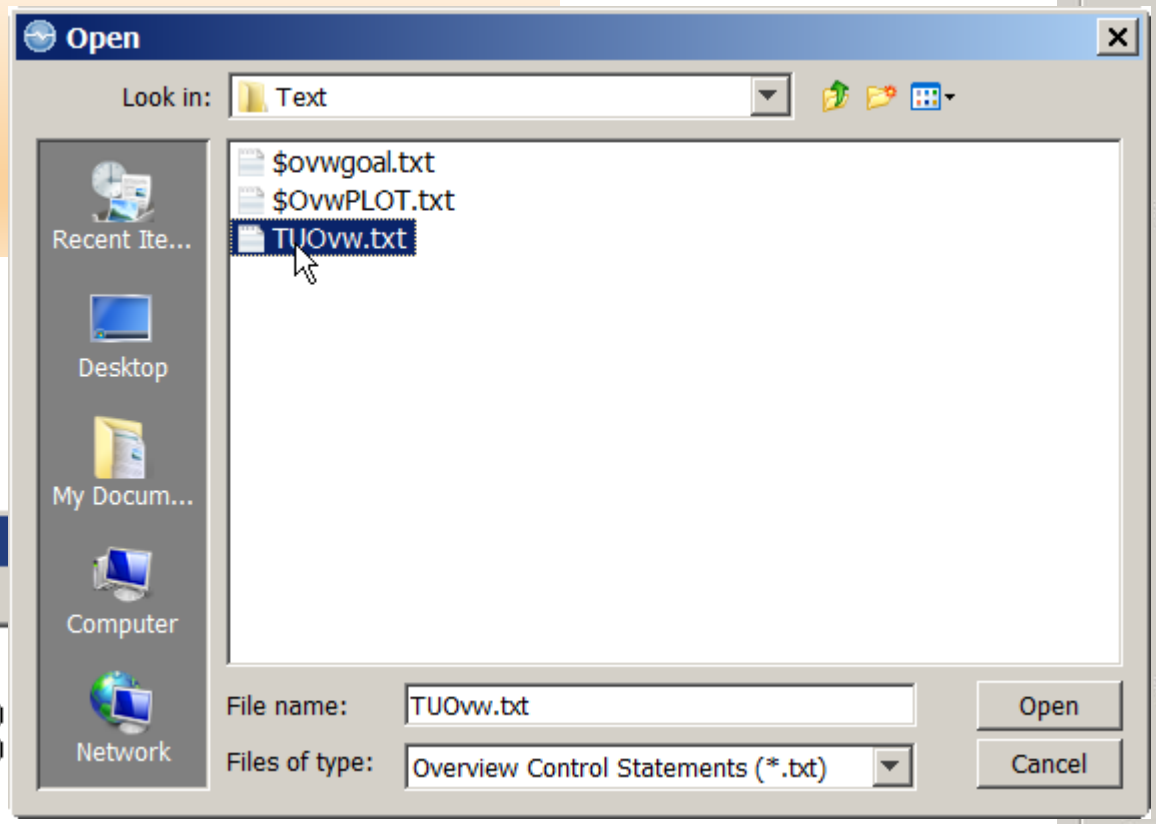
➔ Right click mouse and select ‚Properties‘

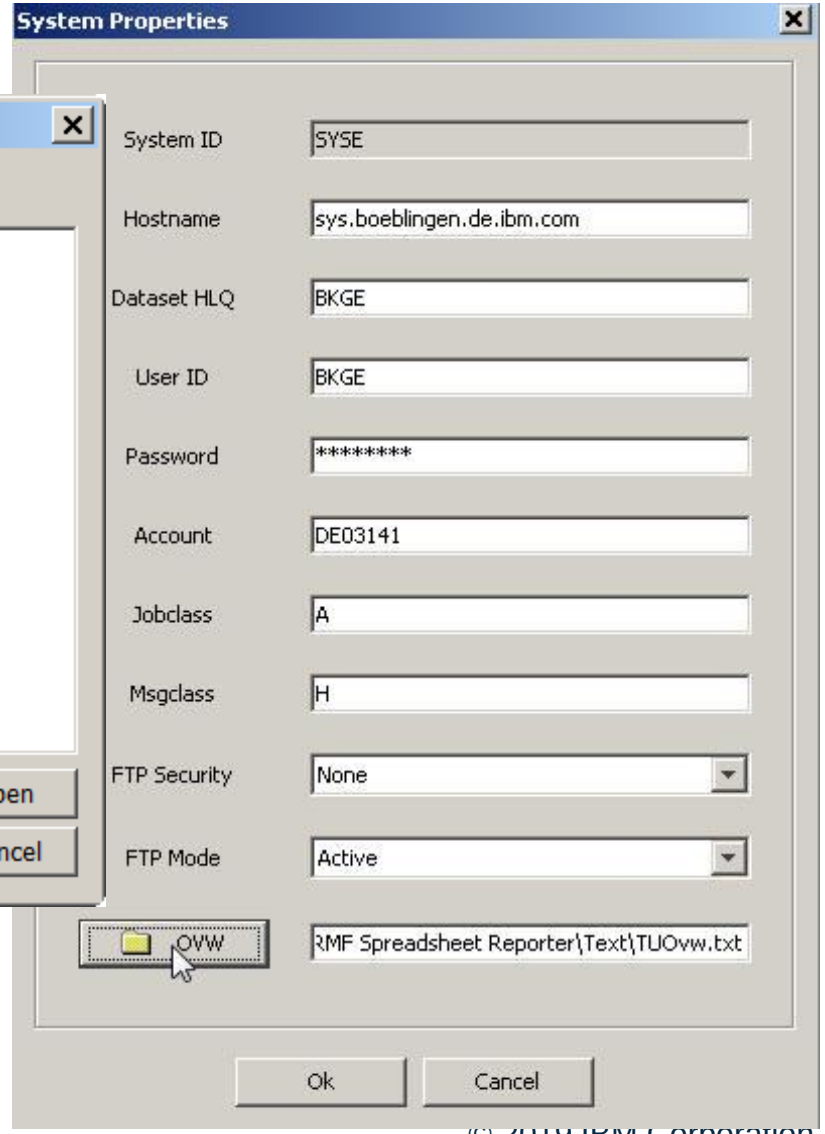


RMF SR: How to create an Overview Spreadsheet (3)

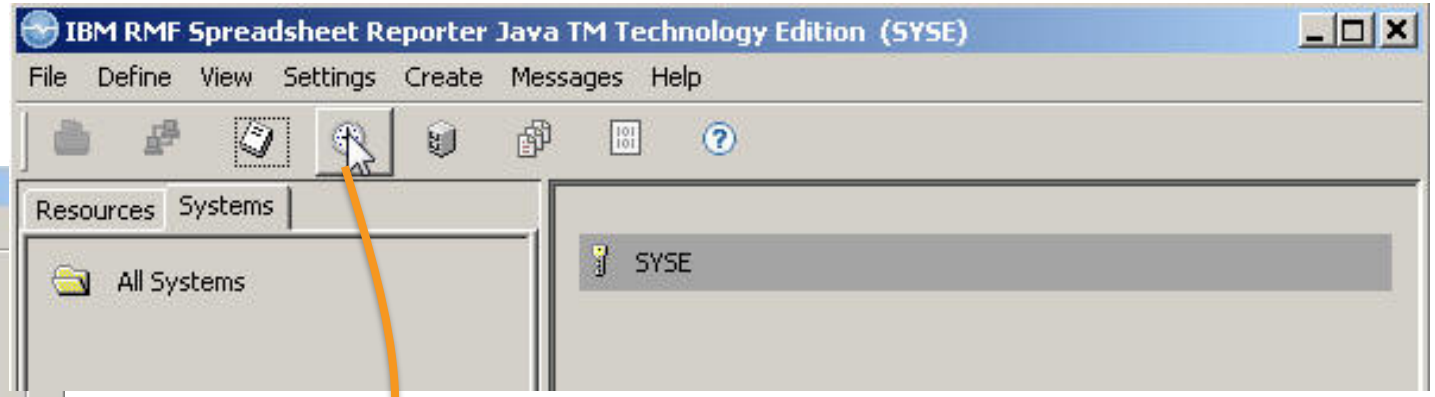
- Select file name for OVW report statements
- Edit this file and define OVW statements

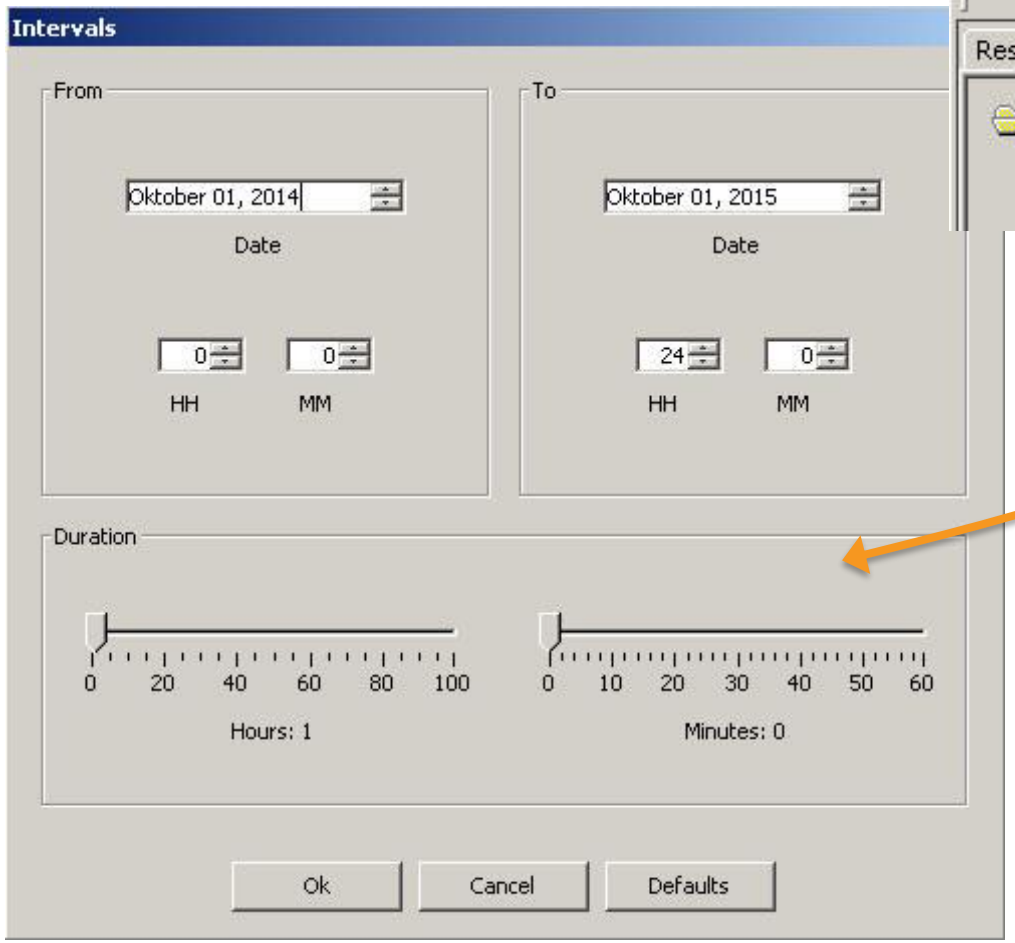






RMF SR: How to create an Overview Spreadsheet (4)

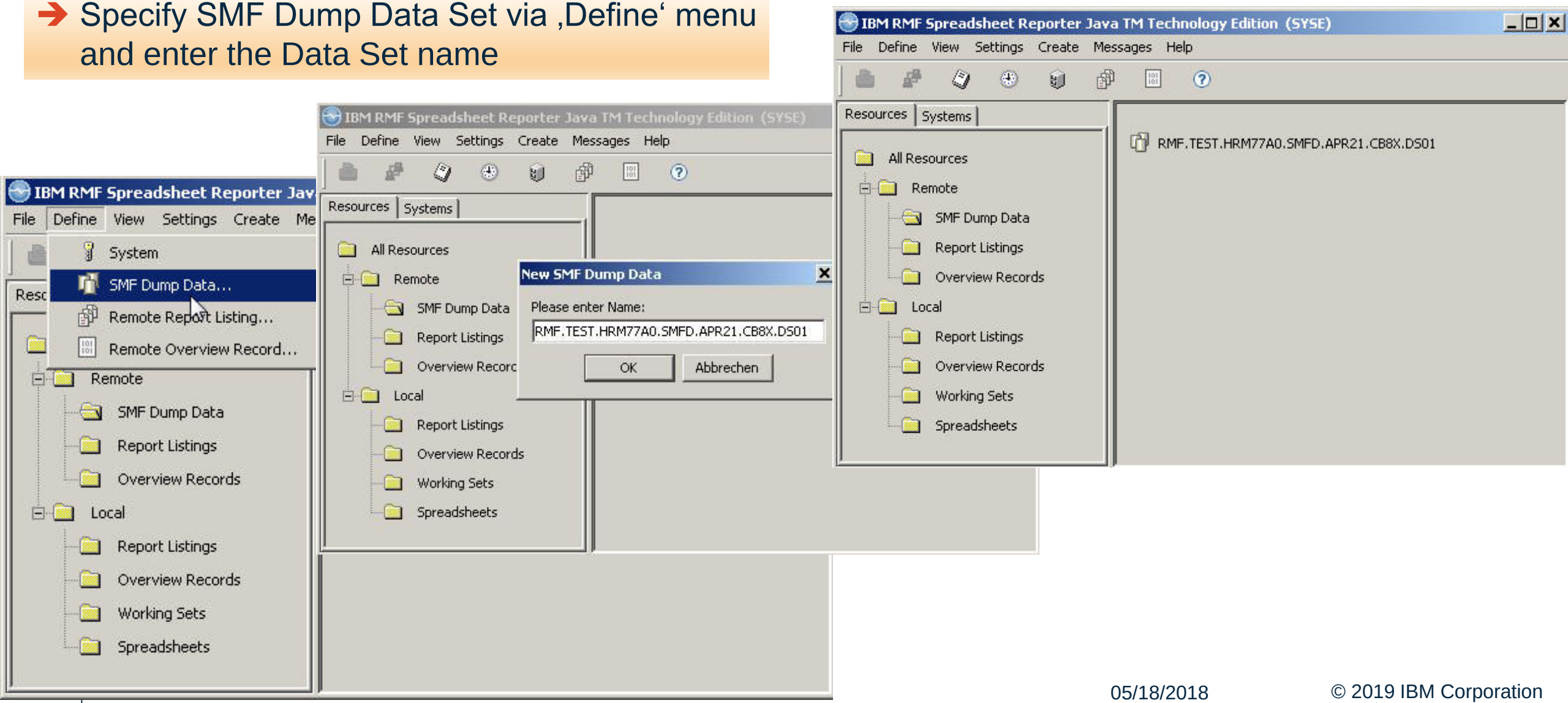




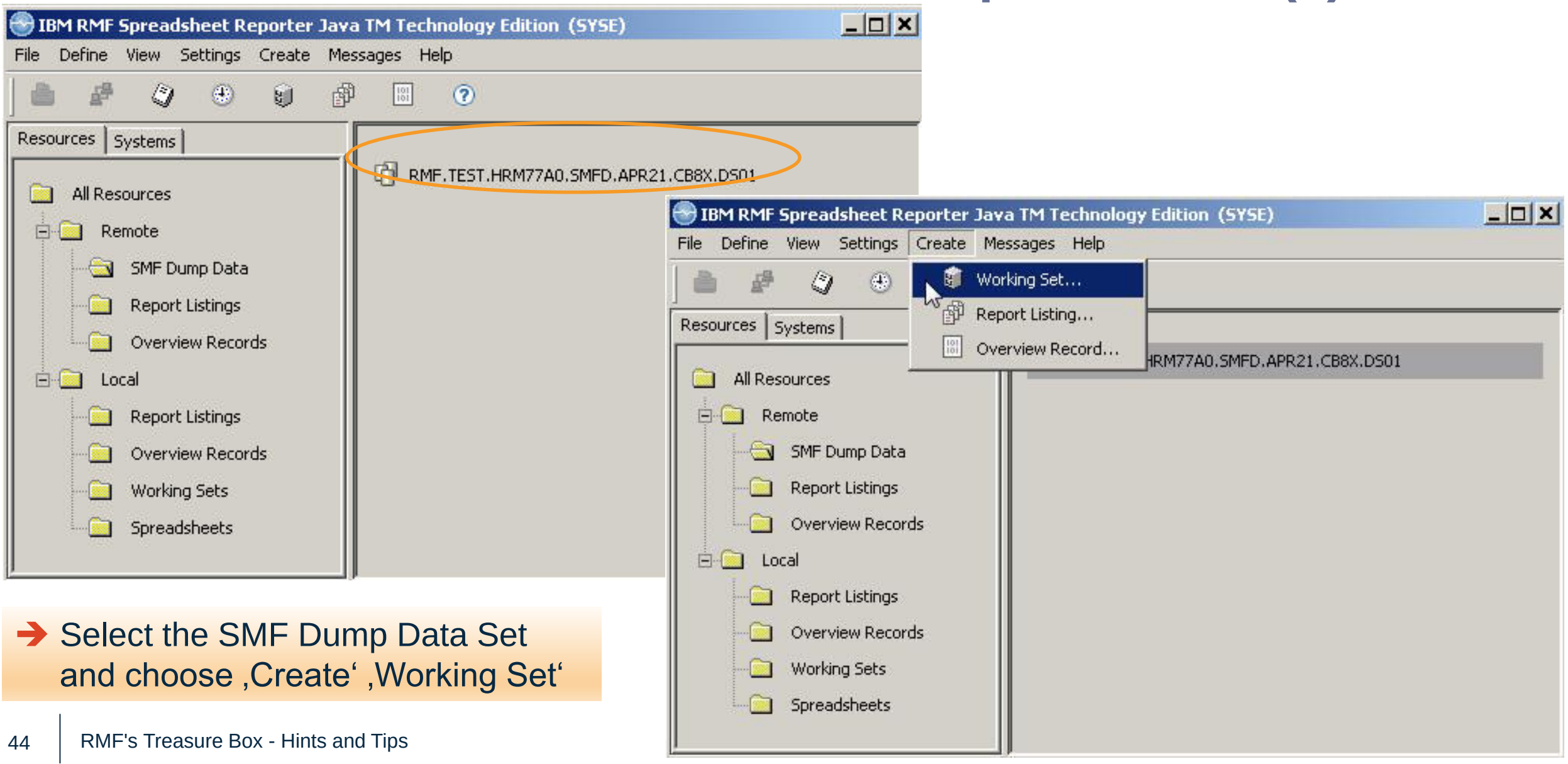
➔ Specify intervals and duration:
Use ‚Clock' symbol or ‚Settings' menu

RMF SR: How to create an Overview Spreadsheet (5

➔ Specify SMF Dump Data Set via ‚Define' menu and enter the Data Set name



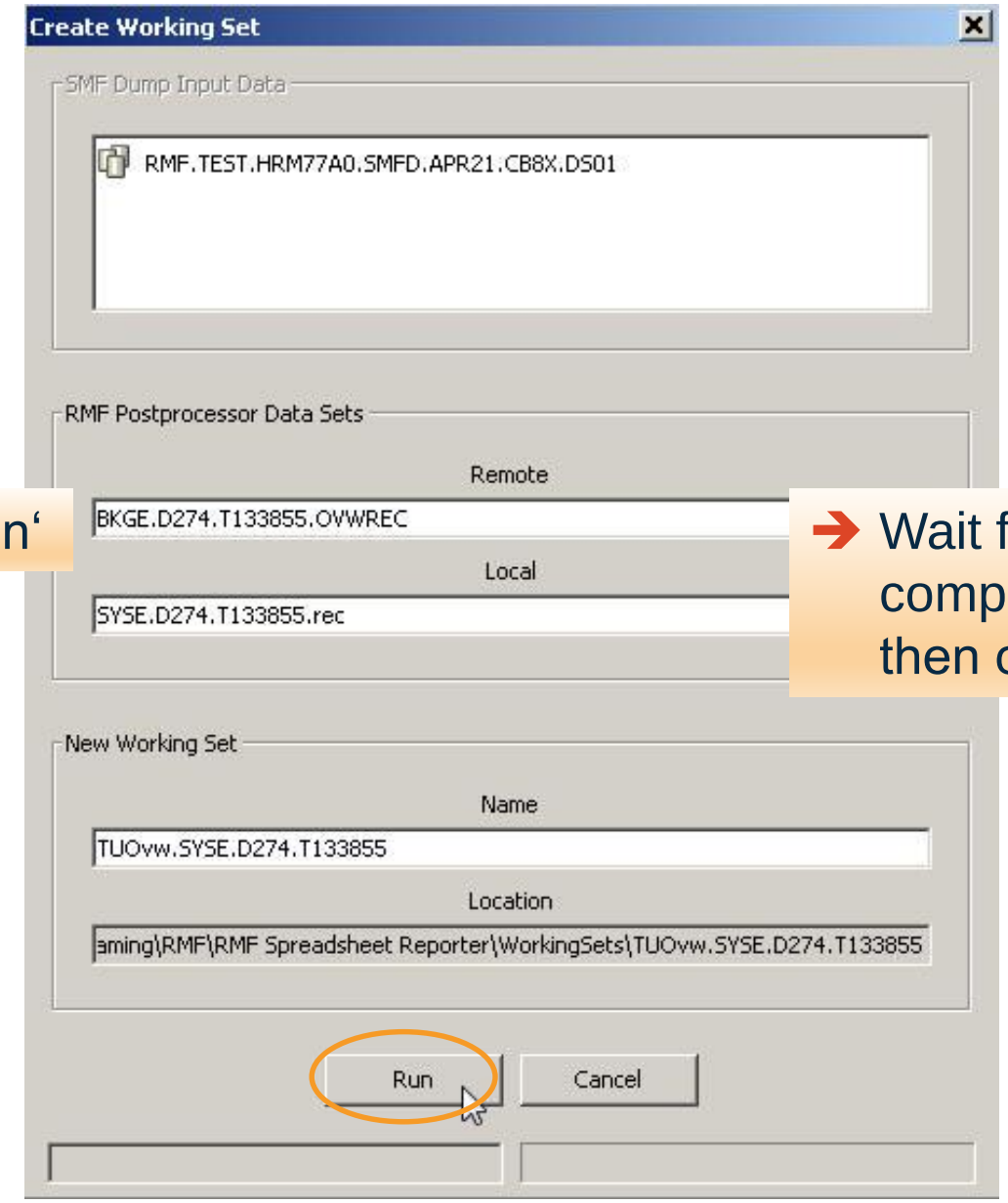
RMF SR: How to create an Overview Spreadsheet (6)



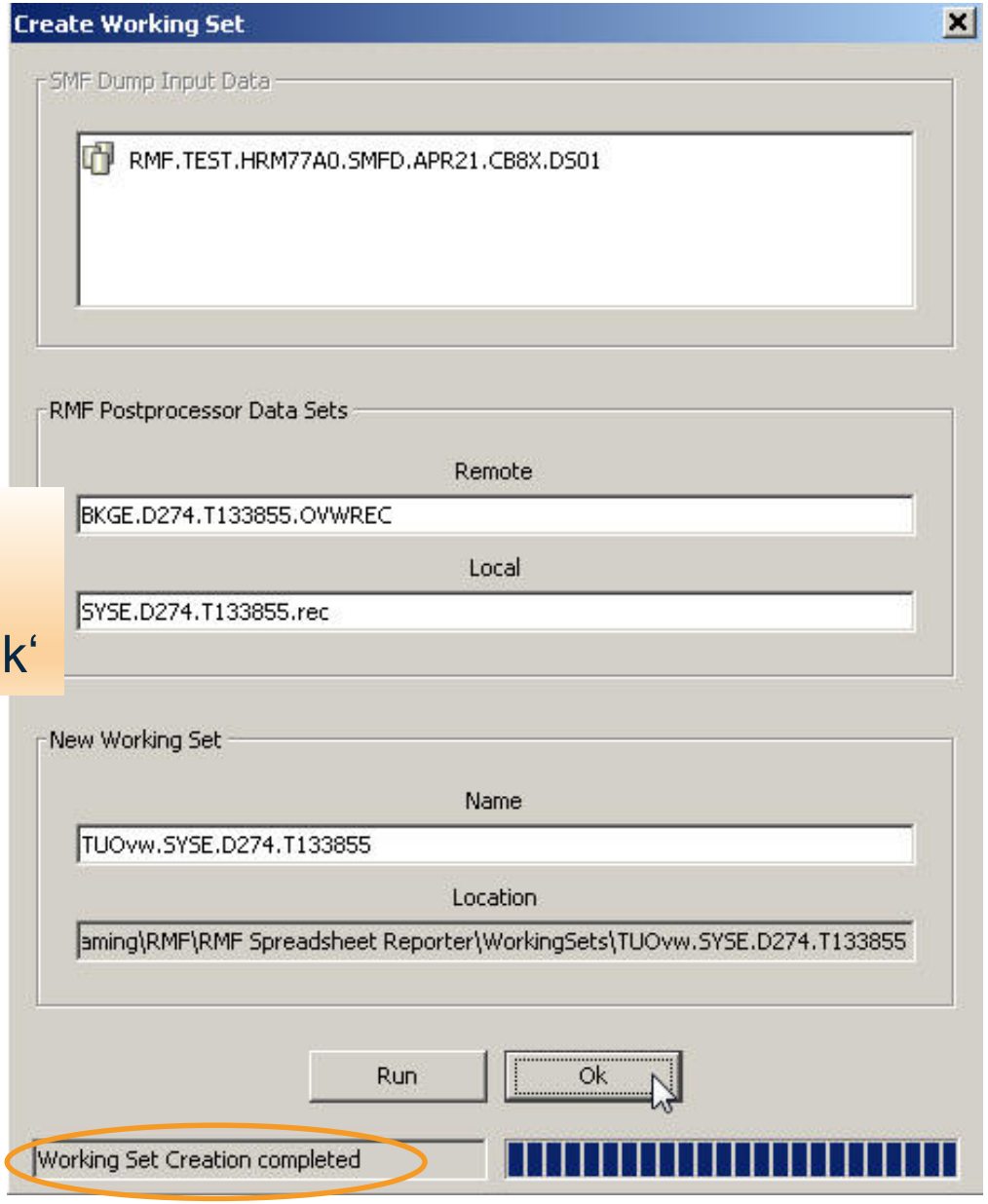
➔ Select the SMF Dump Data Set and choose ‚Create' ‚Working Set'

RMF SR: How to create an Overview Spreadsheet (7)

➔ Click ‚Run‘

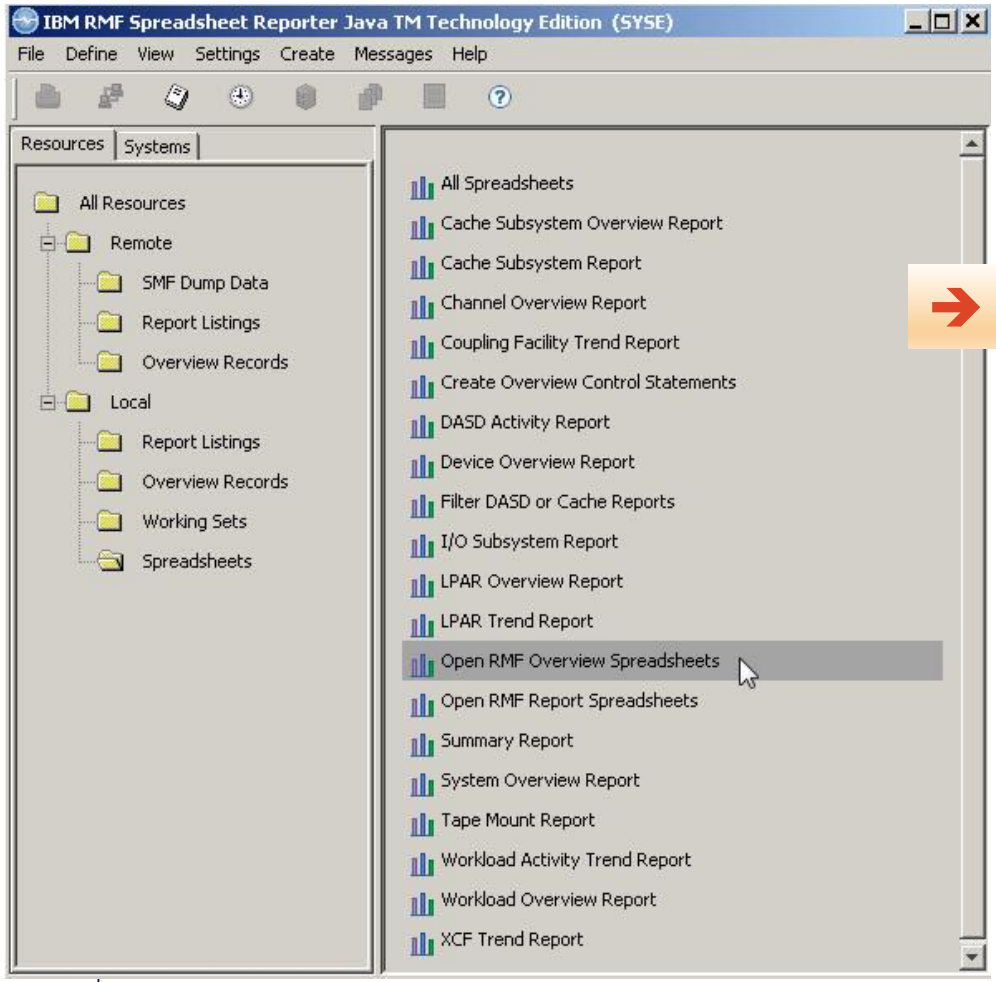


➔ Wait for completion, then click ‚Ok‘

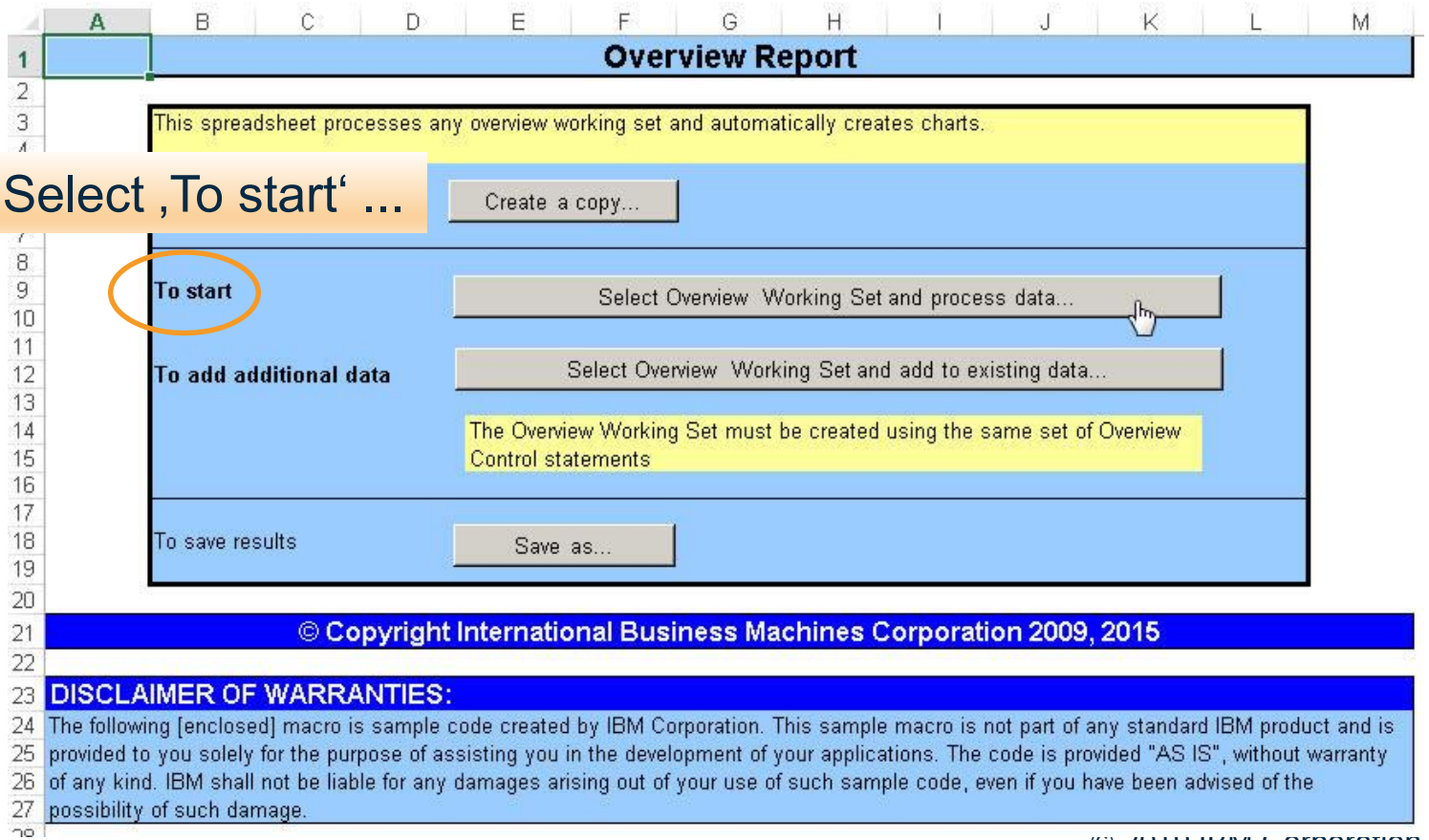


RMF SR: How to create an Overview Spreadsheet (8)

➔ Double click ‚Open RMF Overview' from Spreadsheets subfolder, then your Spreadsheet Application starts

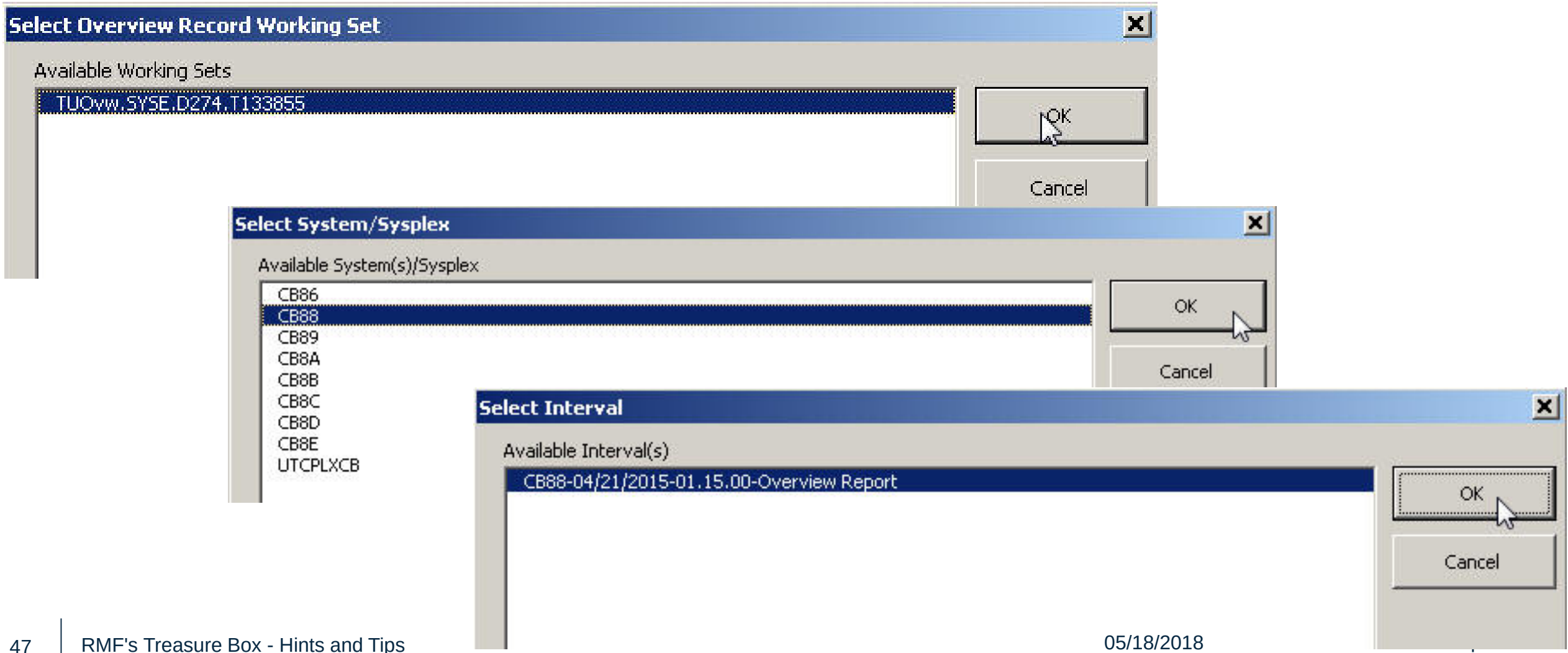


➔ Select ‚To start' ...



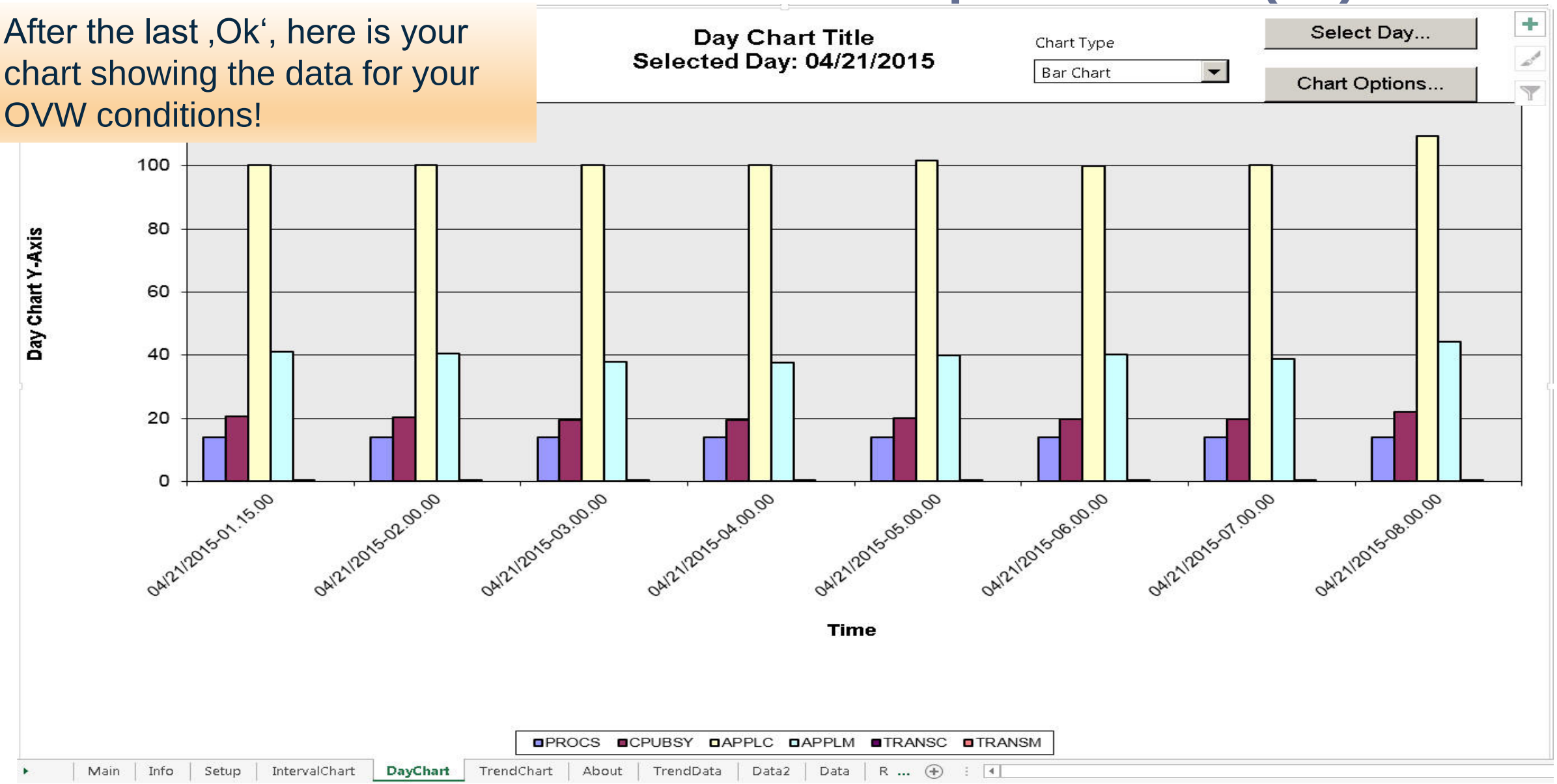
RMF SR: How to create an Overview Spreadsheet (9)

➔ Specify working set, system and interval of interest

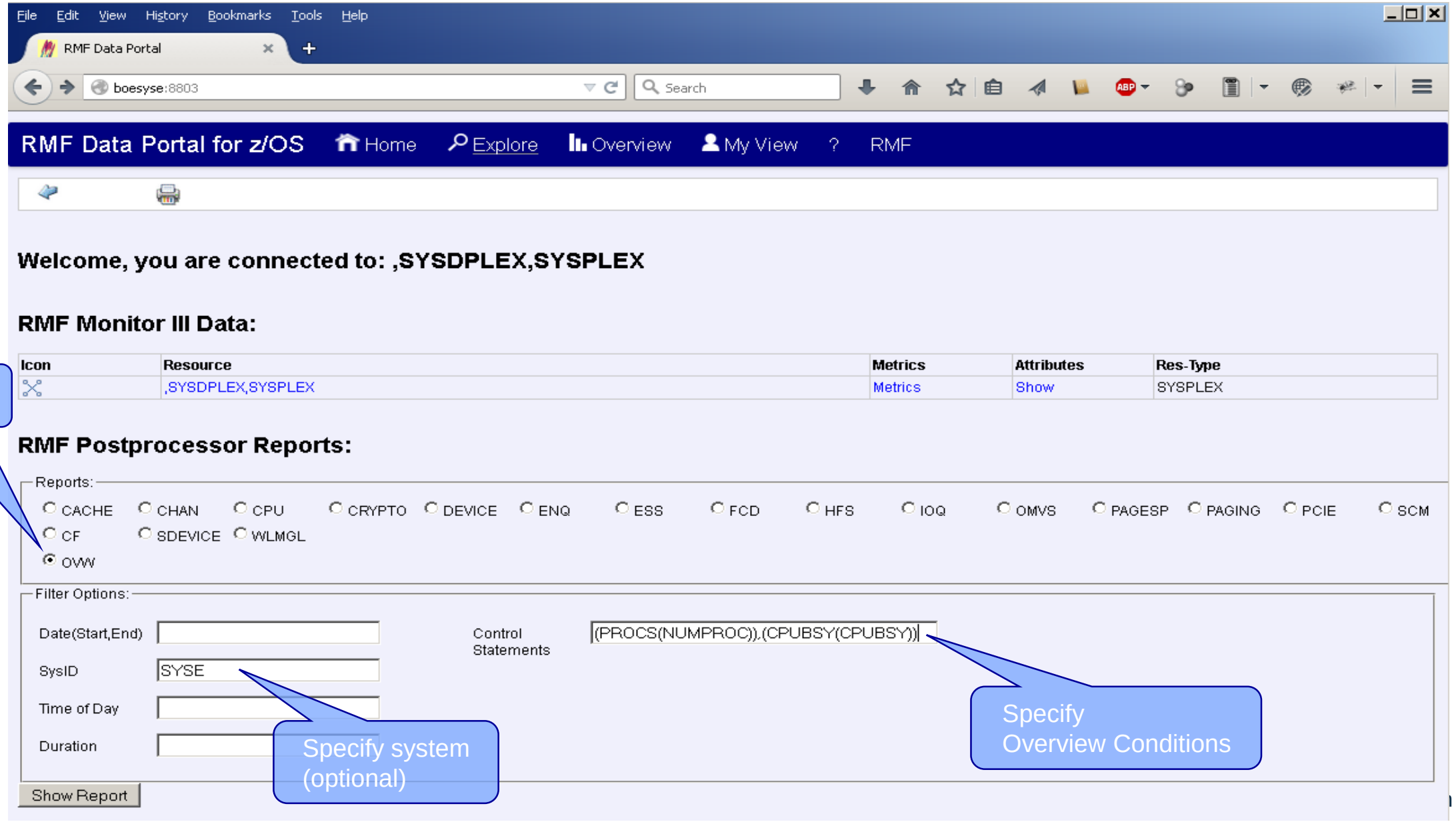


RMF SR: How to create an Overview Spreadsheet (10)

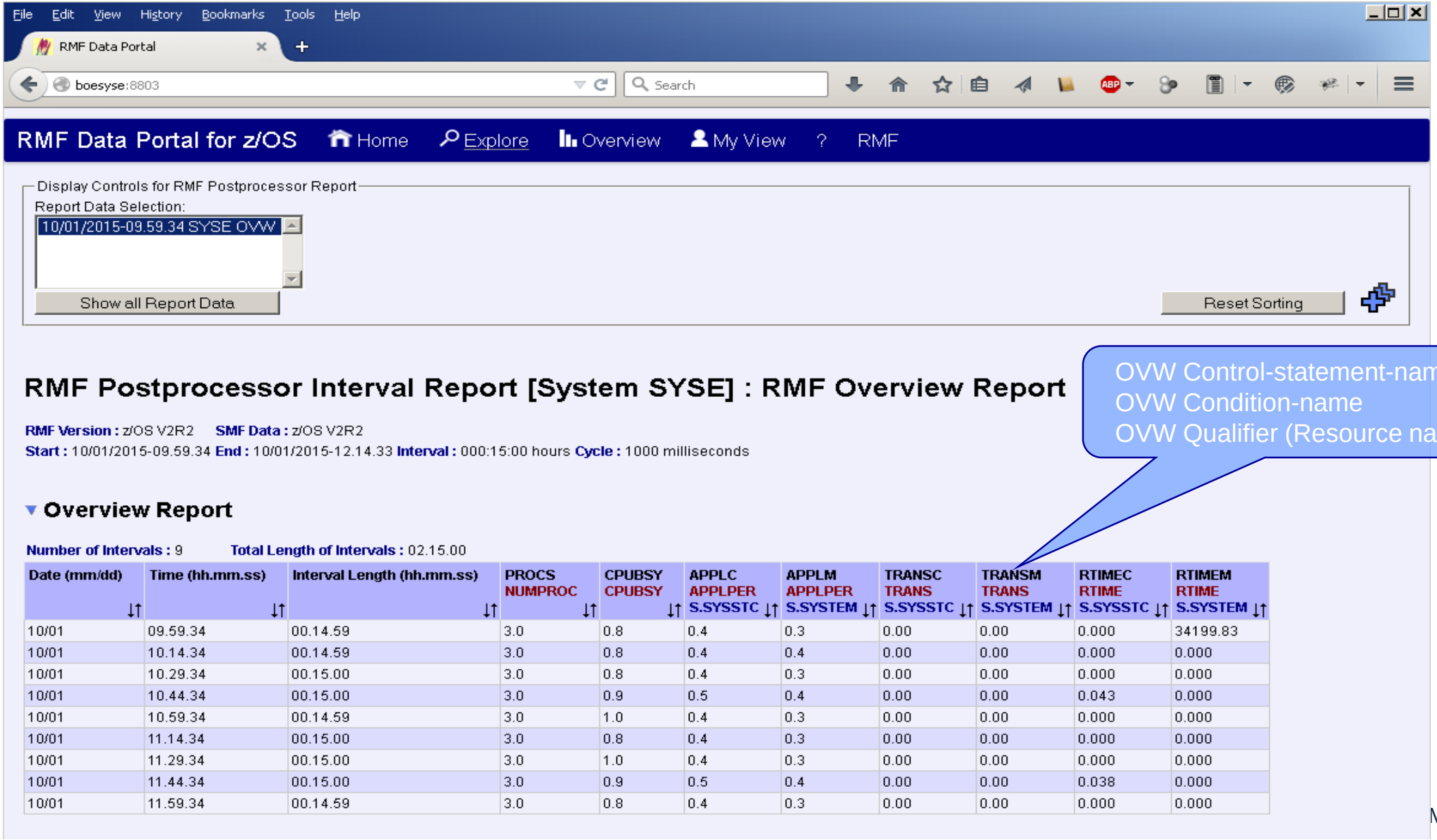
➔ After the last ‚Ok‘, here is your chart showing the data for your OVW conditions!



Overview Conditions: RMF Data Portal



Overview Conditions: RMF Data Portal



Date (mm/dd)	Time (hh.mm.ss)	Interval Length (hh.mm.ss)	PROCS NUMPROC	CPUBSY CPUBSY	APPLC APPLPER S.SYSSTC	APPLM APPLPER S.SYSTEM	TRANSC TRANS S.SYSSTC	TRANSM TRANS S.SYSTEM	RTIMEC RTIME S.SYSSTC	RTIMEM RTIME S.SYSTEM
10/01	09.59.34	00.14.59	3.0	0.8	0.4	0.3	0.00	0.00	0.000	34199.83
10/01	10.14.34	00.14.59	3.0	0.8	0.4	0.4	0.00	0.00	0.000	0.000
10/01	10.29.34	00.15.00	3.0	0.8	0.4	0.3	0.00	0.00	0.000	0.000
10/01	10.44.34	00.15.00	3.0	0.9	0.5	0.4	0.00	0.00	0.043	0.000
10/01	10.59.34	00.14.59	3.0	1.0	0.4	0.3	0.00	0.00	0.000	0.000
10/01	11.14.34	00.15.00	3.0	0.8	0.4	0.3	0.00	0.00	0.000	0.000
10/01	11.29.34	00.15.00	3.0	1.0	0.4	0.3	0.00	0.00	0.000	0.000
10/01	11.44.34	00.15.00	3.0	0.9	0.5	0.4	0.00	0.00	0.038	0.000
10/01	11.59.34	00.14.59	3.0	0.8	0.4	0.3	0.00	0.00	0.000	0.000

Resume

With RMF Overview Conditions, you can ...

- ... retrieve important data points individually
- ... combine data from different Postprocessor reports
- ... combine data from different resources
- ... aggregate data for longer time intervals than stored in SMF

Information and Tools

- Website https://github.com/IBM/IBM-Z-zOS/tree/master/zOS-RMF
  with product information, newsletters, presentations, ...
- Downloads from ftp://public.dhe.ibm.com/eserver/zseries/zos/rmf/
  - Spreadsheet Reporter
  - Postprocessor XML Toolkit

- RMF email address: rmf@de.ibm.com

- Documentation and news:
  - RMF Report Analysis, SC34-2665
  - RMF User‘s Guide, SC34-2664
  - RMF Programmer‘s Guide, SC34-2667
  - Latest version of PDF files can be downloaded from:
    https://www.ibm.com/servers/resourcelink/svc00100.nsf/pages/zOSV2R3RmfPublications?OpenDocument