Safeguard your data, Sustain Compliance and Optimize Security Intelligence with zSecure

Session 16276

Lunch n Learn

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Have you talked to a 'mainframe' today?

- Did you withdraw cash out of a bank's ATM?
- Did you make a purchase at a major retail store?
- Did you make a bank to bank transfer locally or internationally?
- Did you make an airline ticket reservation?
- Did you apply for a credit card?

… at some point in these daily transactions, you likely touched a mainframe.

The Mainframe (System z) is The Platform Choice Of …

- 25 of the Top 25 Global Banks
- 110 of the Top WW 120 banks ranked by asset size
- 23 of the Top 25 U.S. Retailers
- 21 out of the Top 25 Insurance Organizations
- 9 Of The Top 10 Global Life/Health Insurance Providers

Have you been subject to a not so good audit result…

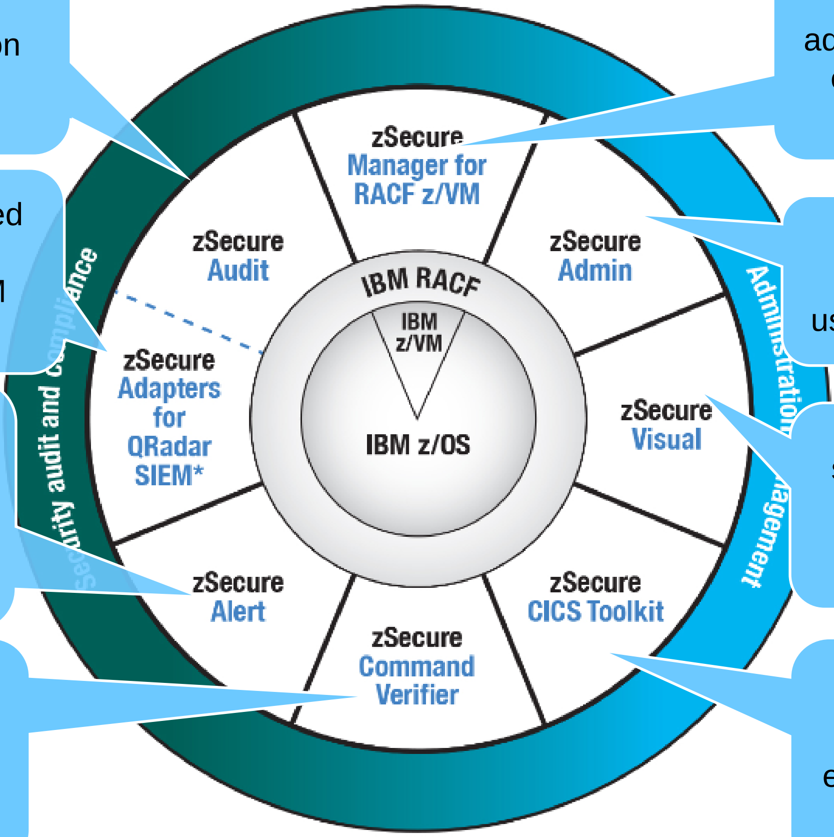
IBM Security zSecure helps address mainframe security challenges

Vulnerability analysis for the mainframe infrastructure. Automatically analyze and report on security events & detect security exposures

Collects, formats and sends enriched mainframe System Management Facility (SMF) audit records to IBM Security QRadar SIEM

Real-time mainframe threat monitoring permits you to monitor intruders and identify misconfigurations that could hamper your compliance efforts

Policy enforcement solution that helps enforce compliance to company and regulatory policies by preventing erroneous commands



Combined audit and administration for RACF in the VM environment including auditing Linux on System z

Enables more efficient and effective RACF administration, using significantly fewer resources

Helps reduce the need for scarce, RACF-trained expertise through a Microsoft Windows–based GUI for RACF administration

Provides access RACF command & APIs from a CICS environment, allowing additional administrative flexibility

* Product offers a subset of the capabilities provided by zSecure Audit

* Supports RACF, CA ACF2 and CA Top Secret

****** Supports RACFand CA ACF2

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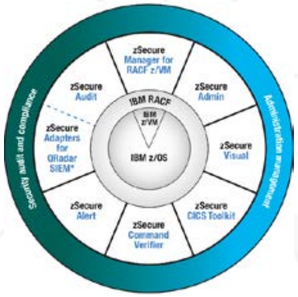
Enhanced compliance reporting



- Features
  - Extend automation and coverage for PCI-DSS*, STIG**, GSD331*** and other regulatory requirements
    - New reports specific to PCI-DSS, STIG
    - More flexible reporting
    - Ability to combine report types
    - Allow for exceptions
    - Target percentage reporting
    - Improved UI
    - Enhanced zoom in UI reporting
- Benefits
  - Helps customers comply with latest iterations of regulations
  - Helps customers identify, document, and remediate security breaches

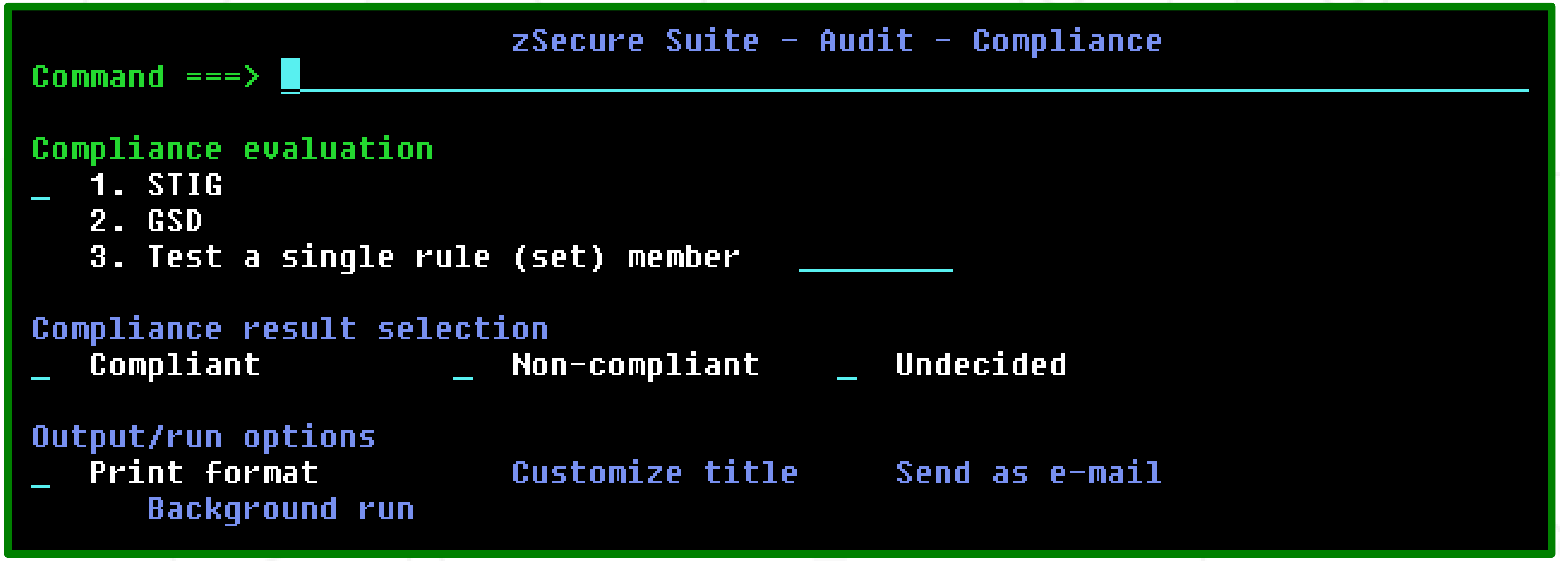
* PCI DSS: Payment Card Industry Data Security Standard for retail payments

** STIG: Security Technical Implementation Guide; Guidelines from US Defense Information Systems Agency (DISA)

*** GSD331: IBM's primary information security controls documentation for Strategic Outsourcing customers

Compliance reporting – Simple user interface

- Available as option AU.R

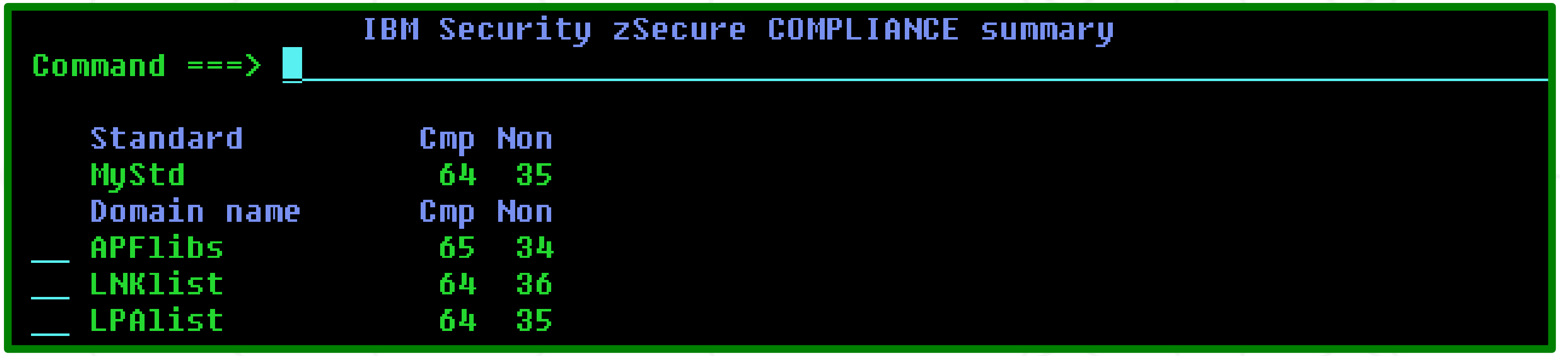


```
                          zSecure Suite - Audit - Compliance
Command ===> _

Compliance evaluation
_   1. STIG
    2. GSD
    3. Test a single rule (set) member    ________

Compliance result selection
_   Compliant             _   Non-compliant    _   Undecided

Output/run options
_   Print format              Customize title      Send as e-mail
        Background run
```

- 1 - run all available STIG rules/tests
  2 - run all available GSD331 rules/tests
  3 - run individual rule
- Choose results to include in report (none=all)

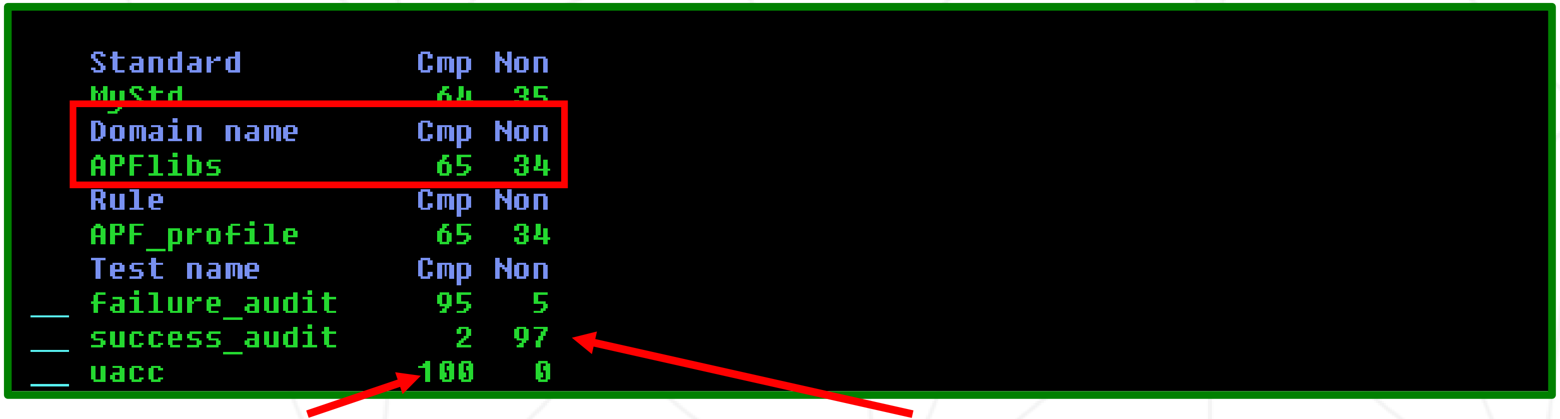
Compliance reporting – Sample report

- Example Output:



```
                  IBM Security zSecure COMPLIANCE summary
Command ===>

   Standard          Cmp  Non
   MyStd              64   35
   Domain name       Cmp  Non
__ APFlibs            65   34
__ LNKlist            64   36
__ LPAlist            64   35
```

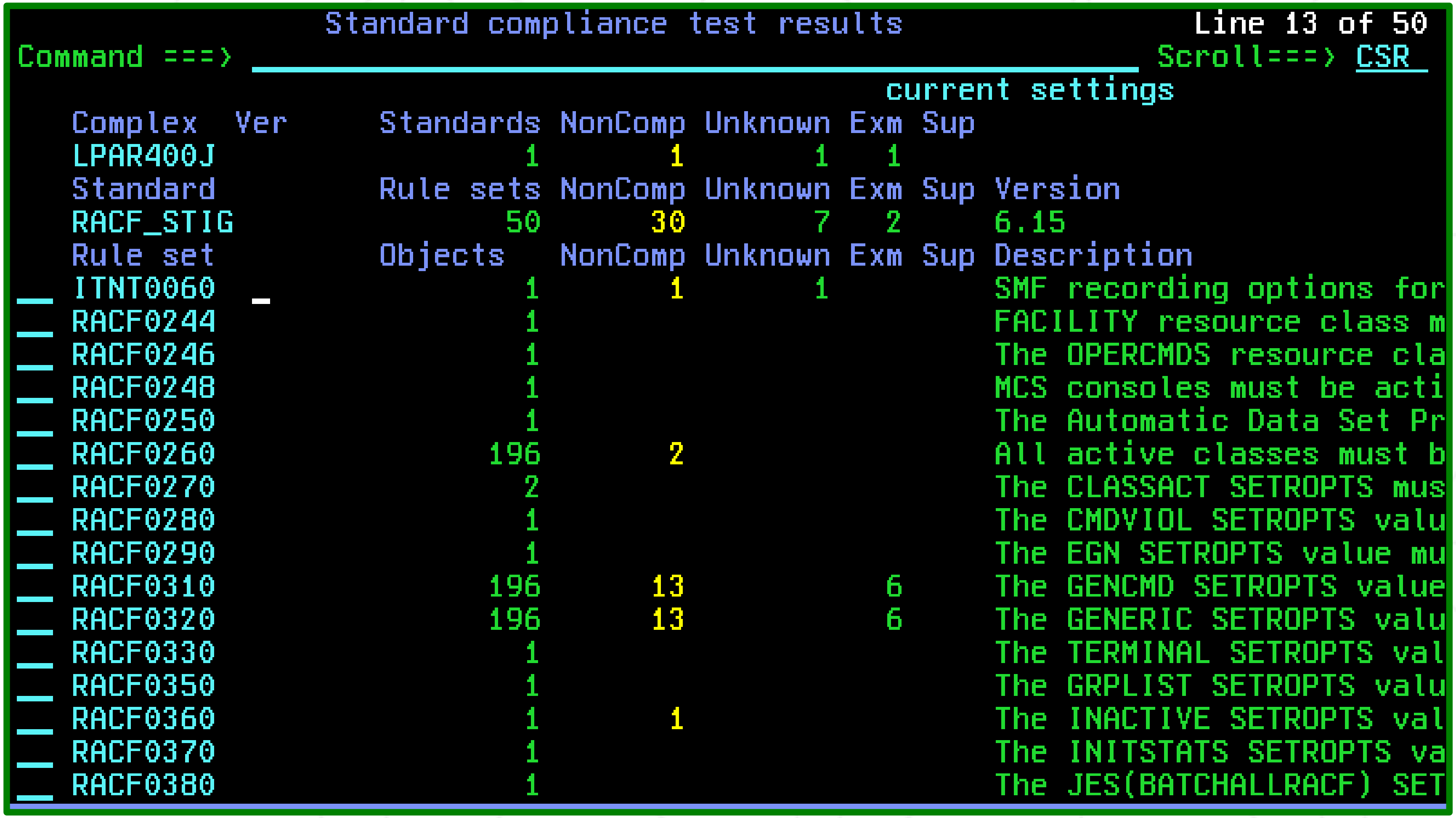
- Zoom in



```
   Standard          Cmp  Non
   MyStd              64   35
   Domain name       Cmp  Non
   APFlibs            65   34
   Rule              Cmp  Non
   APF_profile        65   34
   Test name         Cmp  Non
__ failure_audit      95    5
__ success_audit       2   97
__ uacc              100    0
```

- We're good at access, but not so good at auditing

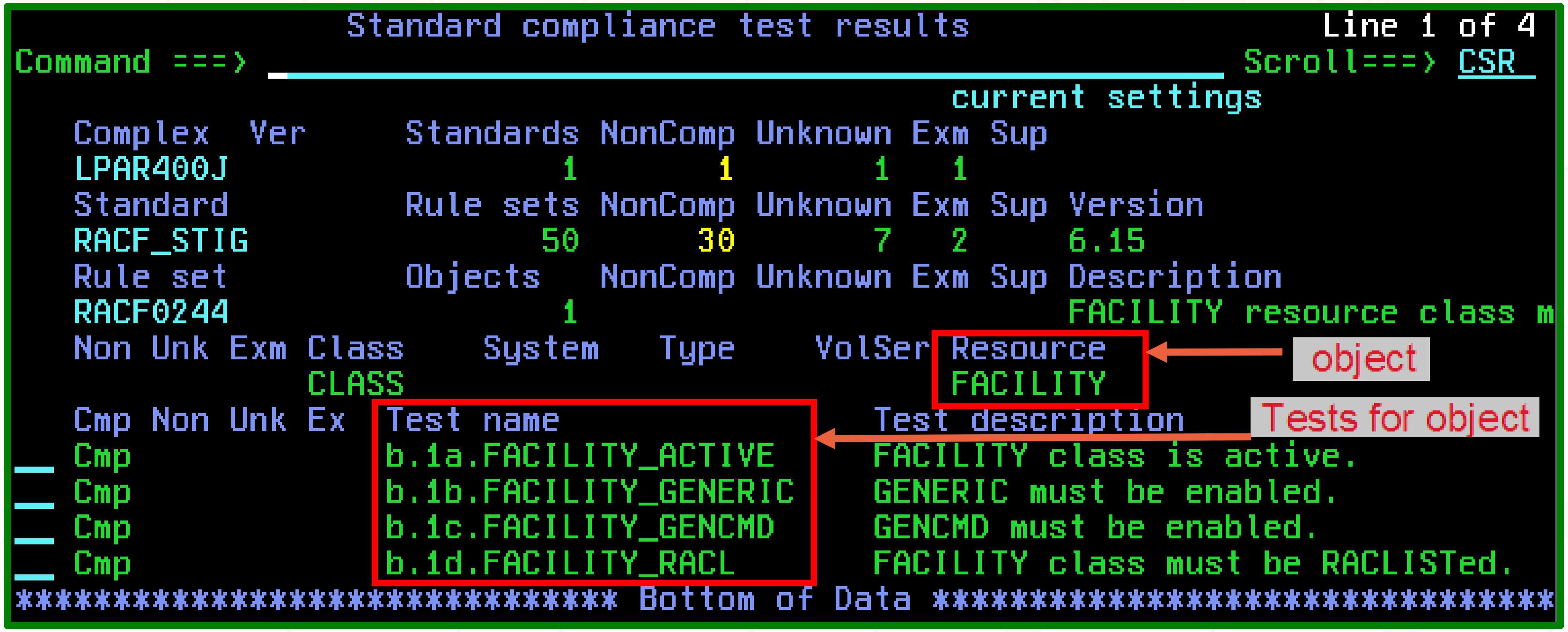
Compliance reporting – Sample output RACF



```
                 Standard compliance test results                 Line 13 of 50
Command ===>                                                   Scroll===> CSR
                                                current settings
   Complex  Ver     Standards NonComp Unknown Exm Sup
   LPAR400J                 1       1       1   1
   Standard         Rule sets NonComp Unknown Exm Sup Version
   RACF_STIG               50      30       7   2     6.15
   Rule set         Objects   NonComp Unknown Exm Sup Description
__ ITNT0060  _              1       1       1         SMF recording options for
__ RACF0244                 1                         FACILITY resource class m
__ RACF0246                 1                         The OPERCMDS resource cla
__ RACF0248                 1                         MCS consoles must be acti
__ RACF0250                 1                         The Automatic Data Set Pr
__ RACF0260               196       2                 All active classes must b
__ RACF0270                 2                         The CLASSACT SETROPTS mus
__ RACF0280                 1                         The CMDVIOL SETROPTS valu
__ RACF0290                 1                         The EGN SETROPTS value mu
__ RACF0310               196      13           6     The GENCMD SETROPTS value
__ RACF0320               196      13           6     The GENERIC SETROPTS valu
__ RACF0330                 1                         The TERMINAL SETROPTS val
__ RACF0350                 1                         The GRPLIST SETROPTS valu
__ RACF0360                 1       1                 The INACTIVE SETROPTS val
__ RACF0370                 1                         The INITSTATS SETROPTS va
__ RACF0380                 1                         The JES(BATCHALLRACF) SET
```

✓RULE and RULE_SET names indicate compliant state

Compliance reporting – Zoom in to test level



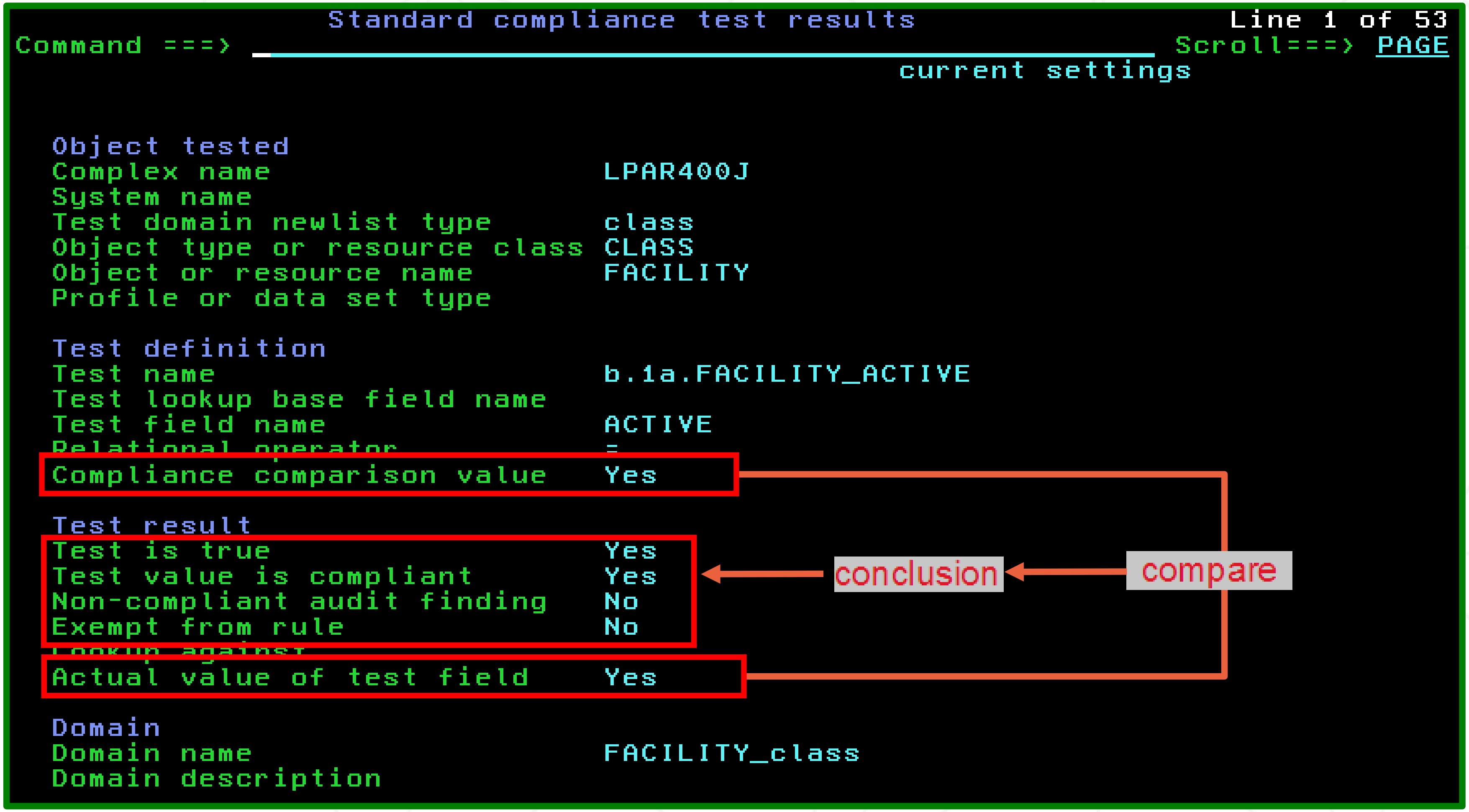
```
                 Standard compliance test results                        Line 1 of 4
Command ===> _________________________________________________       Scroll===> CSR
                                                      current settings
   Complex  Ver      Standards NonComp Unknown Exm Sup
   LPAR400J                  1       1       1   1
   Standard          Rule sets NonComp Unknown Exm Sup Version
   RACF_STIG                50      30       7   2     6.15
   Rule set          Objects    NonComp Unknown Exm Sup Description
   RACF0244                  1                          FACILITY resource class m
   Non Unk Exm Class      System   Type     VolSer Resource
               CLASS                               FACILITY
   Cmp Non Unk Ex  Test name                   Test description
__ Cmp             b.1a.FACILITY_ACTIVE        FACILITY class is active.
__ Cmp             b.1b.FACILITY_GENERIC       GENERIC must be enabled.
__ Cmp             b.1c.FACILITY_GENCMD        GENCMD must be enabled.
__ Cmp             b.1d.FACILITY_RACL          FACILITY class must be RACLISTed.
******************************* Bottom of Data ********************************
```

object

Tests for object

✓Test names contain clear test numbers

Compliance reporting – Zoom in to detail level

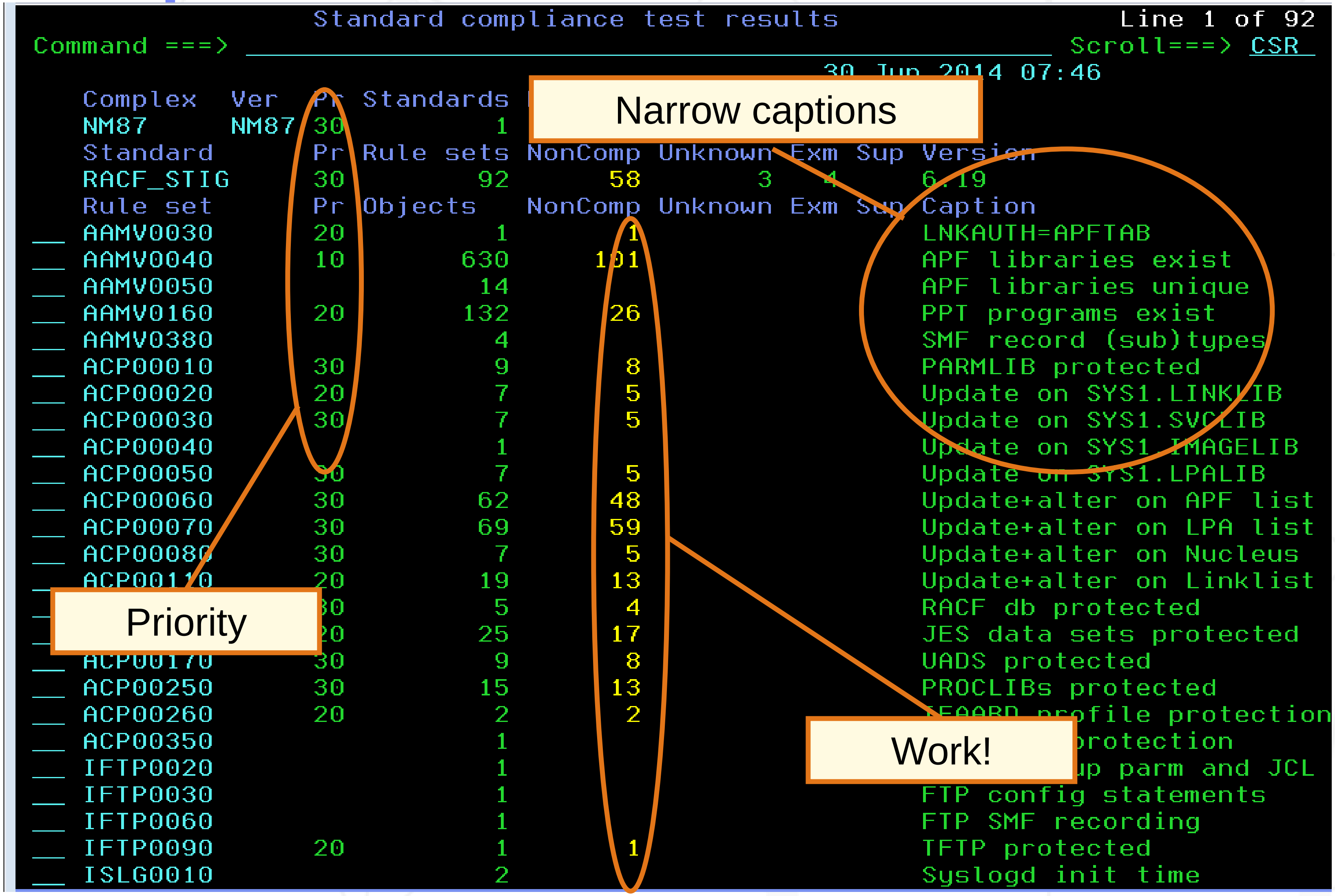


```
                 Standard compliance test results                   Line 1 of 53
Command ===> ___________________________________________________   Scroll===> PAGE
                                                     current settings


  Object tested
  Complex name                      LPAR400J
  System name
  Test domain newlist type          class
  Object type or resource class     CLASS
  Object or resource name           FACILITY
  Profile or data set type

  Test definition
  Test name                         b.1a.FACILITY_ACTIVE
  Test lookup base field name
  Test field name                   ACTIVE
  Relational operator               =
  Compliance comparison value       Yes

  Test result
  Test is true                      Yes
  Test value is compliant           Yes
  Non-compliant audit finding       No
  Exempt from rule                  No
  Lookup against
  Actual value of test field        Yes

  Domain
  Domain name                       FACILITY_class
  Domain description
```

Audit priority derived from severity

- Extra SEVERITY keyword on the RULE and RULE_SET statement: `[SEVERITY({1 | 2 | 3 | HIGH | MEDIUM | LOW})]`
- New SITE_SEVERITY statement for RULE (SET) and COMPLEX
- Non-compliant rules receive an AUDITPRIORITY, based on
  - Default value 20
  - RULE or RULE_SET severity
  - SITE_SEVERITY for RULE or RULE_SET
  - Increase/Decrease 10 using SITE_SEVERITY for COMPLEX
- Declare a rule not applicable for your environment or complex

AU.R – STDETAIL Zoomable compliance test details



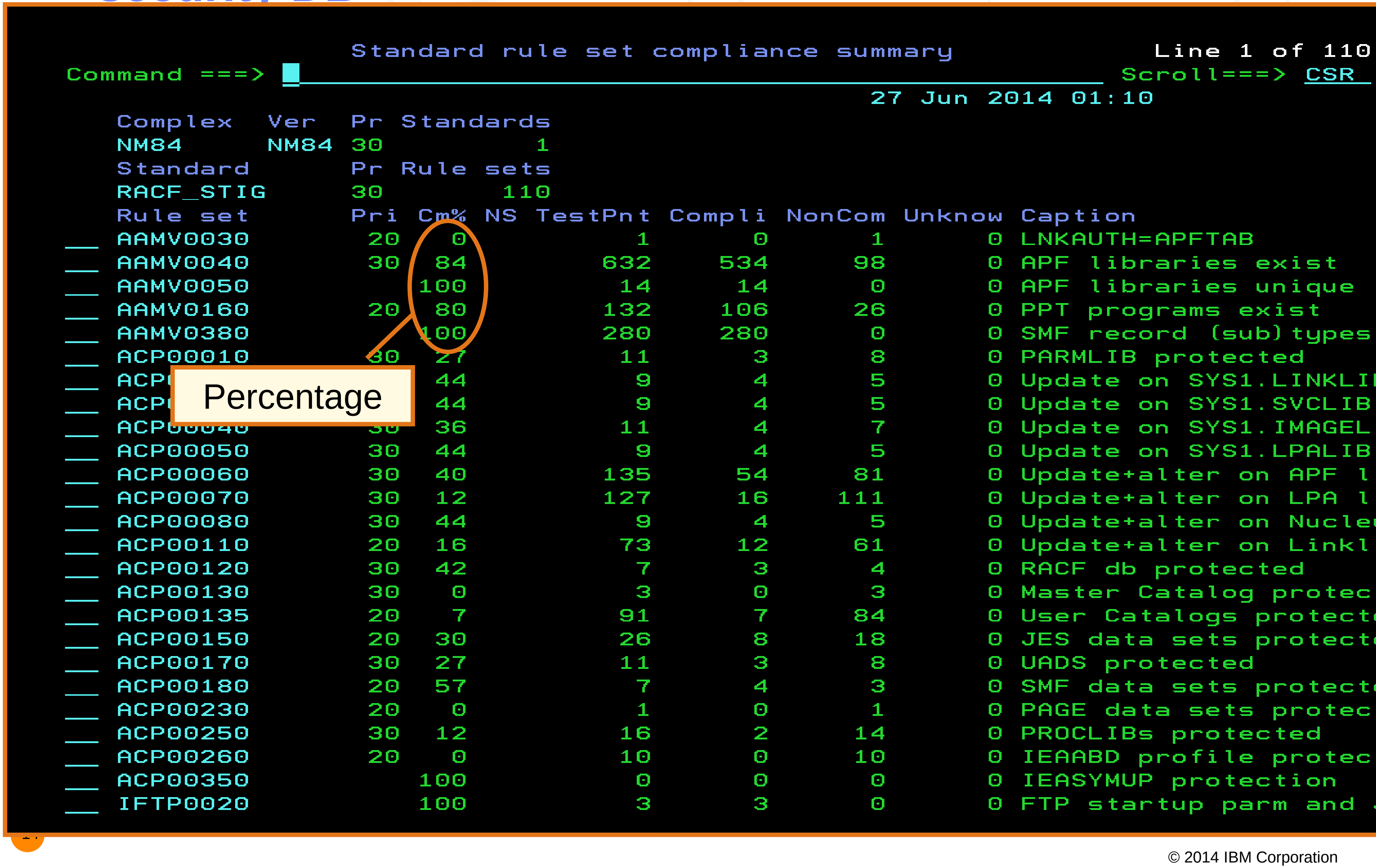
```
                 Standard compliance test results                    Line 1 of 92
Command ===> ______________________________________________________ Scroll===> CSR
                                                        30 Jun 2014 07:46
   Complex  Ver   Pr Standards
   NM87     NM87  30         1
   Standard       Pr Rule sets NonComp Unknown Exm Sup Version
   RACF_STIG      30        92      58       3   4     6.19
   Rule set       Pr Objects   NonComp Unknown Exm Sup Caption
__ AAMV0030       20         1       1                 LNKAUTH=APFTAB
__ AAMV0040       10       630     101                 APF libraries exist
__ AAMV0050                 14                         APF libraries unique
__ AAMV0160       20       132      26                 PPT programs exist
__ AAMV0380                  4                         SMF record (sub)types
__ ACP00010       30         9       8                 PARMLIB protected
__ ACP00020       20         7       5                 Update on SYS1.LINKLIB
__ ACP00030       30         7       5                 Update on SYS1.SVCLIB
__ ACP00040                  1                         Update on SYS1.IMAGELIB
__ ACP00050       30         7       5                 Update on SYS1.LPALIB
__ ACP00060       30        62      48                 Update+alter on APF list
__ ACP00070       30        69      59                 Update+alter on LPA list
__ ACP00080       30         7       5                 Update+alter on Nucleus
__ ACP00110       20        19      13                 Update+alter on Linklist
                  30         5       4                 RACF db protected
                  20        25      17                 JES data sets protected
__ ACP00170       30         9       8                 UADS protected
__ ACP00250       30        15      13                 PROCLIBs protected
__ ACP00260       20         2       2                 IEAABD profile protection
__ ACP00350                  1                                   protection
__ IFTP0020                  1                                   up parm and JCL
__ IFTP0030                  1                         FTP config statements
__ IFTP0060                  1                         FTP SMF recording
__ IFTP0090       20         1       1                 TFTP protected
__ ISLG0010                  2                         Syslogd init time
```

Narrow captions

Priority

Work!

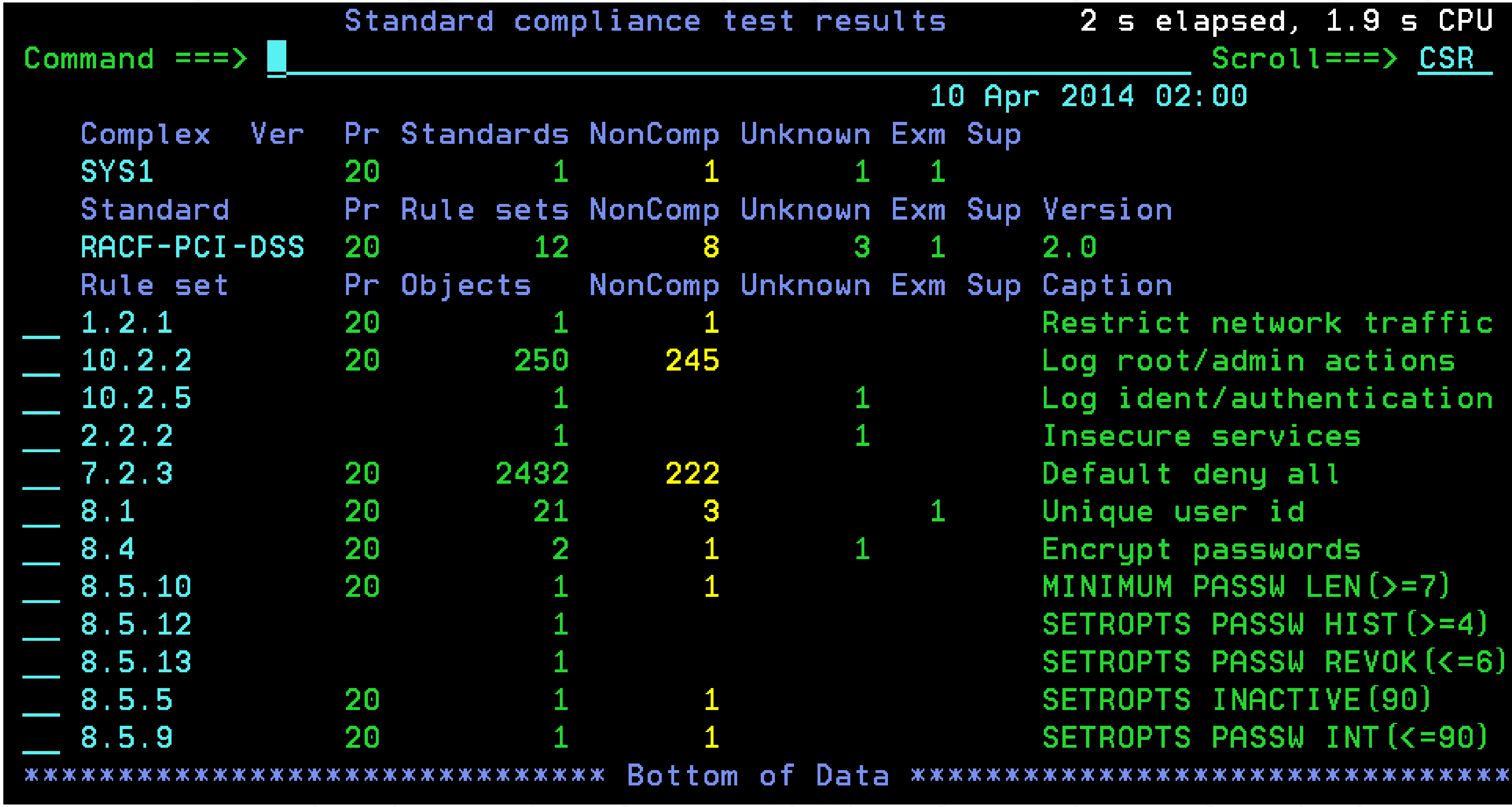
AU.R – STDRULES Rule set overview by security DB



```
                Standard rule set compliance summary            Line 1 of 110
Command ===> _                                                  Scroll===> CSR
                                                        27 Jun 2014 01:10
   Complex    Ver  Pr Standards
   NM84       NM84 30          1
   Standard        Pr Rule sets
   RACF_STIG       30       110
   Rule set        Pri Cm% NS TestPnt Compli NonCom Unknow Caption
___ AAMV0030        20   0           1      0      1      0 LNKAUTH=APFTAB
___ AAMV0040        30  84         632    534     98      0 APF libraries exist
___ AAMV0050           100          14     14      0      0 APF libraries unique
___ AAMV0160        20  80         132    106     26      0 PPT programs exist
___ AAMV0380           100         280    280      0      0 SMF record (sub) types
___ ACP00010        30  27          11      3      8      0 PARMLIB protected
___ ACP                 44           9      4      5      0 Update on SYS1.LINKLI
___ ACP                 44           9      4      5      0 Update on SYS1.SVCLIB
___ ACP                 36          11      4      7      0 Update on SYS1.IMAGEL
___ ACP00050        30  44           9      4      5      0 Update on SYS1.LPALIB
___ ACP00060        30  40         135     54     81      0 Update+alter on APF l
___ ACP00070        30  12         127     16    111      0 Update+alter on LPA l
___ ACP00080        30  44           9      4      5      0 Update+alter on Nucle
___ ACP00110        20  16          73     12     61      0 Update+alter on Linkl
___ ACP00120        30  42           7      3      4      0 RACF db protected
___ ACP00130        30   0           3      0      3      0 Master Catalog protec
___ ACP00135        20   7          91      7     84      0 User Catalogs protect
___ ACP00150        20  30          26      8     18      0 JES data sets protect
___ ACP00170        30  27          11      3      8      0 UADS protected
___ ACP00180        20  57           7      4      3      0 SMF data sets protect
___ ACP00230        20   0           1      0      1      0 PAGE data sets protec
___ ACP00250        30  12          16      2     14      0 PROCLIBs protected
___ ACP00260        20   0          10      0     10      0 IEAABD profile protec
___ ACP00350           100           0      0      0      0 IEASYMUP protection
___ IFTP0020           100           3      3      0      0 FTP startup parm and .
```

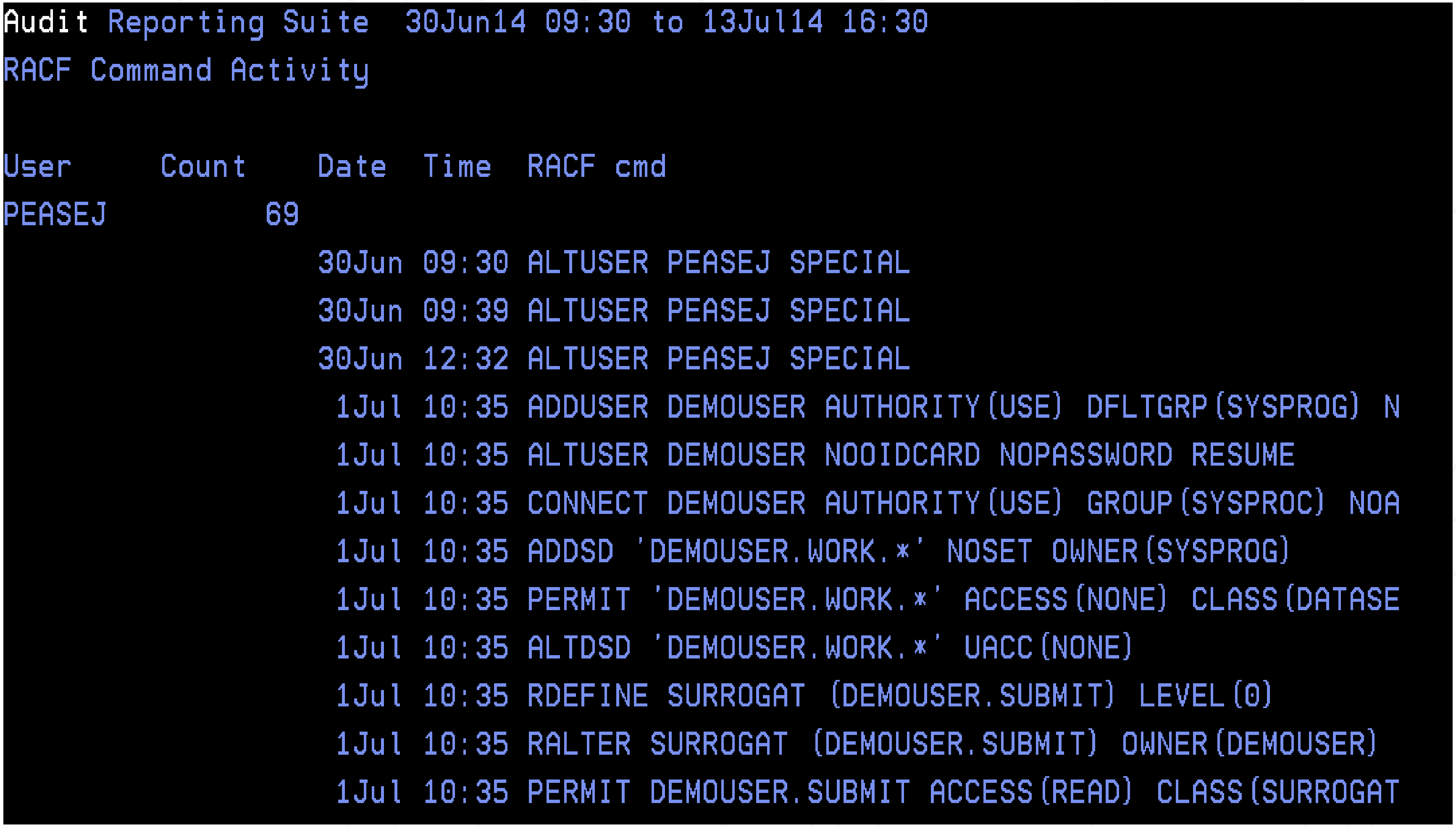
Percentage

Rule set display – PCI-DSS example



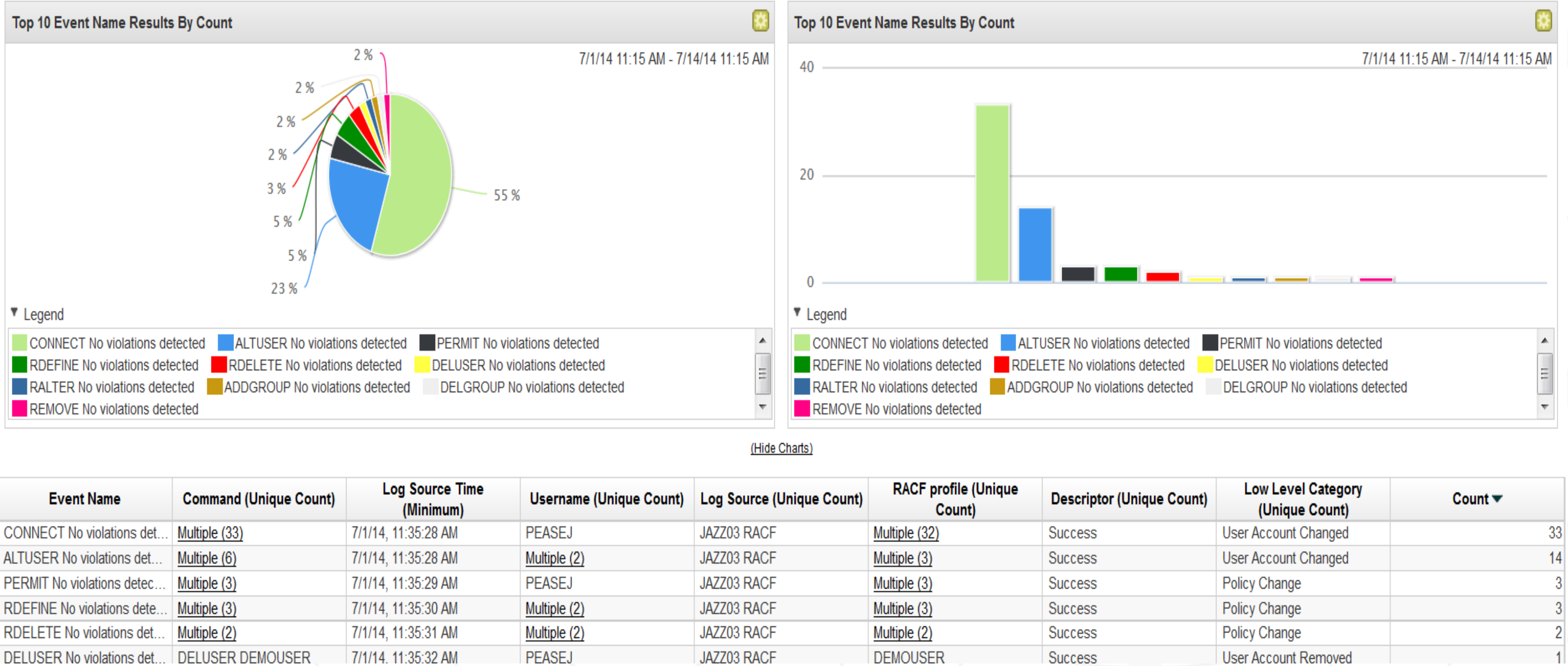
```
                 Standard compliance test results       2 s elapsed, 1.9 s CPU
Command ===>                                                   Scroll===> CSR
                                                10 Apr 2014 02:00
   Complex   Ver  Pr Standards NonComp Unknown Exm Sup
   SYS1          20         1       1       1   1
   Standard      Pr Rule sets NonComp Unknown Exm Sup Version
   RACF-PCI-DSS  20        12       8       3   1     2.0
   Rule set      Pr Objects   NonComp Unknown Exm Sup Caption
__ 1.2.1         20         1       1                 Restrict network traffic
__ 10.2.2        20       250     245                 Log root/admin actions
__ 10.2.5                   1               1         Log ident/authentication
__ 2.2.2                    1               1         Insecure services
__ 7.2.3         20      2432     222                 Default deny all
__ 8.1           20        21       3           1     Unique user id
__ 8.4           20         2       1       1         Encrypt passwords
__ 8.5.10        20         1       1                 MINIMUM PASSW LEN(>=7)
__ 8.5.12                   1                         SETROPTS PASSW HIST(>=4)
__ 8.5.13                   1                         SETROPTS PASSW REVOK(<=6)
__ 8.5.5         20         1       1                 SETROPTS INACTIVE(90)
__ 8.5.9         20         1       1                 SETROPTS PASSW INT(<=90)
******************************* Bottom of Data ********************************
```

How about if you could transform this . . .



```
Audit Reporting Suite  30Jun14 09:30 to 13Jul14 16:30
RACF Command Activity

User     Count    Date  Time  RACF cmd
PEASEJ         69
                  30Jun 09:30 ALTUSER PEASEJ SPECIAL
                  30Jun 09:39 ALTUSER PEASEJ SPECIAL
                  30Jun 12:32 ALTUSER PEASEJ SPECIAL
                   1Jul 10:35 ADDUSER DEMOUSER AUTHORITY(USE) DFLTGRP(SYSPROG) N
                   1Jul 10:35 ALTUSER DEMOUSER NOOIDCARD NOPASSWORD RESUME
                   1Jul 10:35 CONNECT DEMOUSER AUTHORITY(USE) GROUP(SYSPROC) NOA
                   1Jul 10:35 ADDSD 'DEMOUSER.WORK.*' NOSET OWNER(SYSPROG)
                   1Jul 10:35 PERMIT 'DEMOUSER.WORK.*' ACCESS(NONE) CLASS(DATASE
                   1Jul 10:35 ALTDSD 'DEMOUSER.WORK.*' UACC(NONE)
                   1Jul 10:35 RDEFINE SURROGAT (DEMOUSER.SUBMIT) LEVEL(0)
                   1Jul 10:35 RALTER SURROGAT (DEMOUSER.SUBMIT) OWNER(DEMOUSER)
                   1Jul 10:35 PERMIT DEMOUSER.SUBMIT ACCESS(READ) CLASS(SURROGAT
```

Into this . . .

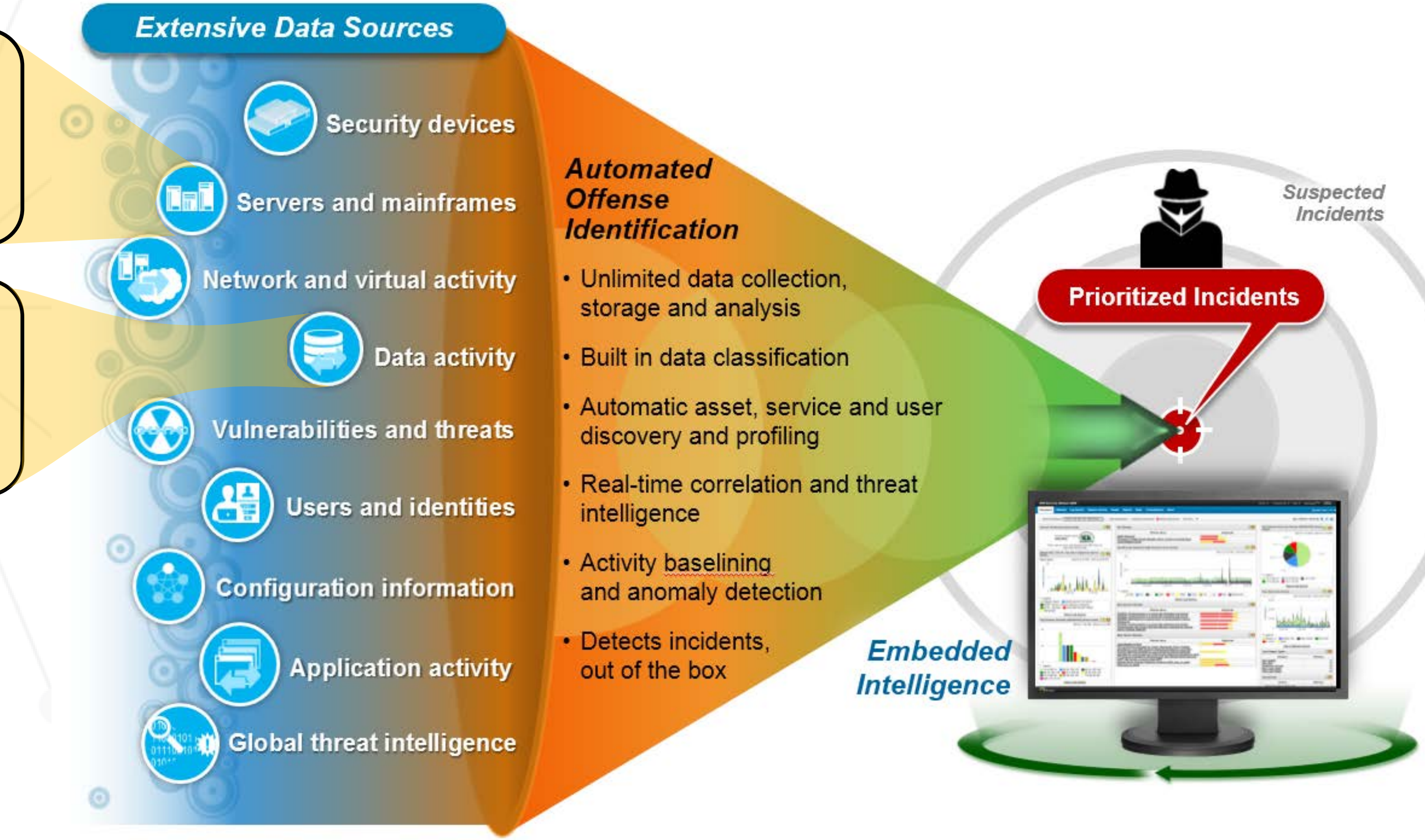

Top 10 Event Name Results By Count
7/1/14 11:15 AM - 7/14/14 11:15 AM
2 %
2 %
2 %
2 %
3 %
5 %
5 %
23 %
55 %
Legend
CONNECT No violations detected
ALTUSER No violations detected
PERMIT No violations detected
RDEFINE No violations detected
RDELETE No violations detected
DELUSER No violations detected
RALTER No violations detected
ADDGROUP No violations detected
DELGROUP No violations detected
REMOVE No violations detected
Top 10 Event Name Results By Count
7/1/14 11:15 AM - 7/14/14 11:15 AM
40
20
0
Legend
CONNECT No violations detected
ALTUSER No violations detected
PERMIT No violations detected
RDEFINE No violations detected
RDELETE No violations detected
DELUSER No violations detected
RALTER No violations detected
ADDGROUP No violations detected
DELGROUP No violations detected
REMOVE No violations detected
(Hide Charts)

Event Name	Command (Unique Count)	Log Source Time (Minimum)	Username (Unique Count)	Log Source (Unique Count)	RACF profile (Unique Count)	Descriptor (Unique Count)	Low Level Category (Unique Count)	Count ▼
CONNECT No violations det...	Multiple (33)	7/1/14, 11:35:28 AM	PEASEJ	JAZZ03 RACF	Multiple (32)	Success	User Account Changed	33
ALTUSER No violations det...	Multiple (6)	7/1/14, 11:35:28 AM	Multiple (2)	JAZZ03 RACF	Multiple (3)	Success	User Account Changed	14
PERMIT No violations detec...	Multiple (3)	7/1/14, 11:35:29 AM	PEASEJ	JAZZ03 RACF	Multiple (3)	Success	Policy Change	3
RDEFINE No violations dete...	Multiple (3)	7/1/14, 11:35:30 AM	Multiple (2)	JAZZ03 RACF	Multiple (3)	Success	Policy Change	3
RDELETE No violations det...	Multiple (2)	7/1/14, 11:35:31 AM	Multiple (2)	JAZZ03 RACF	Multiple (2)	Success	Policy Change	2
DELUSER No violations det...	DELUSER DEMOUSER	7/1/14, 11:35:32 AM	PEASEJ	JAZZ03 RACF	DEMOUSER	Success	User Account Removed	1

Security intelligence automated offense identification for System z

zSecure
- z/OS
- RACF
- ACF2, TSS
- CICS

Guardium
- DB2
- IMS
- VSAM



Extensive Data Sources

- Security devices
- Servers and mainframes
- Network and virtual activity
- Data activity
- Vulnerabilities and threats
- Users and identities
- Configuration information
- Application activity
- Global threat intelligence

Automated Offense Identification

- Unlimited data collection, storage and analysis
- Built in data classification
- Automatic asset, service and user discovery and profiling
- Real-time correlation and threat intelligence
- Activity baselining and anomaly detection
- Detects incidents, out of the box

Embedded Intelligence

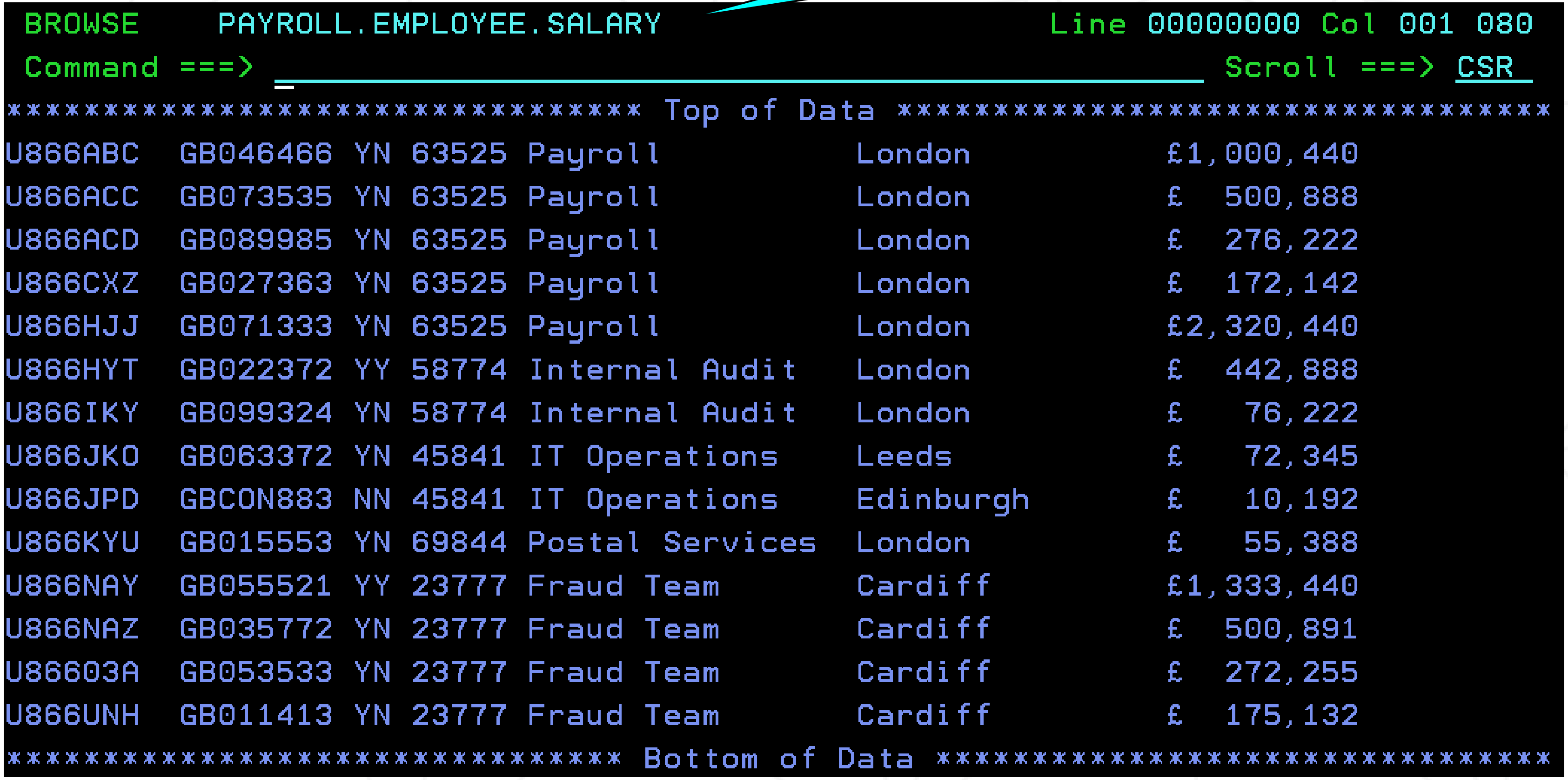
Suspected Incidents

Prioritized Incidents

Extensive Data Sources + Deep Intelligence = Exceptionally Accurate and Actionable Insight

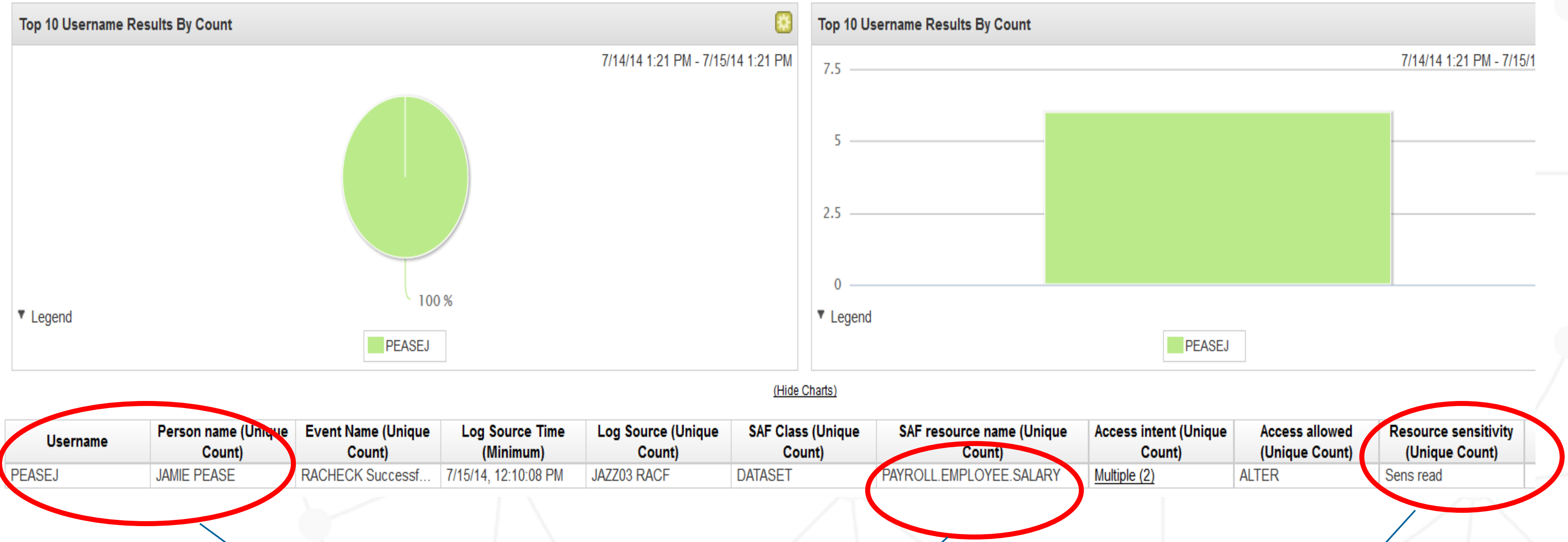
Scenario # 1 – Inappropriate access to sensitive data on z/OS

System Programmer accesses a Payroll file on System z



```
BROWSE    PAYROLL.EMPLOYEE.SALARY                         Line 00000000 Col 001 080
Command ===> _                                                     Scroll ===> CSR
********************************* Top of Data **********************************
U866ABC  GB046466 YN 63525 Payroll          London          £1,000,440
U866ACC  GB073535 YN 63525 Payroll          London          £  500,888
U866ACD  GB089985 YN 63525 Payroll          London          £  276,222
U866CXZ  GB027363 YN 63525 Payroll          London          £  172,142
U866HJJ  GB071333 YN 63525 Payroll          London          £2,320,440
U866HYT  GB022372 YY 58774 Internal Audit   London          £  442,888
U866IKY  GB099324 YN 58774 Internal Audit   London          £   76,222
U866JKO  GB063372 YN 45841 IT Operations    Leeds           £   72,345
U866JPD  GBCON883 NN 45841 IT Operations    Edinburgh       £   10,192
U866KYU  GB015553 YN 69844 Postal Services  London          £   55,388
U866NAY  GB055521 YY 23777 Fraud Team       Cardiff         £1,333,440
U866NAZ  GB035772 YN 23777 Fraud Team       Cardiff         £  500,891
U86603A  GB053533 YN 23777 Fraud Team       Cardiff         £  272,255
U866UNH  GB011413 YN 23777 Fraud Team       Cardiff         £  175,132
******************************** Bottom of Data ********************************
```

Scenario # 1 – Monitoring inappropriate access to sensitive data


Top 10 Username Results By Count
7/14/14 1:21 PM - 7/15/14 1:21 PM
100 %
Legend
🟩 PEASEJ
Top 10 Username Results By Count
7/14/14 1:21 PM - 7/15/1
7.5
5
2.5
0
Legend
🟩 PEASEJ
(Hide Charts)

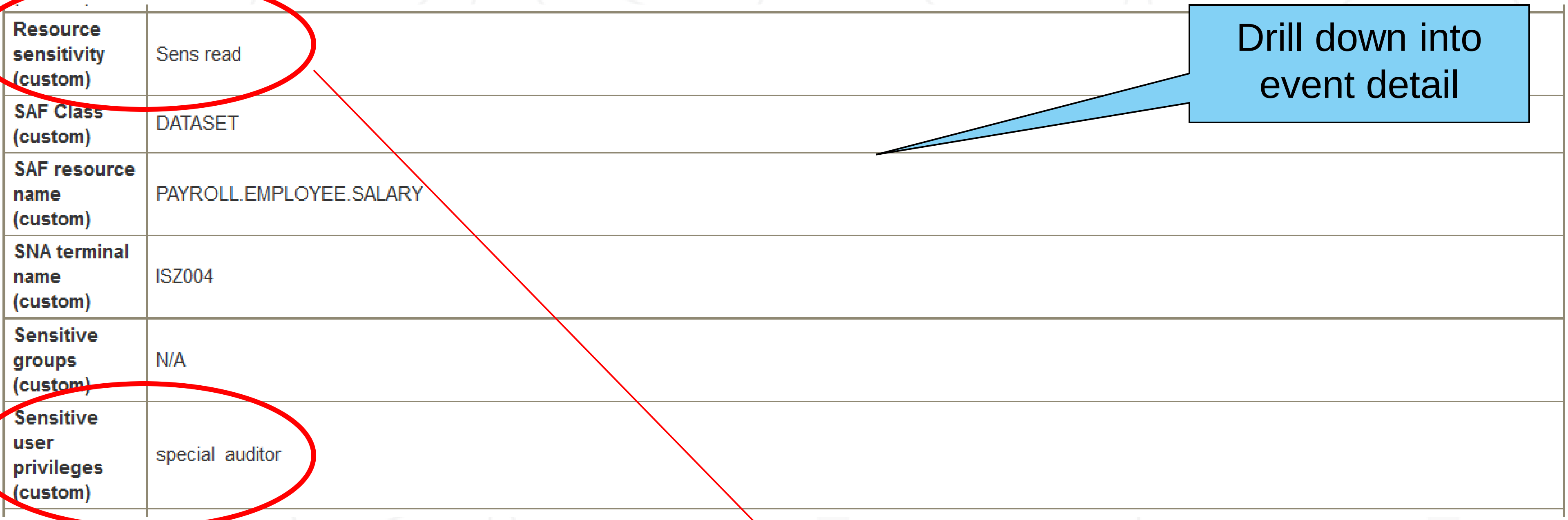
Username	Person name (Unique Count)	Event Name (Unique Count)	Log Source Time (Minimum)	Log Source (Unique Count)	SAF Class (Unique Count)	SAF resource name (Unique Count)	Access intent (Unique Count)	Access allowed (Unique Count)	Resource sensitivity (Unique Count)
PEASEJ	JAMIE PEASE	RACHECK Successf...	7/15/14, 12:10:08 PM	JAZZ03 RACF	DATASET	PAYROLL.EMPLOYEE.SALARY	Multiple (2)	ALTER	Sens read

Who accessed the sensitive resource

What they accessed

Resource is sensitive for read access

Scenario # 1 – Monitoring inappropriate access to sensitive data



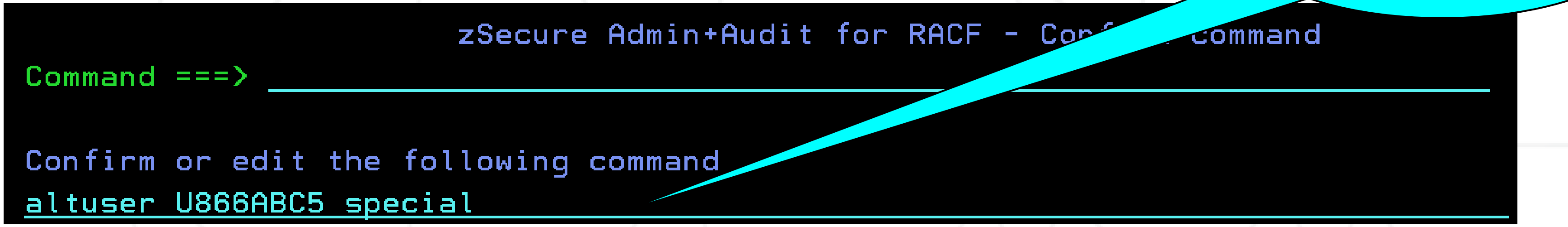
Resource sensitivity (custom)	Sens read
SAF Class (custom)	DATASET
SAF resource name (custom)	PAYROLL.EMPLOYEE.SALARY
SNA terminal name (custom)	ISZ004
Sensitive groups (custom)	N/A
Sensitive user privileges (custom)	special auditor

Drill down into event detail

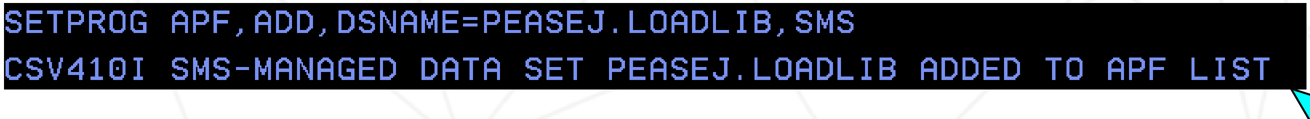
zSecure has enriched event data – assists the Security Officer to understand the user involved and what they accessed

Scenario # 2 – Privileged User Activities occurring on System z

Assigning powerful RACF attributes



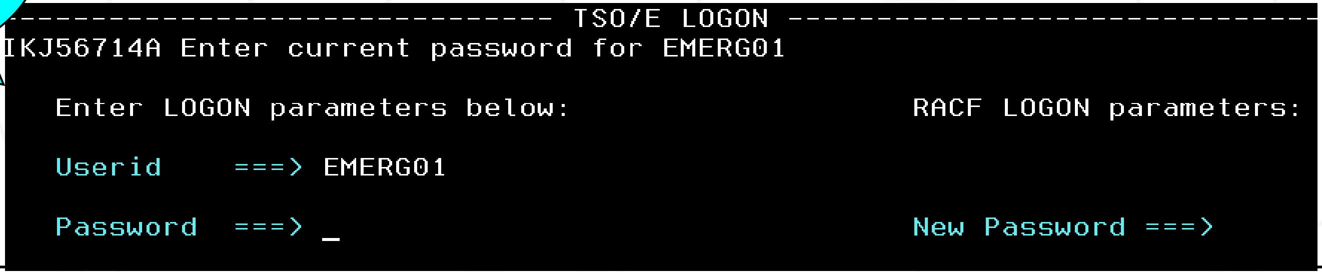
```
                 zSecure Admin+Audit for RACF - Confirm command
Command ===> ____________________________________________________

Confirm or edit the following command
altuser U866ABC5 special
```



```
SETPROG APF,ADD,DSNAME=PEASEJ.LOADLIB,SMS
CSV410I SMS-MANAGED DATA SET PEASEJ.LOADLIB ADDED TO APF LIST
```

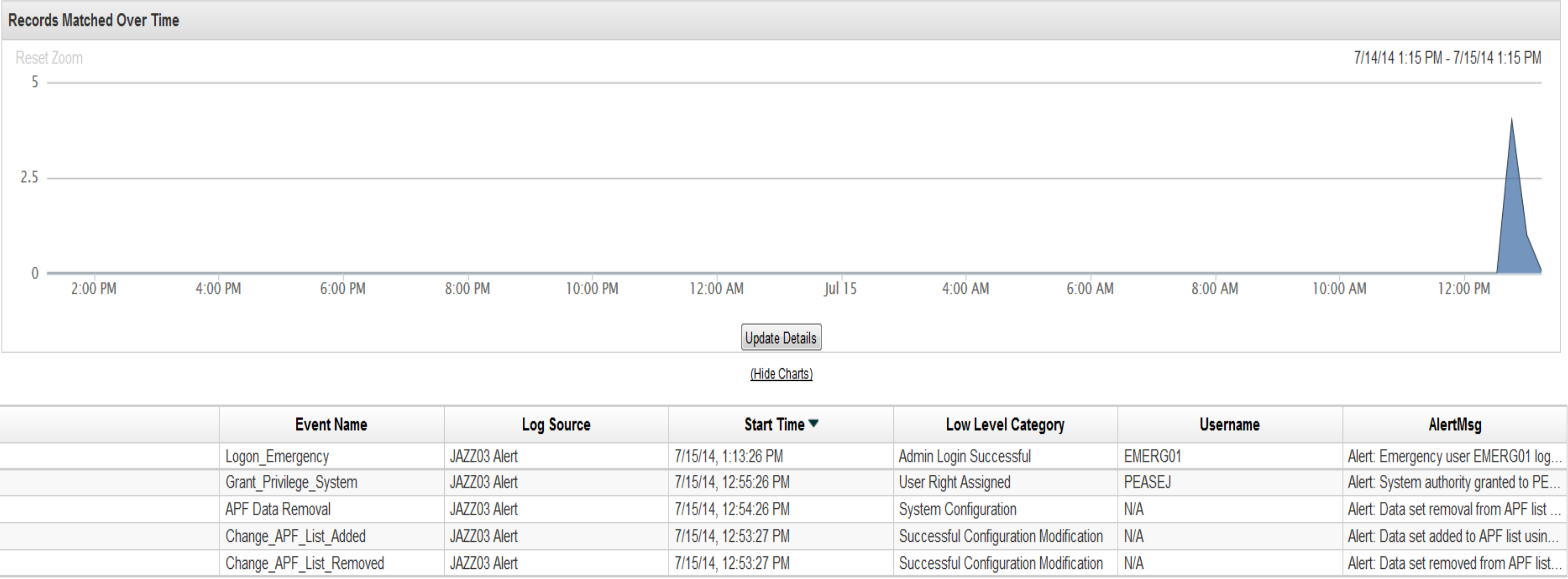
Modifying the Trusted Computing Base

Logon with powerful emergency user IDs



```
------------------------------- TSO/E LOGON -------------------------------
IKJ56714A Enter current password for EMERG01

   Enter LOGON parameters below:                    RACF LOGON parameters:

   Userid    ===> EMERG01

   Password  ===> _                                 New Password ===>
```

Scenario # 2 – Monitoring Privileged User activities in QRadar



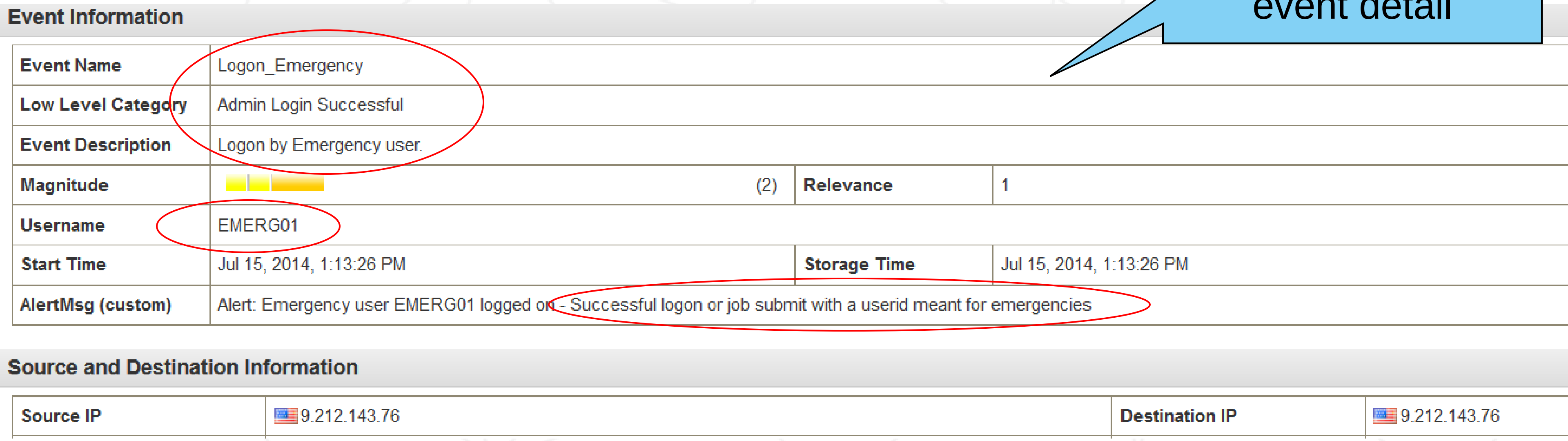
	Event Name	Log Source	Start Time ▼	Low Level Category	Username	AlertMsg
	Logon_Emergency	JAZZ03 Alert	7/15/14, 1:13:26 PM	Admin Login Successful	EMERG01	Alert: Emergency user EMERG01 log...
	Grant_Privilege_System	JAZZ03 Alert	7/15/14, 12:55:26 PM	User Right Assigned	PEASEJ	Alert: System authority granted to PE...
	APF Data Removal	JAZZ03 Alert	7/15/14, 12:54:26 PM	System Configuration	N/A	Alert: Data set removal from APF list ...
	Change_APF_List_Added	JAZZ03 Alert	7/15/14, 12:53:27 PM	Successful Configuration Modification	N/A	Alert: Data set added to APF list usin...
	Change_APF_List_Removed	JAZZ03 Alert	7/15/14, 12:53:27 PM	Successful Configuration Modification	N/A	Alert: Data set removed from APF list...

Events sent to QRadar, seconds later

Collected and sent to QRadar by **zSecure Alert**

Scenario # 2 – Monitoring Privileged User activities in QRadar

Drill down into event detail



Event Information

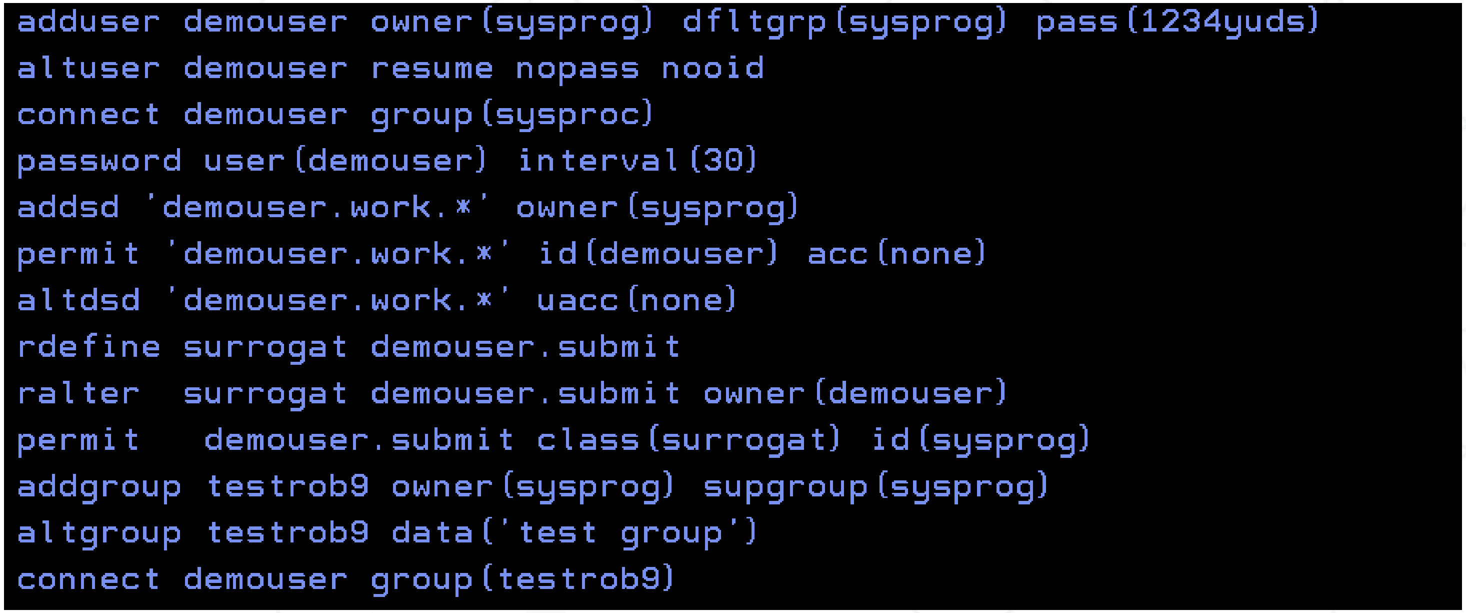
Event Name	Logon_Emergency		
Low Level Category	Admin Login Successful		
Event Description	Logon by Emergency user.		
Magnitude	(2)	Relevance	1
Username	EMERG01		
Start Time	Jul 15, 2014, 1:13:26 PM	Storage Time	Jul 15, 2014, 1:13:26 PM
AlertMsg (custom)	Alert: Emergency user EMERG01 logged on - Successful logon or job submit with a userid meant for emergencies		

Source and Destination Information

Source IP	9.212.143.76	Destination IP	9.212.143.76

Detailed information alerts us to the fact that an emergency user ID has been used – big problem for mainframe customers!

Scenario # 3 – Security Administrator activities occurring on System z

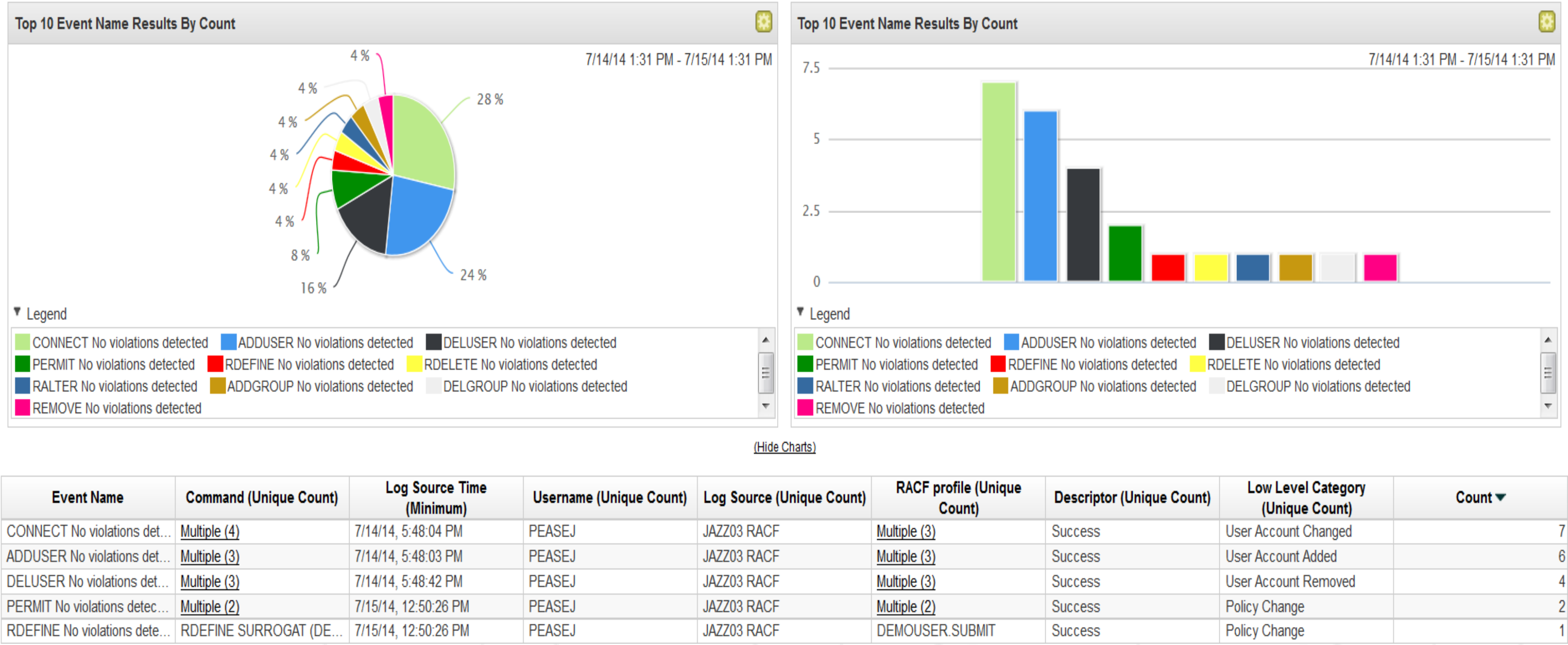


```
adduser demouser owner(sysprog) dfltgrp(sysprog) pass(1234yuds)
altuser demouser resume nopass nooid
connect demouser group(sysproc)
password user(demouser) interval(30)
addsd 'demouser.work.*' owner(sysprog)
permit 'demouser.work.*' id(demouser) acc(none)
altdsd 'demouser.work.*' uacc(none)
rdefine surrogat demouser.submit
ralter  surrogat demouser.submit owner(demouser)
permit   demouser.submit class(surrogat) id(sysprog)
addgroup testrob9 owner(sysprog) supgroup(sysprog)
altgroup testrob9 data('test group')
connect demouser group(testrob9)
```

Executing RACF Commands

Security Administrator is creating new security definitions on the mainframe

Scenario # 3 – Monitoring Security Administrator activities



Top 10 Event Name Results By Count

7/14/14 1:31 PM - 7/15/14 1:31 PM

Top 10 Event Name Results By Count

7/14/14 1:31 PM - 7/15/14 1:31 PM

▾ Legend

🟩 CONNECT No violations detected
🟦 ADDUSER No violations detected
⬛ DELUSER No violations detected
🟩 PERMIT No violations detected
🟥 RDEFINE No violations detected
🟨 RDELETE No violations detected
🟦 RALTER No violations detected
🟫 ADDGROUP No violations detected
⬜ DELGROUP No violations detected
🟪 REMOVE No violations detected

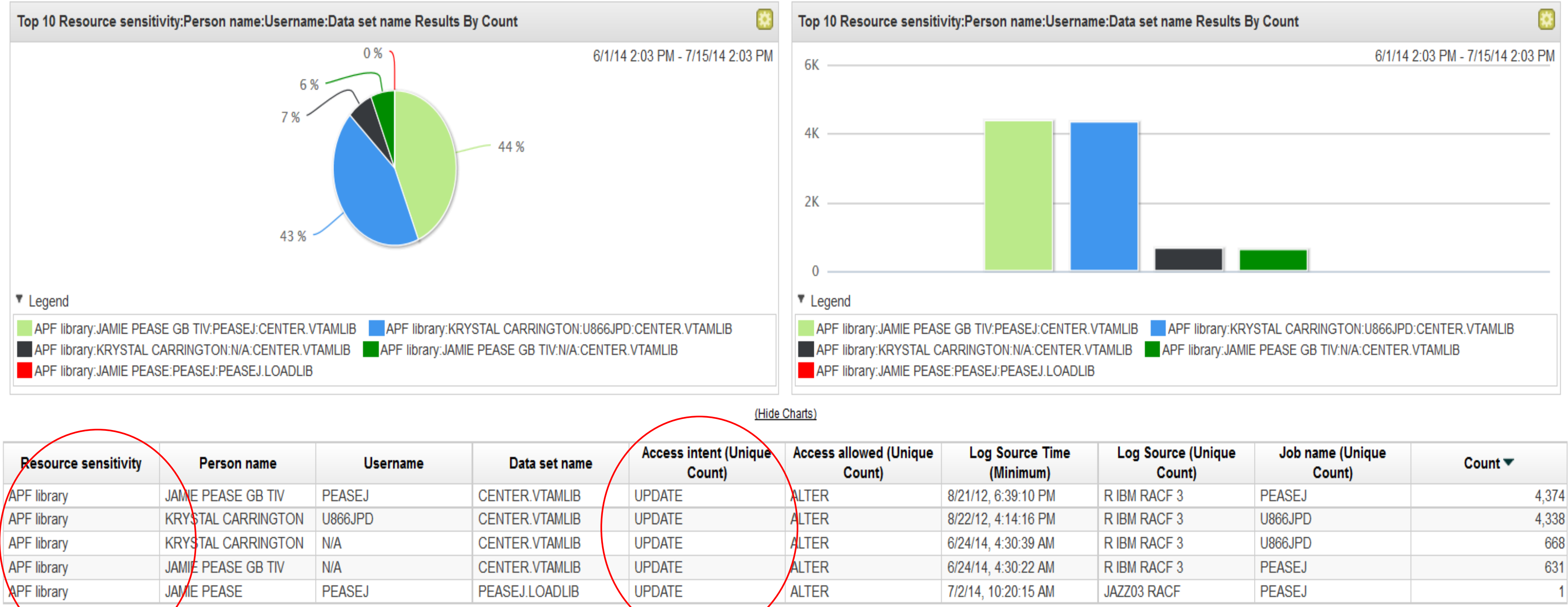
(Hide Charts)

Event Name	Command (Unique Count)	Log Source Time (Minimum)	Username (Unique Count)	Log Source (Unique Count)	RACF profile (Unique Count)	Descriptor (Unique Count)	Low Level Category (Unique Count)	Count ▾
CONNECT No violations det...	Multiple (4)	7/14/14, 5:48:04 PM	PEASEJ	JAZZ03 RACF	Multiple (3)	Success	User Account Changed	7
ADDUSER No violations det...	Multiple (3)	7/14/14, 5:48:03 PM	PEASEJ	JAZZ03 RACF	Multiple (3)	Success	User Account Added	6
DELUSER No violations det...	Multiple (3)	7/14/14, 5:48:42 PM	PEASEJ	JAZZ03 RACF	Multiple (3)	Success	User Account Removed	4
PERMIT No violations detec...	Multiple (2)	7/15/14, 12:50:26 PM	PEASEJ	JAZZ03 RACF	Multiple (2)	Success	Policy Change	2
RDEFINE No violations dete...	RDEFINE SURROGAT (DE...	7/15/14, 12:50:26 PM	PEASEJ	JAZZ03 RACF	DEMOUSER.SUBMIT	Success	Policy Change	1

A view of the RACF commands that have been executed over a 24 hour period – mainframe customers typically run this type of report on a daily basis!

Event data collected by **zSecure Audit**

Scenario # 4 – Monitoring your System Programmers



Top 10 Resource sensitivity:Person name:Username:Data set name Results By Count

6/1/14 2:03 PM - 7/15/14 2:03 PM

▼ Legend

🟩 APF library:JAMIE PEASE GB TIV:PEASEJ:CENTER.VTAMLIB 🟦 APF library:KRYSTAL CARRINGTON:U866JPD:CENTER.VTAMLIB
⬛ APF library:KRYSTAL CARRINGTON:N/A:CENTER.VTAMLIB 🟩 APF library:JAMIE PEASE GB TIV:N/A:CENTER.VTAMLIB
🟥 APF library:JAMIE PEASE:PEASEJ:PEASEJ.LOADLIB

Top 10 Resource sensitivity:Person name:Username:Data set name Results By Count

6/1/14 2:03 PM - 7/15/14 2:03 PM

▼ Legend

🟩 APF library:JAMIE PEASE GB TIV:PEASEJ:CENTER.VTAMLIB 🟦 APF library:KRYSTAL CARRINGTON:U866JPD:CENTER.VTAMLIB
⬛ APF library:KRYSTAL CARRINGTON:N/A:CENTER.VTAMLIB 🟩 APF library:JAMIE PEASE GB TIV:N/A:CENTER.VTAMLIB
🟥 APF library:JAMIE PEASE:PEASEJ:PEASEJ.LOADLIB

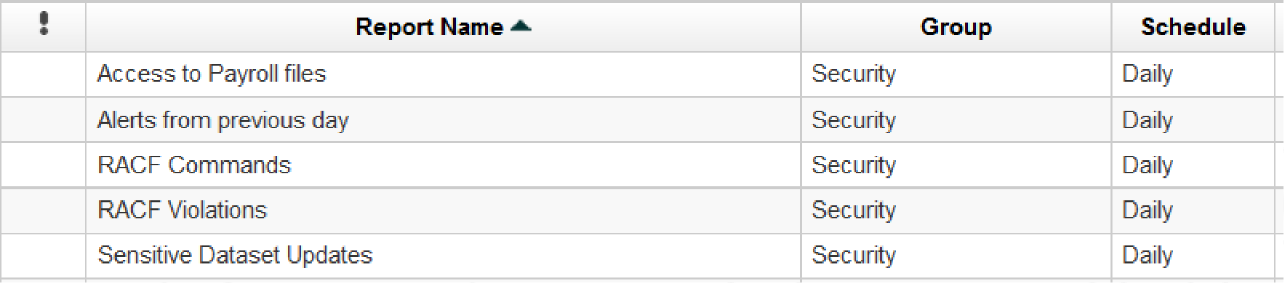
(Hide Charts)

Resource sensitivity	Person name	Username	Data set name	Access intent (Unique Count)	Access allowed (Unique Count)	Log Source Time (Minimum)	Log Source (Unique Count)	Job name (Unique Count)	Count ▼
APF library	JAMIE PEASE GB TIV	PEASEJ	CENTER.VTAMLIB	UPDATE	ALTER	8/21/12, 6:39:10 PM	R IBM RACF 3	PEASEJ	4,374
APF library	KRYSTAL CARRINGTON	U866JPD	CENTER.VTAMLIB	UPDATE	ALTER	8/22/12, 4:14:16 PM	R IBM RACF 3	U866JPD	4,338
APF library	KRYSTAL CARRINGTON	N/A	CENTER.VTAMLIB	UPDATE	ALTER	6/24/14, 4:30:39 AM	R IBM RACF 3	U866JPD	668
APF library	JAMIE PEASE GB TIV	N/A	CENTER.VTAMLIB	UPDATE	ALTER	6/24/14, 4:30:22 AM	R IBM RACF 3	PEASEJ	631
APF library	JAMIE PEASE	PEASEJ	PEASEJ.LOADLIB	UPDATE	ALTER	7/2/14, 10:20:15 AM	JAZZ03 RACF	PEASEJ	1

Highly sensitive resource – keys to the kingdom!

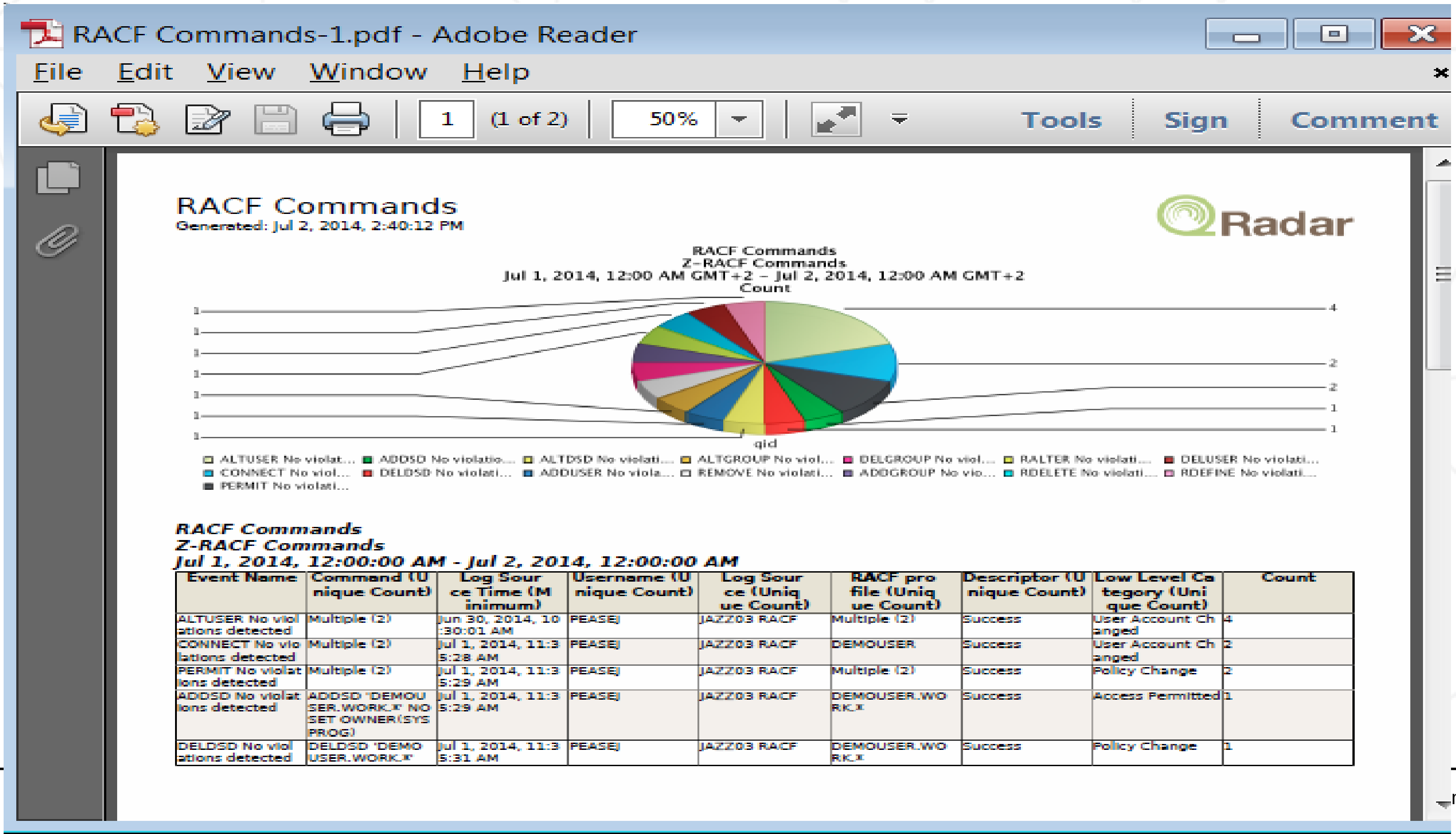
Could be used to circumvent system security

Daily (scheduled) reporting



!	Report Name ▲	Group	Schedule
	Access to Payroll files	Security	Daily
	Alerts from previous day	Security	Daily
	RACF Commands	Security	Daily
	RACF Violations	Security	Daily
	Sensitive Dataset Updates	Security	Daily

Customers typically run scheduled monitoring reports



RACF Commands

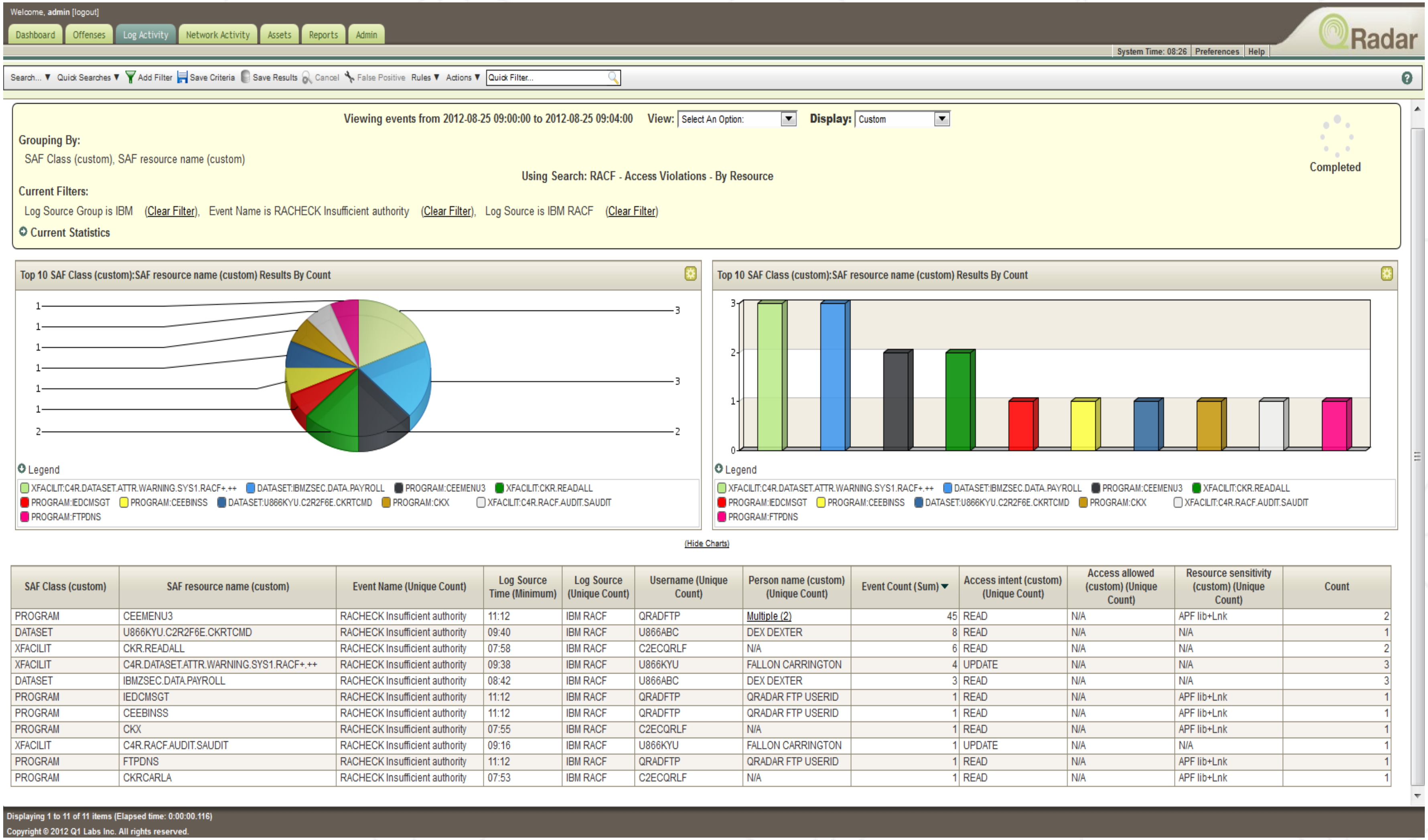
Generated: Jul 2, 2014, 2:40:12 PM

RACF Commands
Z-RACF Commands
Jul 1, 2014, 12:00 AM GMT+2 – Jul 2, 2014, 12:00 AM GMT+2
Count

RACF Commands
Z-RACF Commands
Jul 1, 2014, 12:00:00 AM - Jul 2, 2014, 12:00:00 AM

Event Name	Command (Unique Count)	Log Source Time (Minimum)	Username (Unique Count)	Log Source (Unique Count)	RACF profile (Unique Count)	Descriptor (Unique Count)	Low Level Category (Unique Count)	Count
ALTUSER No violations detected	Multiple (2)	Jun 30, 2014, 10:30:01 AM	PEASEJ	JAZZ03 RACF	Multiple (2)	Success	User Account Changed	4
CONNECT No violations detected	Multiple (2)	Jul 1, 2014, 11:35:28 AM	PEASEJ	JAZZ03 RACF	DEMOUSER	Success	User Account Changed	2
PERMIT No violations detected	Multiple (2)	Jul 1, 2014, 11:35:29 AM	PEASEJ	JAZZ03 RACF	Multiple (2)	Success	Policy Change	2
ADDSD No violations detected	ADDSD 'DEMOUSER.WORK.*' NOSET OWNER(SYSPROG)	Jul 1, 2014, 11:35:29 AM	PEASEJ	JAZZ03 RACF	DEMOUSER.WORK.*	Success	Access Permitted	1
DELDSD No violations detected	DELDSD 'DEMOUSER.WORK.*'	Jul 1, 2014, 11:35:31 AM	PEASEJ	JAZZ03 RACF	DEMOUSER.WORK.*	Success	Policy Change	1

QRadar/zSecure – RACF – Access Violations by Resource



Viewing events from 2012-08-25 09:00:00 to 2012-08-25 09:04:00 View: Select An Option: Display: Custom

Grouping By:

SAF Class (custom), SAF resource name (custom)

Using Search: RACF - Access Violations - By Resource

Current Filters:

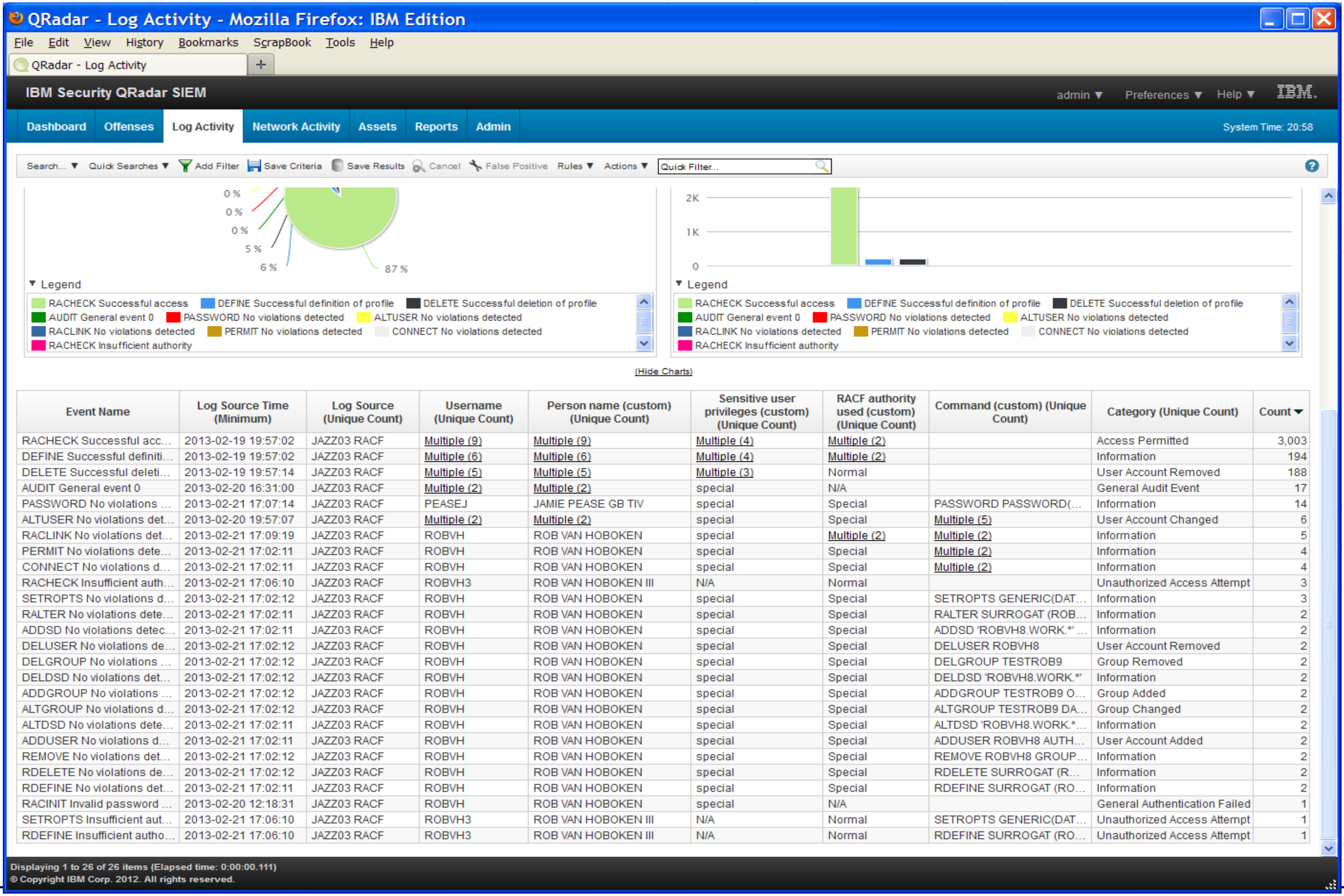
Log Source Group is IBM (Clear Filter), Event Name is RACHECK Insufficient authority (Clear Filter), Log Source is IBM RACF (Clear Filter)

Current Statistics

SAF Class (custom)	SAF resource name (custom)	Event Name (Unique Count)	Log Source Time (Minimum)	Log Source (Unique Count)	Username (Unique Count)	Person name (custom) (Unique Count)	Event Count (Sum) ▼	Access intent (custom) (Unique Count)	Access allowed (custom) (Unique Count)	Resource sensitivity (custom) (Unique Count)	Count
PROGRAM	CEEMENU3	RACHECK Insufficient authority	11:12	IBM RACF	QRADFTP	Multiple (2)	45	READ	N/A	APF lib+Lnk	2
DATASET	U866KYU.C2R2F6E.CKRTCMD	RACHECK Insufficient authority	09:40	IBM RACF	U866ABC	DEX DEXTER	8	READ	N/A	N/A	1
XFACILIT	CKR.READALL	RACHECK Insufficient authority	07:58	IBM RACF	C2ECQRLF	N/A	6	READ	N/A	N/A	2
XFACILIT	C4R.DATASET.ATTR.WARNING.SYS1.RACF+.++	RACHECK Insufficient authority	09:38	IBM RACF	U866KYU	FALLON CARRINGTON	4	UPDATE	N/A	N/A	3
DATASET	IBMZSEC.DATA.PAYROLL	RACHECK Insufficient authority	08:42	IBM RACF	U866ABC	DEX DEXTER	3	READ	N/A	N/A	3
PROGRAM	IEDCMSGT	RACHECK Insufficient authority	11:12	IBM RACF	QRADFTP	QRADAR FTP USERID	1	READ	N/A	APF lib+Lnk	1
PROGRAM	CEEBINSS	RACHECK Insufficient authority	11:12	IBM RACF	QRADFTP	QRADAR FTP USERID	1	READ	N/A	APF lib+Lnk	1
PROGRAM	CKX	RACHECK Insufficient authority	07:55	IBM RACF	C2ECQRLF	N/A	1	READ	N/A	APF lib+Lnk	1
XFACILIT	C4R.RACF.AUDIT.SAUDIT	RACHECK Insufficient authority	09:16	IBM RACF	U866KYU	FALLON CARRINGTON	1	UPDATE	N/A	N/A	1
PROGRAM	FTPDNS	RACHECK Insufficient authority	11:12	IBM RACF	QRADFTP	QRADAR FTP USERID	1	READ	N/A	APF lib+Lnk	1
PROGRAM	CKRCARLA	RACHECK Insufficient authority	07:53	IBM RACF	C2ECQRLF	N/A	1	READ	N/A	APF lib+Lnk	1

Displaying 1 to 11 of 11 items (Elapsed time: 0:00:00.116)

RACF Commands Issued



QRadar - Log Activity - Mozilla Firefox: IBM Edition
File Edit View History Bookmarks ScrapBook Tools Help
QRadar - Log Activity
IBM Security QRadar SIEM
admin ▼ Preferences ▼ Help ▼ IBM.
Dashboard Offenses Log Activity Network Activity Assets Reports Admin
System Time: 20:58
Search... ▼ Quick Searches ▼ Add Filter Save Criteria Save Results Cancel False Positive Rules ▼ Actions ▼ Quick Filter...
0 %
0 %
0 %
5 %
6 %
87 %
2K
1K
0
(Hide Charts)

▼ Legend

- 🟩 RACHECK Successful access
- 🟦 DEFINE Successful definition of profile
- ■ DELETE Successful deletion of profile
- 🟩 AUDIT General event 0
- 🟥 PASSWORD No violations detected
- 🟨 ALTUSER No violations detected
- 🟦 RACLINK No violations detected
- 🟨 PERMIT No violations detected
- □ CONNECT No violations detected
- 🟥 RACHECK Insufficient authority

Event Name	Log Source Time (Minimum)	Log Source (Unique Count)	Username (Unique Count)	Person name (custom) (Unique Count)	Sensitive user privileges (custom) (Unique Count)	RACF authority used (custom) (Unique Count)	Command (custom) (Unique Count)	Category (Unique Count)	Count ▼
RACHECK Successful acc...	2013-02-19 19:57:02	JAZZ03 RACF	Multiple (9)	Multiple (9)	Multiple (4)	Multiple (2)		Access Permitted	3,003
DEFINE Successful definiti...	2013-02-19 19:57:02	JAZZ03 RACF	Multiple (6)	Multiple (6)	Multiple (4)	Multiple (2)		Information	194
DELETE Successful deleti...	2013-02-19 19:57:14	JAZZ03 RACF	Multiple (5)	Multiple (5)	Multiple (3)	Normal		User Account Removed	188
AUDIT General event 0	2013-02-20 16:31:00	JAZZ03 RACF	Multiple (2)	Multiple (2)	special	N/A		General Audit Event	17
PASSWORD No violations ...	2013-02-21 17:07:14	JAZZ03 RACF	PEASEJ	JAMIE PEASE GB TIV	special	Special	PASSWORD PASSWORD(...	Information	14
ALTUSER No violations det...	2013-02-20 19:57:07	JAZZ03 RACF	Multiple (2)	Multiple (2)	special	Special	Multiple (5)	User Account Changed	6
RACLINK No violations det...	2013-02-21 17:09:19	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Multiple (2)	Multiple (2)	Information	5
PERMIT No violations dete...	2013-02-21 17:02:11	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	Multiple (2)	Information	4
CONNECT No violations d...	2013-02-21 17:02:11	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	Multiple (2)	Information	4
RACHECK Insufficient auth...	2013-02-21 17:06:10	JAZZ03 RACF	ROBVH3	ROB VAN HOBOKEN III	N/A	Normal		Unauthorized Access Attempt	3
SETROPTS No violations d...	2013-02-21 17:02:12	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	SETROPTS GENERIC(DAT...	Information	3
RALTER No violations dete...	2013-02-21 17:02:11	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	RALTER SURROGAT (ROB...	Information	2
ADDSD No violations detec...	2013-02-21 17:02:11	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	ADDSD 'ROBVH8.WORK.*' ...	Information	2
DELUSER No violations de...	2013-02-21 17:02:12	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	DELUSER ROBVH8	User Account Removed	2
DELGROUP No violations ...	2013-02-21 17:02:12	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	DELGROUP TESTROB9	Group Removed	2
DELDSD No violations det...	2013-02-21 17:02:12	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	DELDSD 'ROBVH8.WORK.*'	Information	2
ADDGROUP No violations ...	2013-02-21 17:02:12	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	ADDGROUP TESTROB9 O...	Group Added	2
ALTGROUP No violations d...	2013-02-21 17:02:12	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	ALTGROUP TESTROB9 DA...	Group Changed	2
ALTDSD No violations dete...	2013-02-21 17:02:11	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	ALTDSD 'ROBVH8.WORK.*...	Information	2
ADDUSER No violations d...	2013-02-21 17:02:11	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	ADDUSER ROBVH8 AUTH...	User Account Added	2
REMOVE No violations det...	2013-02-21 17:02:12	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	REMOVE ROBVH8 GROUP...	Information	2
RDELETE No violations de...	2013-02-21 17:02:12	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	RDELETE SURROGAT (R...	Information	2
RDEFINE No violations det...	2013-02-21 17:02:11	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	Special	RDEFINE SURROGAT (RO...	Information	2
RACINIT Invalid password ...	2013-02-20 12:18:31	JAZZ03 RACF	ROBVH	ROB VAN HOBOKEN	special	N/A		General Authentication Failed	1
SETROPTS Insufficient aut...	2013-02-21 17:06:10	JAZZ03 RACF	ROBVH3	ROB VAN HOBOKEN III	N/A	Normal	SETROPTS GENERIC(DAT...	Unauthorized Access Attempt	1
RDEFINE Insufficient autho...	2013-02-21 17:06:10	JAZZ03 RACF	ROBVH3	ROB VAN HOBOKEN III	N/A	Normal	RDEFINE SURROGAT (RO...	Unauthorized Access Attempt	1

Displaying 1 to 26 of 26 items (Elapsed time: 0:00:00.111)
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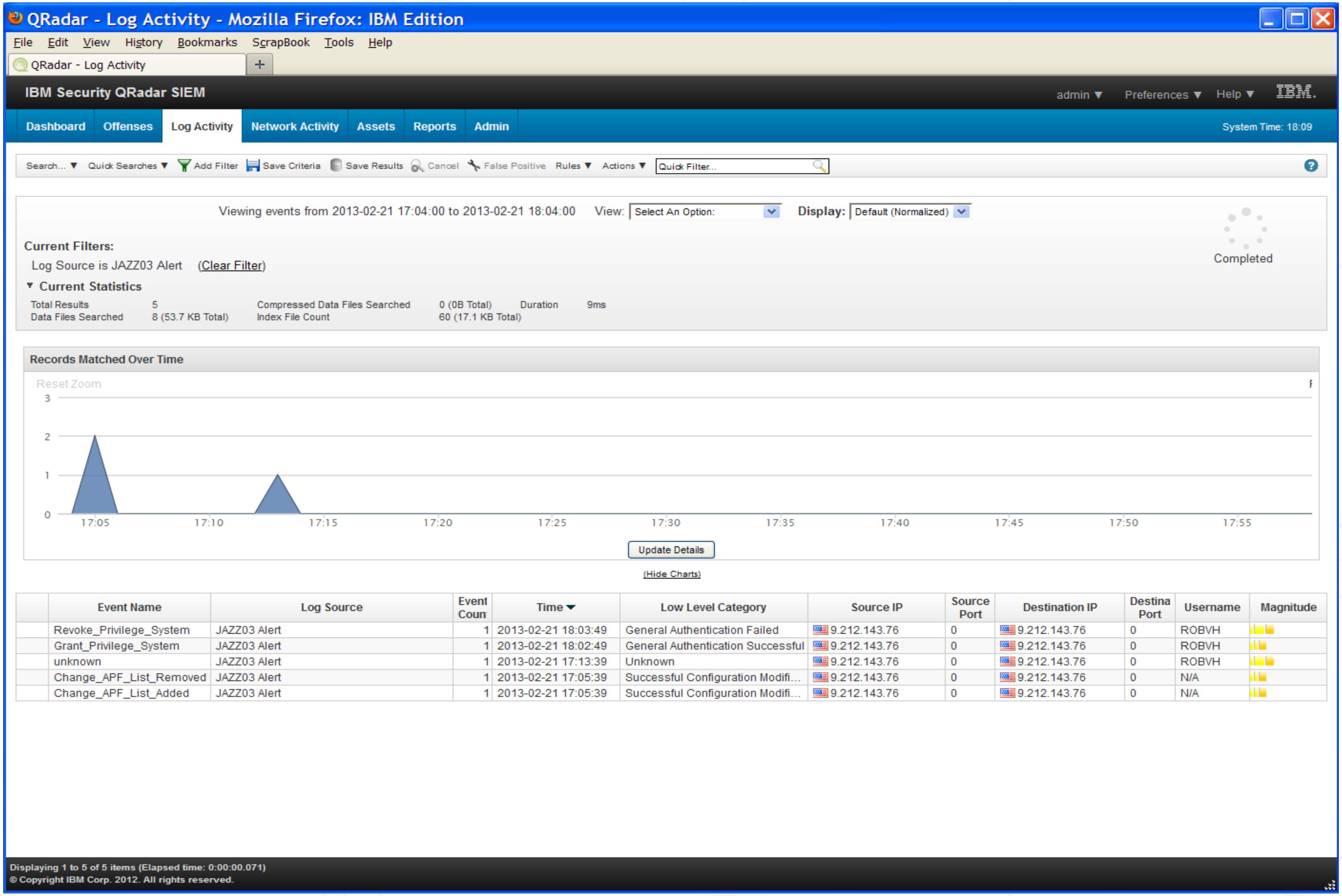
Real Time Alerts from zSecure Alert


QRadar - Log Activity - Mozilla Firefox: IBM Edition
File Edit View History Bookmarks ScrapBook Tools Help
QRadar - Log Activity
IBM Security QRadar SIEM
admin ▼ Preferences ▼ Help ▼ IBM.
Dashboard Offenses Log Activity Network Activity Assets Reports Admin
Search... ▼ Quick Searches ▼ Add Filter Save Criteria Save Results Cancel False Positive Rules ▼ Actions ▼ Quick Filter...
Records Matched Over Time
Reset Zoom
3
2
1
0
17:05
17:10
17:15
17:20
17:25
17:30
17:35
17:40
17:45
17:50
17:55
Update Details
(Hide Charts)

System Time: 18:09

Viewing events from 2013-02-21 17:04:00 to 2013-02-21 18:04:00 View: Select An Option: Display: Default (Normalized)

Completed

Current Filters:

Log Source is JAZZ03 Alert (Clear Filter)

▼ **Current Statistics**

Total Results	5	Compressed Data Files Searched	0 (0B Total)	Duration	9ms
Data Files Searched	8 (53.7 KB Total)	Index File Count	60 (17.1 KB Total)		

Event Name	Log Source	Event Coun	Time ▼	Low Level Category	Source IP	Source Port	Destination IP	Destina Port	Username	Magnitude
Revoke_Privilege_System	JAZZ03 Alert	1	2013-02-21 18:03:49	General Authentication Failed	9.212.143.76	0	9.212.143.76	0	ROBVH	
Grant_Privilege_System	JAZZ03 Alert	1	2013-02-21 18:02:49	General Authentication Successful	9.212.143.76	0	9.212.143.76	0	ROBVH	
unknown	JAZZ03 Alert	1	2013-02-21 17:13:39	Unknown	9.212.143.76	0	9.212.143.76	0	ROBVH	
Change_APF_List_Removed	JAZZ03 Alert	1	2013-02-21 17:05:39	Successful Configuration Modifi...	9.212.143.76	0	9.212.143.76	0	N/A	
Change_APF_List_Added	JAZZ03 Alert	1	2013-02-21 17:05:39	Successful Configuration Modifi...	9.212.143.76	0	9.212.143.76	0	N/A	

Displaying 1 to 5 of 5 items (Elapsed time: 0:00:00.071)

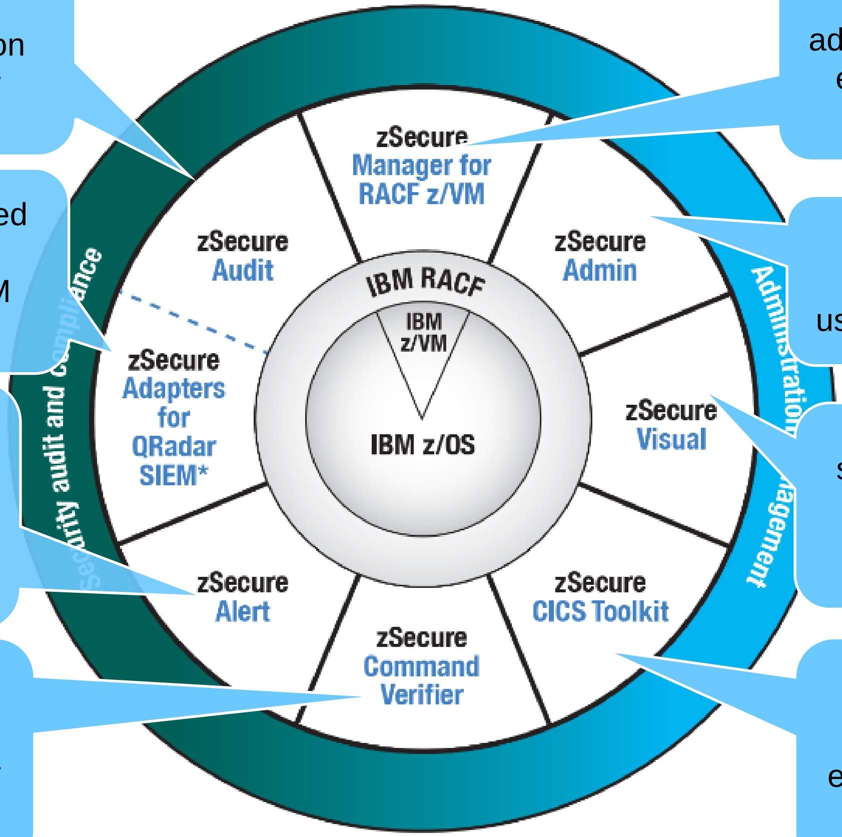
IBM Security zSecure helps address mainframe security challenges

Vulnerability analysis for the mainframe infrastructure. Automatically analyze and report on security events & detect security exposures

Collects, formats and sends enriched mainframe System Management Facility (SMF) audit records to IBM Security QRadar SIEM

Real-time mainframe threat monitoring permits you to monitor intruders and identify misconfigurations that could hamper your compliance efforts

Policy enforcement solution that helps enforce compliance to company and regulatory policies by preventing erroneous commands



* Product offers a subset of the capabilities provided by zSecure Audit

Combined audit and administration for RACF in the VM environment including auditing Linux on System z

Enables more efficient and effective RACF administration, using significantly fewer resources

Helps reduce the need for scarce, RACF-trained expertise through a Microsoft Windows–based GUI for RACF administration

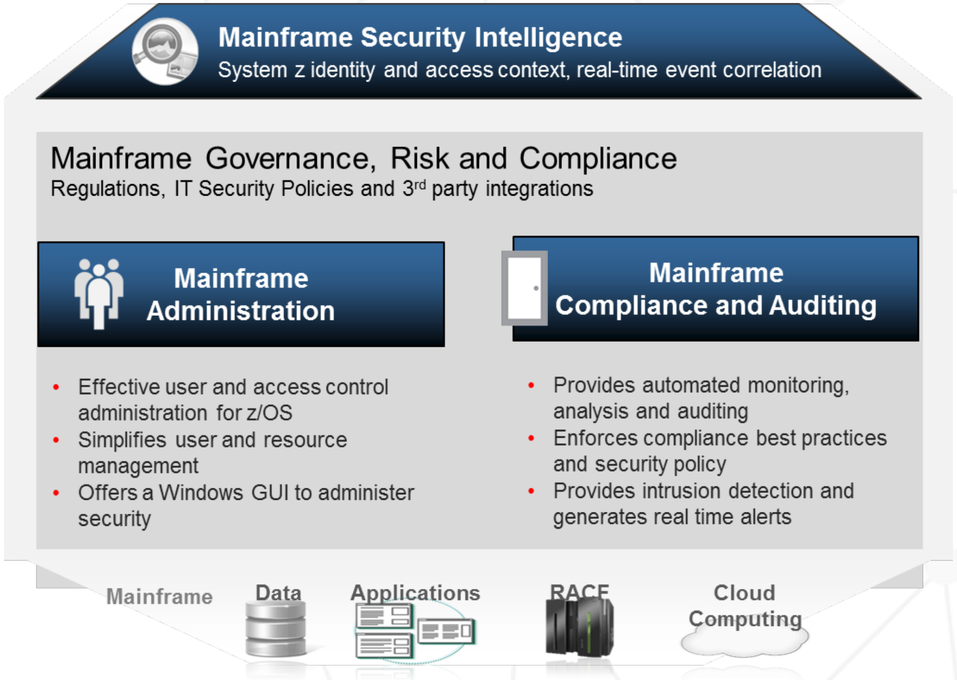
Provides access RACF command & APIs from a CICS environment, allowing additional administrative flexibility

* Supports RACF, CA ACF2 and CA Top Secret

****** Supports RACFand CA ACF2

ACF2 and Top Secret are either registered trademarks or trademarks of CA, Inc. or one of its subsidiaries.

What’s new in zSecure suite 2.1.1



Mainframe Security Intelligence
System z identity and access context, real-time event correlation

Mainframe Governance, Risk and Compliance
Regulations, IT Security Policies and 3rd party integrations

Mainframe Administration

- Effective user and access control administration for z/OS
- Simplifies user and resource management
- Offers a Windows GUI to administer security

Mainframe Compliance and Auditing

- Provides automated monitoring, analysis and auditing
- Enforces compliance best practices and security policy
- Provides intrusion detection and generates real time alerts

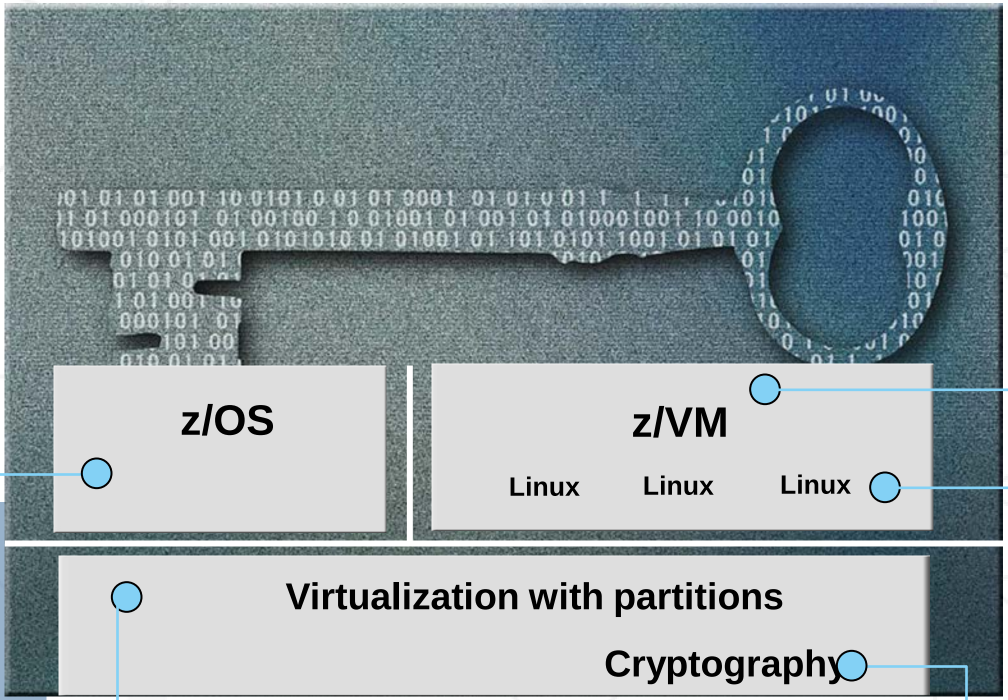
IBM security solution

- ***IBM Security zSecure Suite 2.1.1***

- Compliance, auditing and monitoring – extending compliance framework for automation and coverage for compliance verification
  - PCI DSS requirements
  - STIG RACF and STIG ACF2 – increase our coverage of STIG auditing controls to increase automation
  - Add STIGplus (commercial version of STIG with additional subsystem alternatives)
- Integrated mainframe security intelligence
  - MQ Series – compliance requirements plus assign sensitivity levels to sensitive data sets and resources
  - Enhanced Guardium - Pass remaining object types to Guardium plus new object types for DB2 11
  - DB2 objects (i.e. complete SAF protected object set)
- IBM security software integration
  - QRadar SIEM – custom reporting for information from zSecure Audit, Add event mapping and custom fields for additional SMF records for example for MQ Series
- zSecure Adapters for Qradar SIEM - new product

System z Certifications

The Common Criteria program establishes an organizational and technical framework to evaluate the trustworthiness of IT Products and protection profiles



z/OS

z/VM

Linux Linux Linux

Virtualization with partitions

Cryptography

z/OS

- Common Criteria EAL4+
  - with CAPP and LSPP
  - z/OS 1.7 → 1.10 + RACF
  - z/OS 1.11 + RACF (OSPP)
  - z/OS 1.12 , z/OS 1.13 (OSPP)
- Common Criteria EAL5+

RACF V1R12 (OSPP)

RACF V1R13 (OSPP)

- z/OS 1.10 IPv6 Certification by JITC
- IdenTrust™ certification for z/OS PKI Services
- FIPS 140-2
  - System SSL z/OS 1.10 →1.13
  - z/OS ICSF PKCS#11 Services – z/OS 1.11 → z/OS 1.13
- Statement of Integrity

- zEnterprise 196 & zEnterprise 114
  - Common Criteria EAL5+ with specific target of Evaluation – LPAR: Logical partitions
- System zEC12
  - Common Criteria EAL5+ with specific target of evaluation -- LPAR: Logical partitions
- Crypto Express2 Coprocessor, Crypto Express3 & Crypto Express4s
  - FIPS 140-2 level 4 Hardware Evaluation
  - Approved by German ZKA
- CP Assist
  - FIPS 197 (AES)
  - FIPS 46-3 (TDES)
  - FIPS 180-3 (Secure Hash)

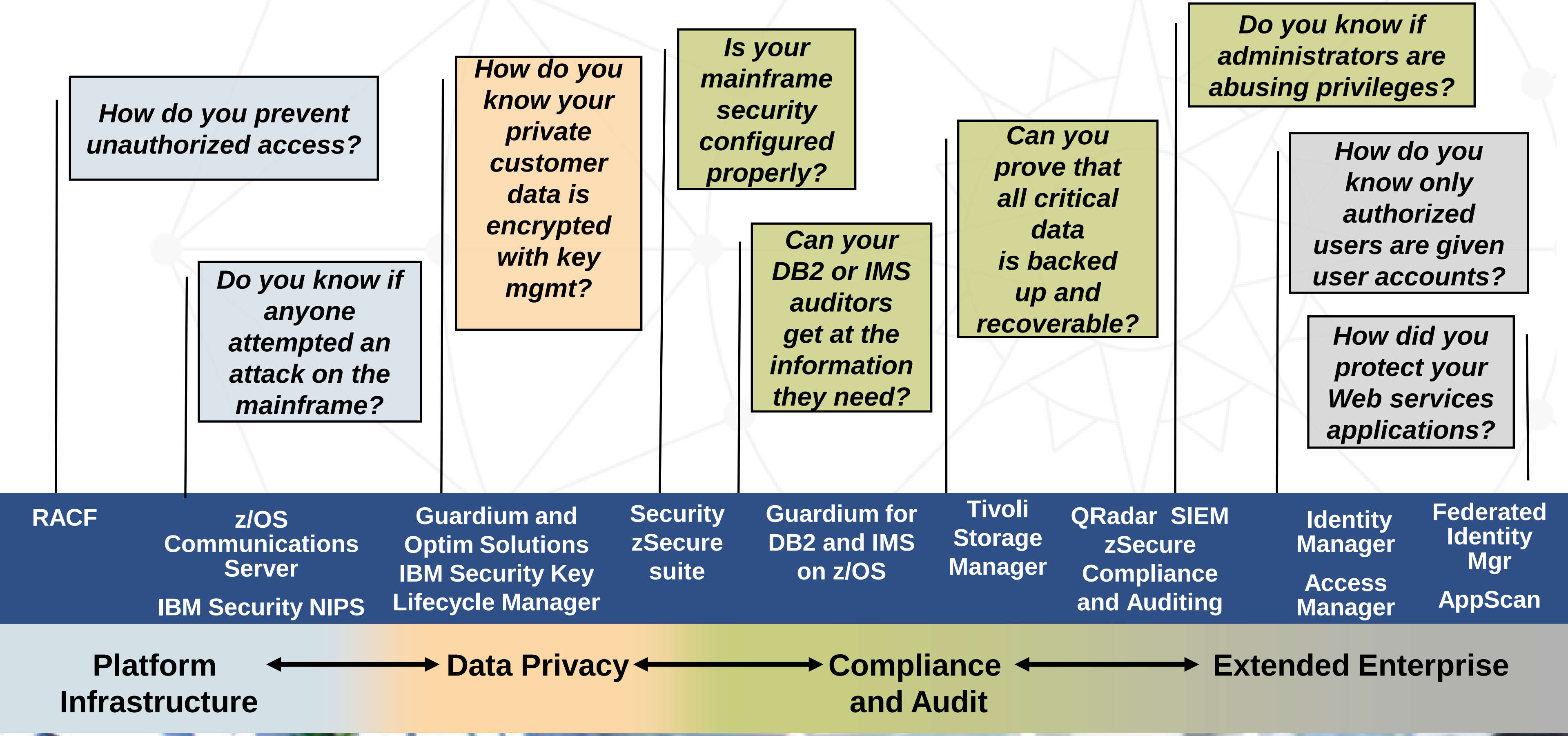
z/VM

- Common Criteria
  - z/VM 6.1 is EAL 4+ for OSPP
  - z/VM 6.1 System SSL is FIPS 140-2 certified.
- System Integrity Statement

Linux on System z

- Common Criteria
  - SUSE SLES11 SP2 certified at EAL4+ with OSPP
  - Red Hat EL6.2 EAL4+ with CAPP and LSPP
- OpenSSL - FIPS 140-2 Level 1 Validated
- CP Assist - SHA-1 validated for FIPS 180-1 - DES & TDES validated for FIPS 46-3

IBM Solutions Help to Address Potential Security and Audit Concerns for the Mainframe



How do you prevent unauthorized access?

Do you know if anyone attempted an attack on the mainframe?

How do you know your private customer data is encrypted with key mgmt?

Is your mainframe security configured properly?

Can your DB2 or IMS auditors get at the information they need?

Can you prove that all critical data is backed up and recoverable?

Do you know if administrators are abusing privileges?

How do you know only authorized users are given user accounts?

How did you protect your Web services applications?

RACF

z/OS Communications Server

IBM Security NIPS

Guardium and Optim Solutions
IBM Security Key Lifecycle Manager

Security zSecure suite

Guardium for DB2 and IMS on z/OS

Tivoli Storage Manager

QRadar SIEM
zSecure Compliance and Auditing

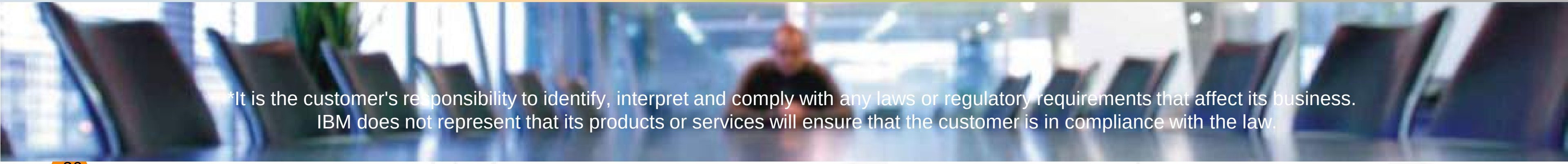
Identity Manager

Access Manager

Federated Identity Mgr

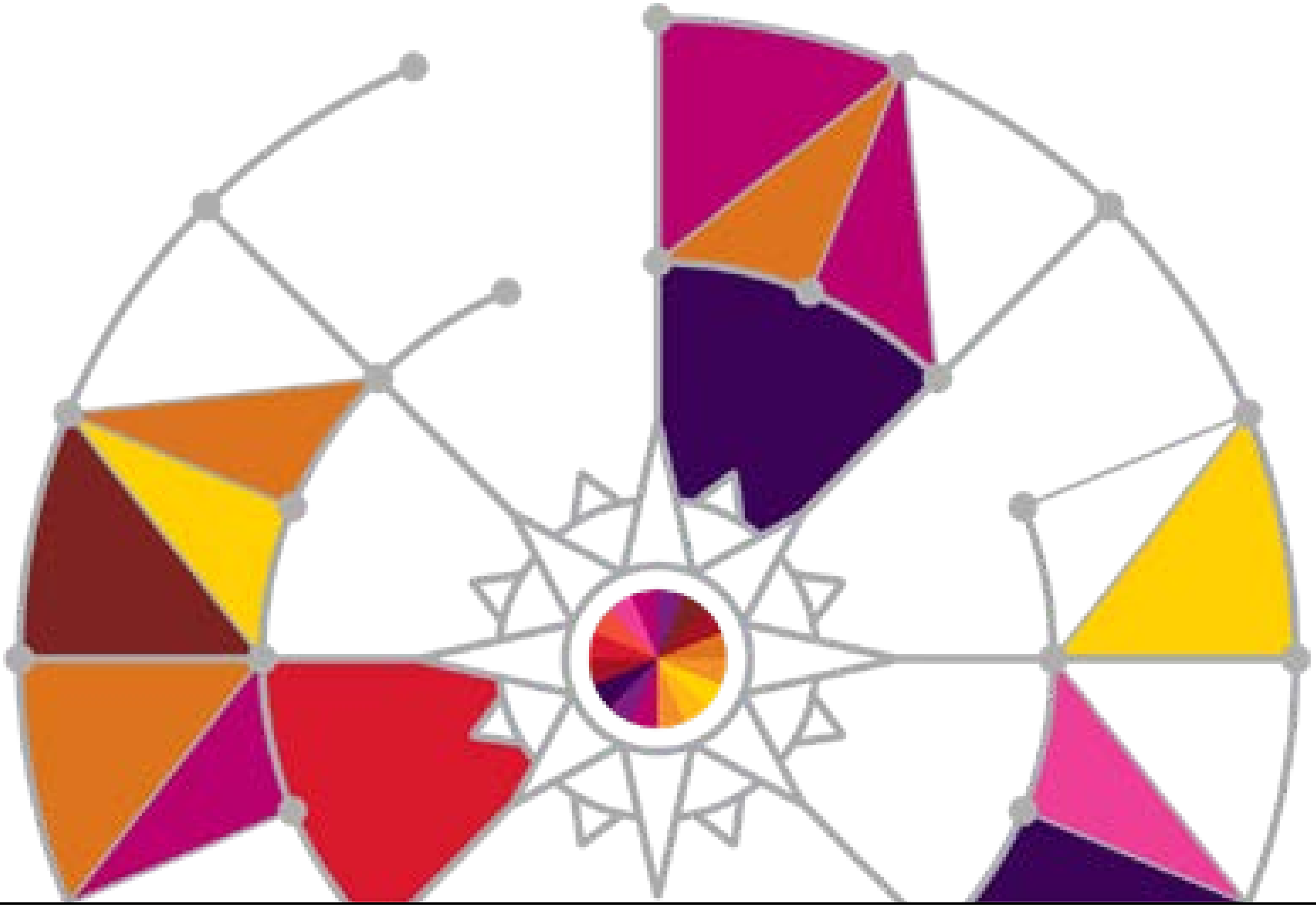
AppScan

Platform Infrastructure ↔ **Data Privacy** ↔ **Compliance and Audit** ↔ **Extended Enterprise**



*It is the customer's responsibility to identify, interpret and comply with any laws or regulatory requirements that affect its business.
IBM does not represent that its products or services will ensure that the customer is in compliance with the law.

Questions any one?



Statement of Good Security Practices: IT system security involves protecting systems and information through prevention, detection and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed or misappropriated or can result in damage to or misuse of your systems, including to attack others. No IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products or services to be most effective. IBM DOES NOT WARRANT THAT SYSTEMS AND PRODUCTS ARE IMMUNE FROM THE MALICIOUS OR ILLEGAL CONDUCT OF ANY PARTY.

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