ASUG SAP BusinessObjects
USER CONFERENCE

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ORLANDO, FLORIDA

BUSINESS INTELLIGENCE
FOR A PASSIONATE COMMUNITY

Getting Into Trouble (and Back Out)

Alan Mayer - Solid Ground Technologies

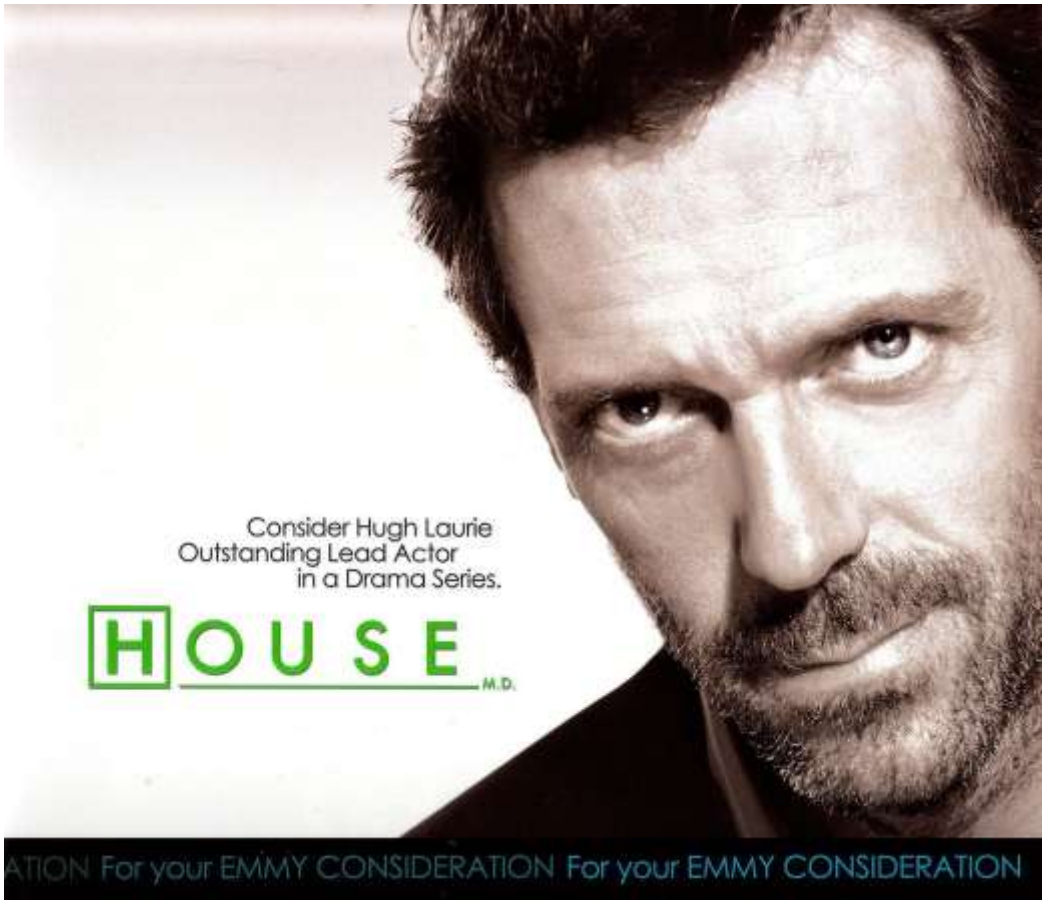
Session Code: 9001

ASUG Real Experience. Real Advantage.

Agenda

- Introduction
- The Approach
- Process Flows
- Tools
- Case Studies
- Conclusion

Introduction



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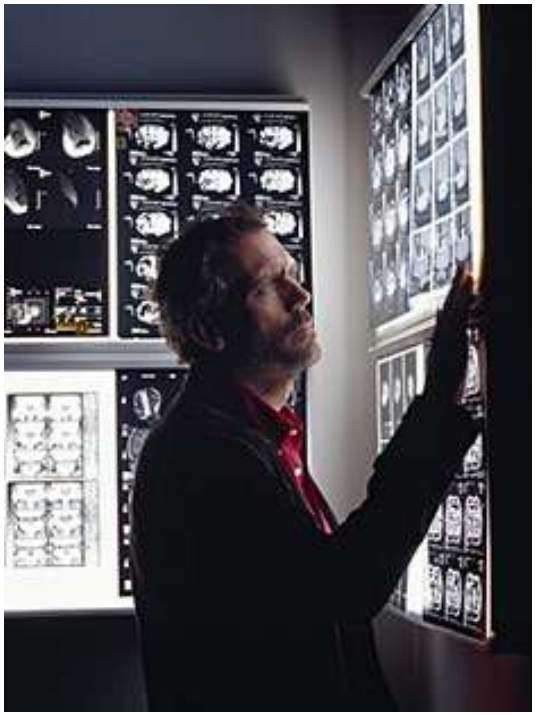
Golden Rules to Troubleshooting

- Rule #1: Understand how the software works
  - Know how each process/server behaves
  - Understand the interaction between servers
  - This becomes your basis when all else fails

Golden Rules to Troubleshooting

- Rule #2: Let the evidence speak for itself
  - Don't discount any evidence
  - Zero in on in irregularities
  - Errors may be misleading at times but are still evidence



Golden Rules to Troubleshooting

- Rule #3: Check your emotions and pride at the door
  - Resist the pressures of deadlines or demands
  - Attack each new problem with a blank resume

Golden Rules to Troubleshooting

- Rule #4: All tools are not equal
  - Don't attack a problem with every tool at hand
  - Certain tools are better at diagnosing parts of the process
  - Too much evidence is sometimes worse than not enough

Golden Rules to Troubleshooting

- Rule #5: Many heads are better than one
  - Share the challenge with colleagues
  - This includes SAP Technical Support
  - Diversify your efforts
    - Avoid many people working on the same solution

Golden Rules to Troubleshooting

- Rule #6: Trust but verify
  - Validate responses received when investigating
  - People's memory tend to dim over time

Golden Rules to Troubleshooting

- Rule #7: Celebrate Differences
  - Hunt for cases that work vs. those that do not
  - Isolate the differences – therein lies the solution

Golden Rules to Troubleshooting

- Rule #8:
  NEVER underestimate the power
  of regressive errors
  - Upgrades can introduce new problems
  - Processes that previously worked may no longer
  - This advice applies to all software modifications
    - Migrations
    - Service Pack Upgrades
    - Fix Packs
    - Customer fixes

A Troubleshooting Methodology

- Isolate the problem to the process that seems broken
- Gather evidence for the process
- Use the quickest / easiest collection methods first
- Zero in on portions that seems to work in some instances
- Involve others early on in the investigation
- Embrace errors that are uncovered

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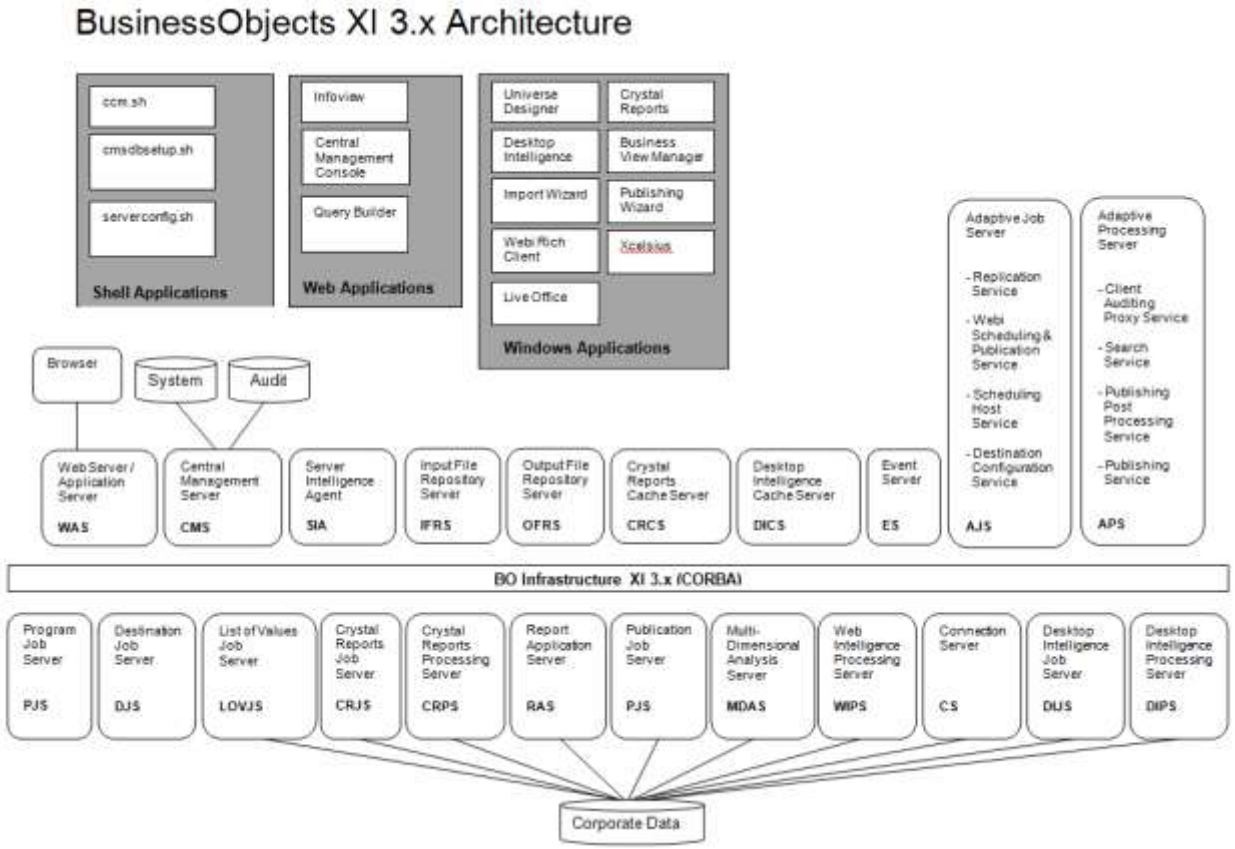
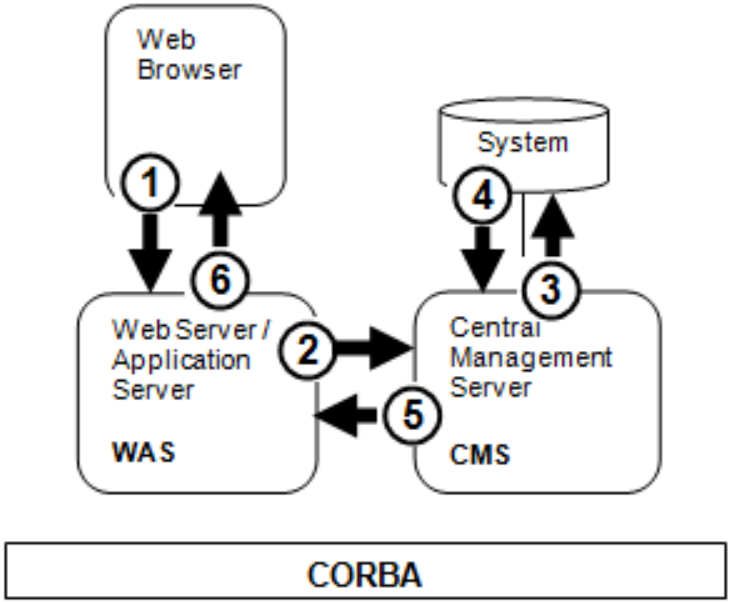
Understanding the Basics

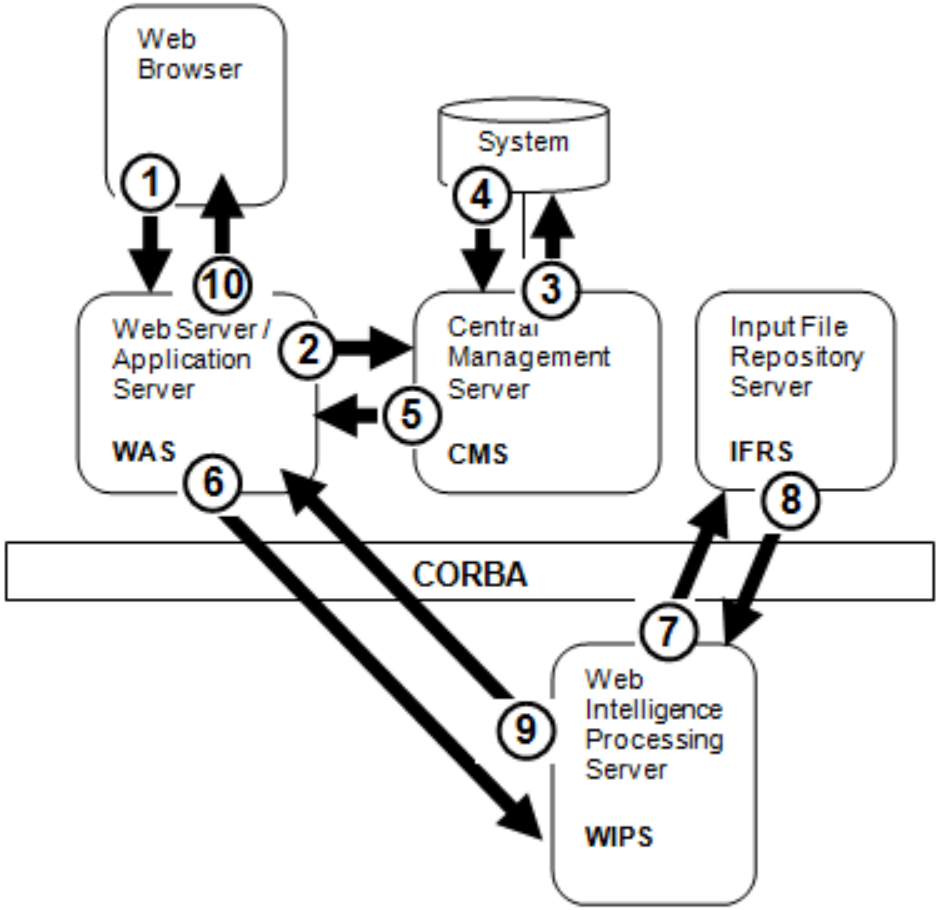
- Process flows force understanding of how the software works
- Knowing the flows helps the analyst better isolate the issue



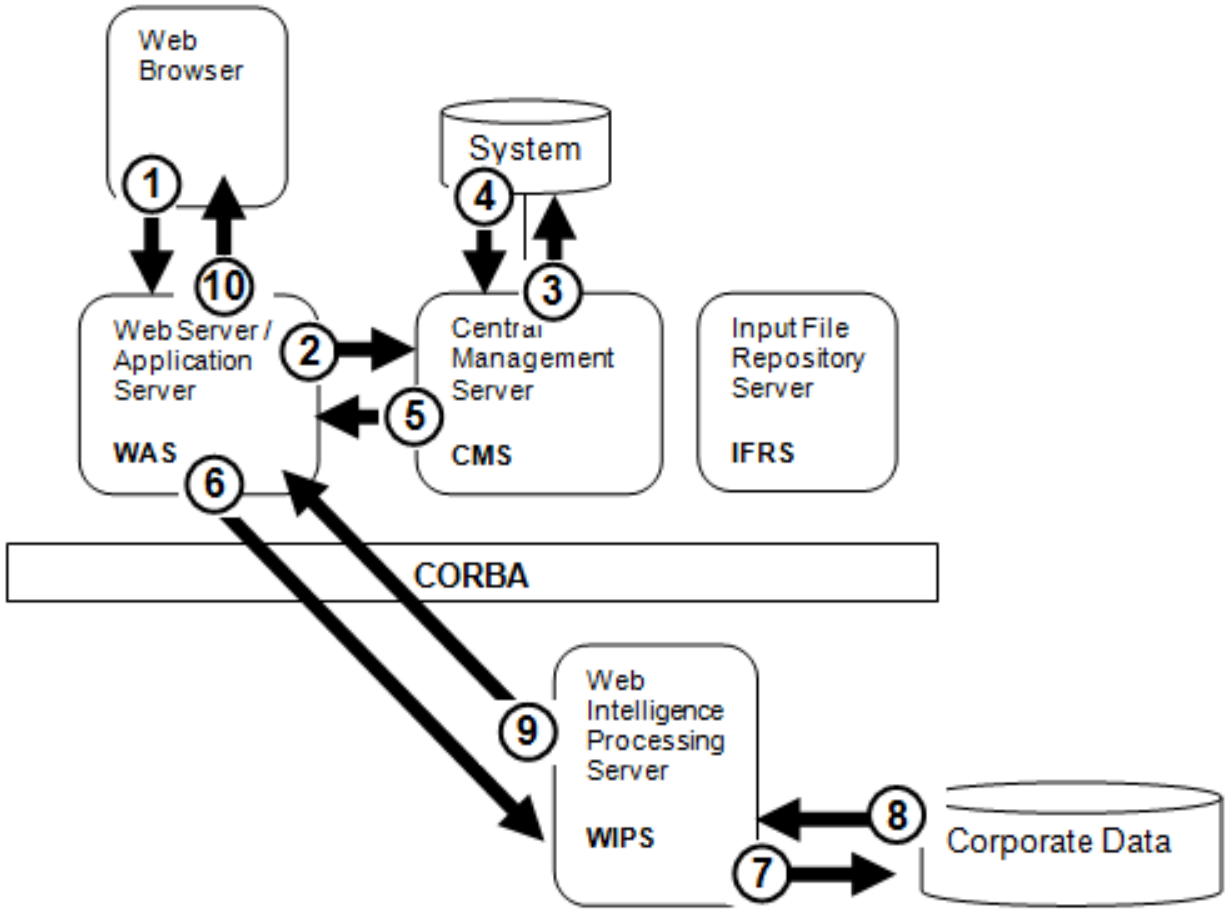
Process Flow: Logging in from Infoview



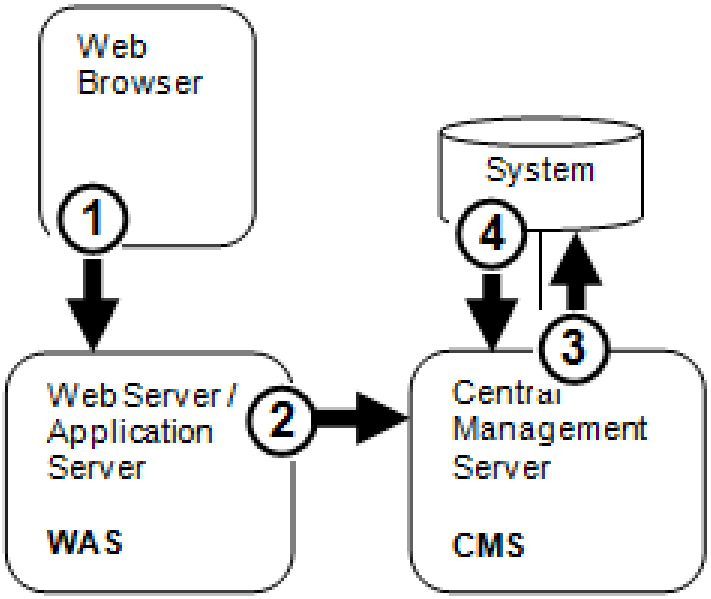
Process Flow: Viewing a Webi Report



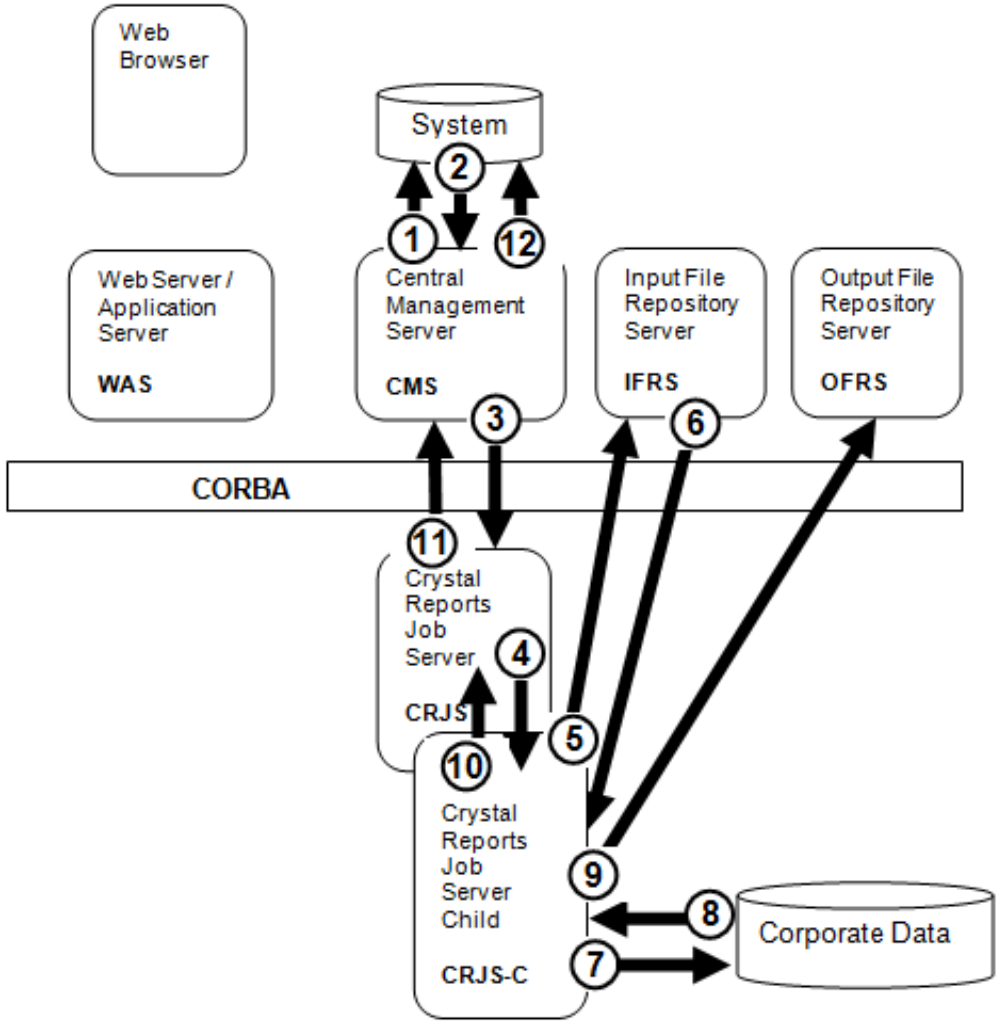
Process Flow: Refreshing a Webi Report



Process Flow: Scheduling a Report from InfoView



Process Flow: Run a Scheduled Crystal Report



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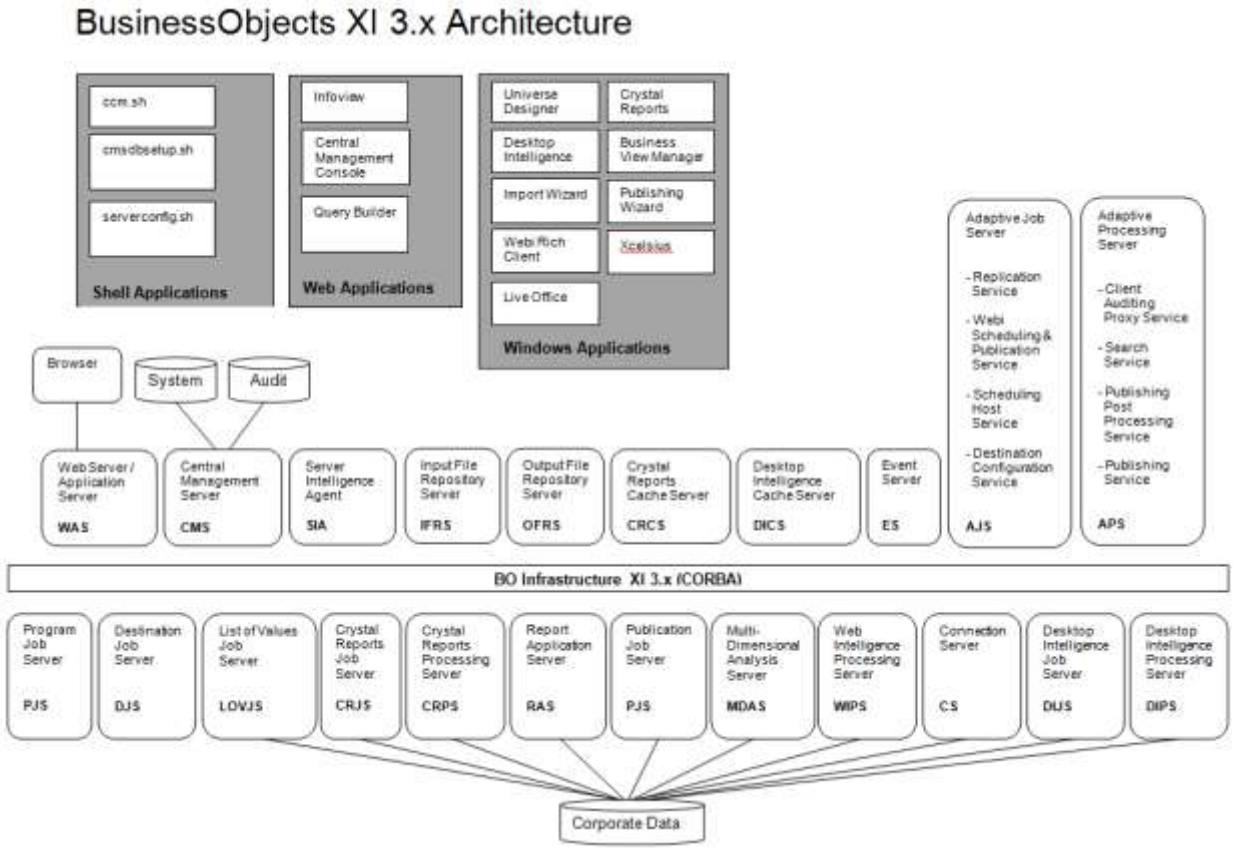
Tool Availability

- Powerful tools are available for troubleshooting
  - Consoles
  - Applications
  - Logs
  - Traces
  - Commands
- Most of these are readily available at no cost to you
- The trick is knowing *which* tool to use *when*

Tool Selection

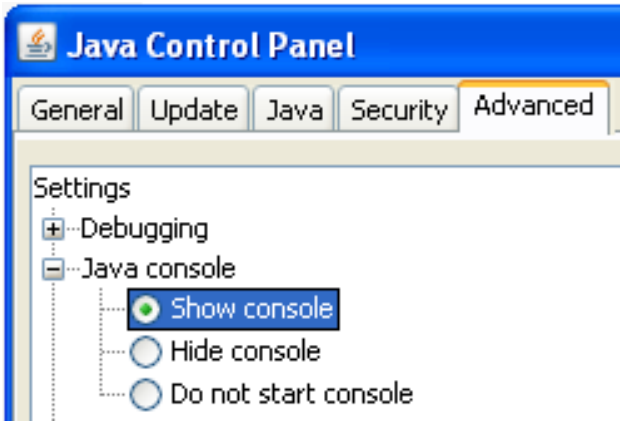
- Tools will be presented based on the portions of BusinessObjects they help diagnose



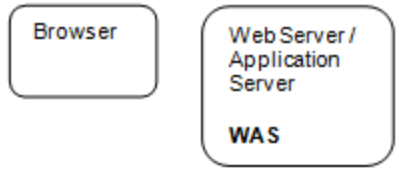
Browser Tools

Browser

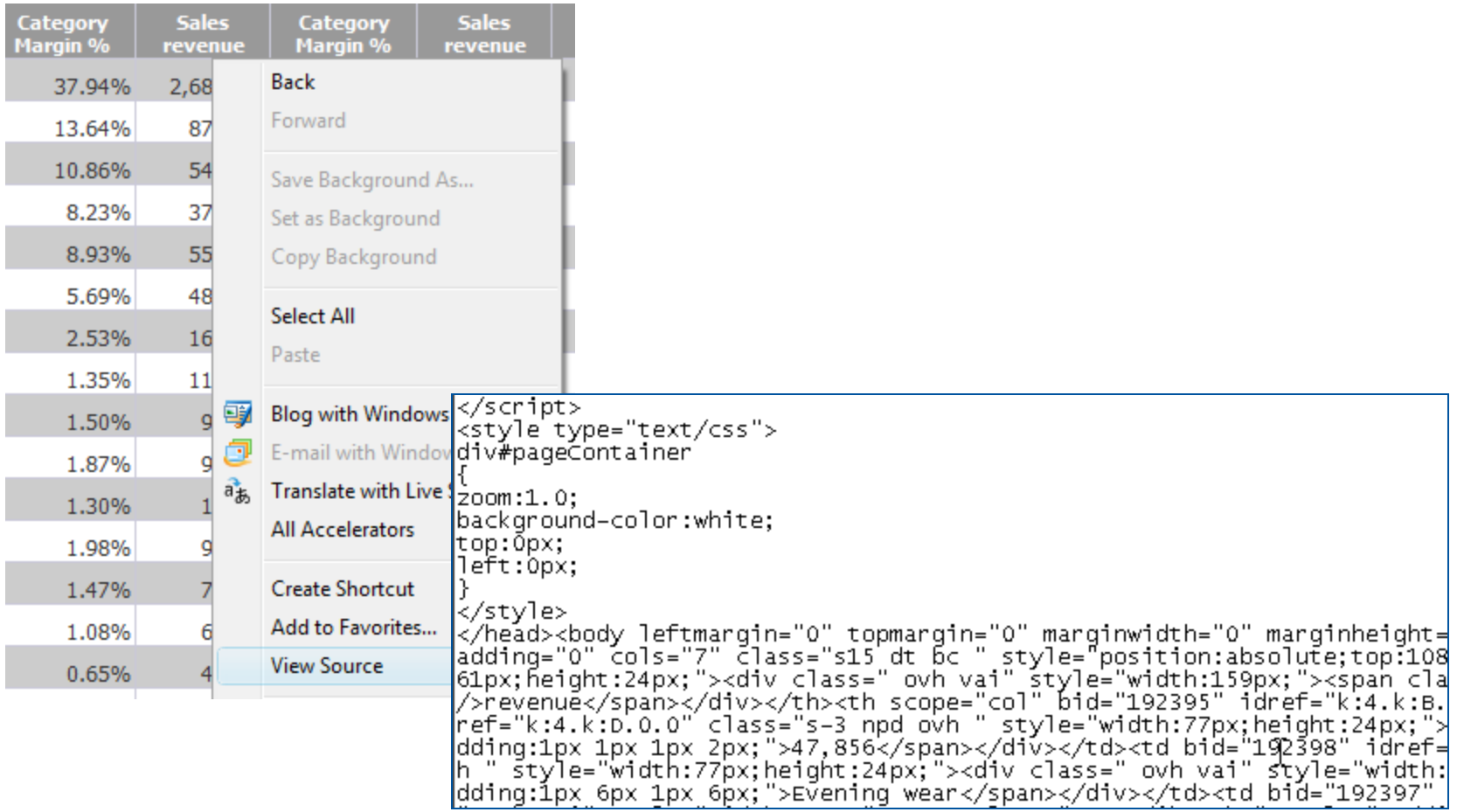
- Use the Java Console to troubleshoot Java client issues
  - Java Report Panel or Rich Client (Webi)
  - Java Viewer (Crystal)



Browser Tools



- Examine the source code for HTML-related issues



Application Server Tools

Web Server / Application Server

WAS

- Look at catalina.out for processing information

```
2011-08-15 10:45:46,150 [main] ERROR com.businessobjects.qaaws.internal.ServiceProvider ()
8445 - initInstance()
com.crystaldecisions.sdk.exception.SDKException$OCAFramework: Server mcksample not found or
server may be down
cause:com.crystaldecisions.enterprise.ocaframework.OCAFrameworkException$NotFoundInDirectory
: Server mcksample not found or server may be down
cause:java.net.ConnectException: Connection refused
detail:Server mcksample not found or server may be down
The exception originally thrown was java.net.ConnectException: Connection refused
detail:Server mcksample not found or server may be down
The exception originally thrown was
com.crystaldecisions.enterprise.ocaframework.OCAFrameworkException$NotFoundInDirectory:
Server mcksample not found or server may be down
cause:java.net.ConnectException: Connection refused
detail:Server mcksample not found or server may be down
The exception originally thrown was java.net.ConnectException: Connection refused and had
the following message: Server mcksample not found or server may be down
The exception originally thrown was java.net.ConnectException: Connection refused
      at com.crystaldecisions.sdk.exception.SDKException.map(Unknown Source)
      at com.crystaldecisions.sdk.occa.security.internal.t.a(Unknown Source)
      at com.crystaldecisions.sdk.occa.security.internal.t.a(Unknown Source)
```

Application Server Tools

Web Server / Application Server

WAS

- Use the Tomcat Admin Panel to monitor memory, status

Apache Tomcat/5.0.27

Administration

Status
Tomcat Administration
Tomcat Manager

Server Status

JVM

Free memory: 221.32 MB Total memory: 254.12 MB Max memory: 1016.12 MB

http-8080

Max threads: 150 Min spare threads: 25 Max spare threads: 75 Current thread count: 25 Current thread busy: 3
Max processing time: 191 ms Processing time: 1 s Request count: 171 Error count: 4 Bytes received: 0.00 MB Bytes sent: 0.90 MB

Application Server Tools

Web Server / Application Server

WAS

- Use the Tomcat Manager to monitor sessions, web apps

Apache Tomcat/5.0.27

Administration
Status
Tomcat Administration
Tomcat Manager

HTML Manager Help	Manager Help	Server Status

Applications				
Path	**Display Name**	**Running**	**Sessions**	**Commands**
/	Welcome to Tomcat	true	0	Start Stop Reload Undeploy
/AnalysisHelp	OLAP Intelligence Help	true	0	Start Stop Reload Undeploy
/BusinessProcessBI	dsws	true	0	Start Stop Reload Undeploy
/admin	Tomcat Administration Application	true	0	Start Stop Reload Undeploy

Application Server Tools

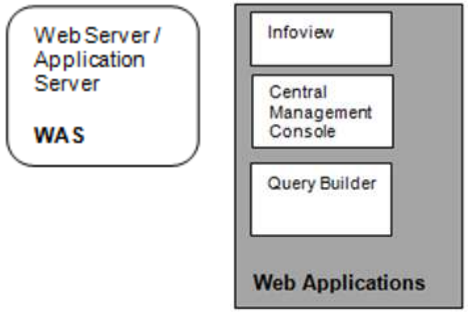
Web Server / Application Server

WAS

- Tomcat Manager must be initialized before using
  - Edit <BO home directory>/tomcat/conf/tomcat-users.xml
  - Add user as a manager
  - Restart Tomcat
  - Use http://<server>:8080/manager

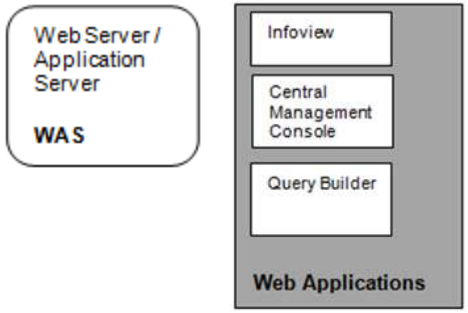
```
<?xml version="1.0" encoding="utf-8" ?>
- <tomcat-users>
  <role rolename="tomcat" />
  <role rolename="role1" />
  <role rolename="manager" />
  <user username="tomcat" password="tomcat" roles="manager,tomcat" />
  <user username="both" password="tomcat" roles="tomcat,role1" />
  <user username="role1" password="tomcat" roles="role1" />
  </tomcat-users>
```

Application Server Tools



- Set up log4j application logs for particular web applications
  - Applications are installed under the following directory:
    - <BO home directory>/tomcat/webapps
  - Following applications are most commonly logged:
    - AnalyticalReporting
    - dswsbobje (Query as a Web Service)
    - PerformanceManagement

Application Server Tools



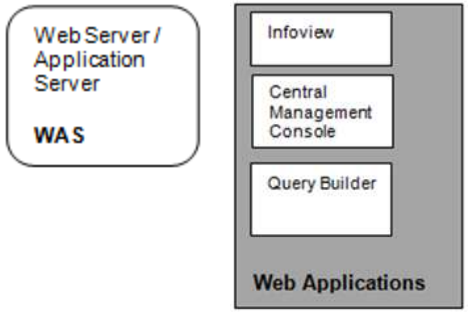
- Activate logging for the application
  - Move to application configuration directory

    `/webapps/<application>/WEB-INF/classes`
  - Activate logging in webi.properties

    `TRACE=1`
  - Uncomment the following lines in log4j.properties

```
log4j.logger.com.businessobjects.rebean=DEBUG, BO1
log4j.logger.com.businessobjects.wp=DEBUG, BO1
log4j.logger.com.businessobjects.cdzlet=DEBUG, BO1
log4j.logger.com.businessobjects.dhtml=DEBUG, BO1
```

Application Server Tools



- Activate logging for the application, cont'd
  - Set the logging directory and file name in log4j.properties

```
# Rolling File Appender
log4j.appender.BO1=org.apache.log4j.RollingFileAppender
log4j.appender.BO1.File=${BO Home}/logging/${Log Name}.log
log4j.appender.BO1.Append=false
log4j.appender.BO1.MaxBackupIndex=5
log4j.appender.BO1.MaxFileSize=10MB
```

BO Server Tools

- Never underestimate the power of the regressive error
- Check Fixed Issues list of latest service pack / fix pack

ADAPT01425727 XI 3.1 FixPack 3.4

Description:
Break headers should repeat on every page even if there is more than one break.

New Behavior:
This problem is resolved.

Modified Components:

AIX	libreport.so
HP-RISC	libreport.sl
Linux	libreport.so
Solaris	libreport.so
Windows	report.dll

Known Limitations:
None

BO Server Tools

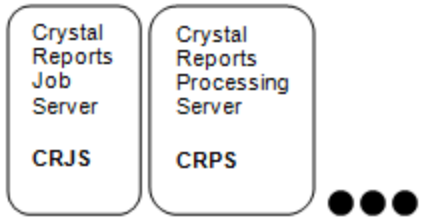
Central Management Server

CMS

- Use list of customer fixes (LAFixes) to find stable versions

LAFix ID	Problem Report ID	Synopsis	Applies on top of	Operating System	Included in
XI3.1 LAFix0.2.29	ADAPT01232664	WebI load balancer does not check if WebI memory usage metrics are exceeded	XI 3.1 FP1.2	Linux, Windows	XI 3.1 FP1.9, XI 3.1 SP2 FP2.1, XI 3.1 SP3

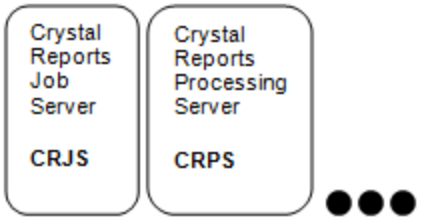
BO Server Tools



- Temporarily set up .INI traces for specific servers
  - Create specific .INI files per server to be traced

Server	Windows	UNIX	Linux
CMS	CMS_Trace.ini	boe_cmsd_trace.ini	
Connection Server	ConnectionServer_trace.ini	ConnectionServer_trace.ini	
Event Server	EventServer_trace.ini	boe_eventsd_trace.ini	
Job Server Child	JobServerChild_trace.ini	boe_jobcd_trace.ini	
Job Server	JobServer_trace.ini	boe_jobsd_trace.ini	
WI Report Server	WIReportServer_trace.ini	WIReportServer_trace.ini	WIReportServer.bin_trace.ini
CR Cache Server	crcache_trace.ini	boe_crcached.bin_trace.ini	
CR Processing Server	crproc_trace.ini	boe_crprocd.bin_trace.ini	
CR RAS Server	crystalras_trace.ini	boe_crystalrasd.bin_trace.ini	
Designer	designer_trace.ini		
Deski Cache Server	fccache_trace.ini	boe_fccached_trace.ini	
Deski Processing Server	fcproc_trace.ini	boe_fcprocd_trace.ini	
File Server	fileserver_trace.ini	boe_filesd_trace.ini	

BO Server Tools



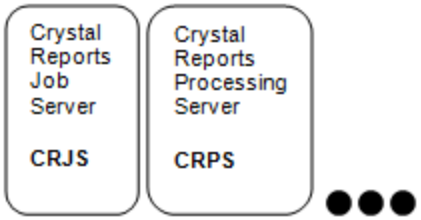
- Add tracing instructions
  - Place INI files in proper directory
    - Windows:

      `<BO Install>\BusinessObjects Enterprise12.0\win32_x86`
    - UNIX/Linux:

      `<BO Install>/bobje`
  - Add the following lines to each INI file

```
active = true;
importance = xs;
alert = true;
severity = 'E';
keep = true;
size = 100 * 1000;
```

BO Server Tools



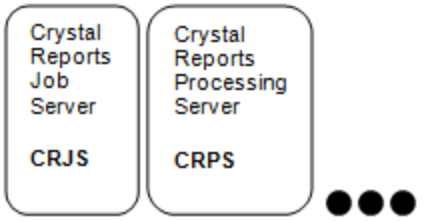
- File will be created in default logging directory
- This can be changed by adding one more line
  - Windows:

    ```
    log_dir="C:\Temp"
    ```
  - UNIX/Linux:

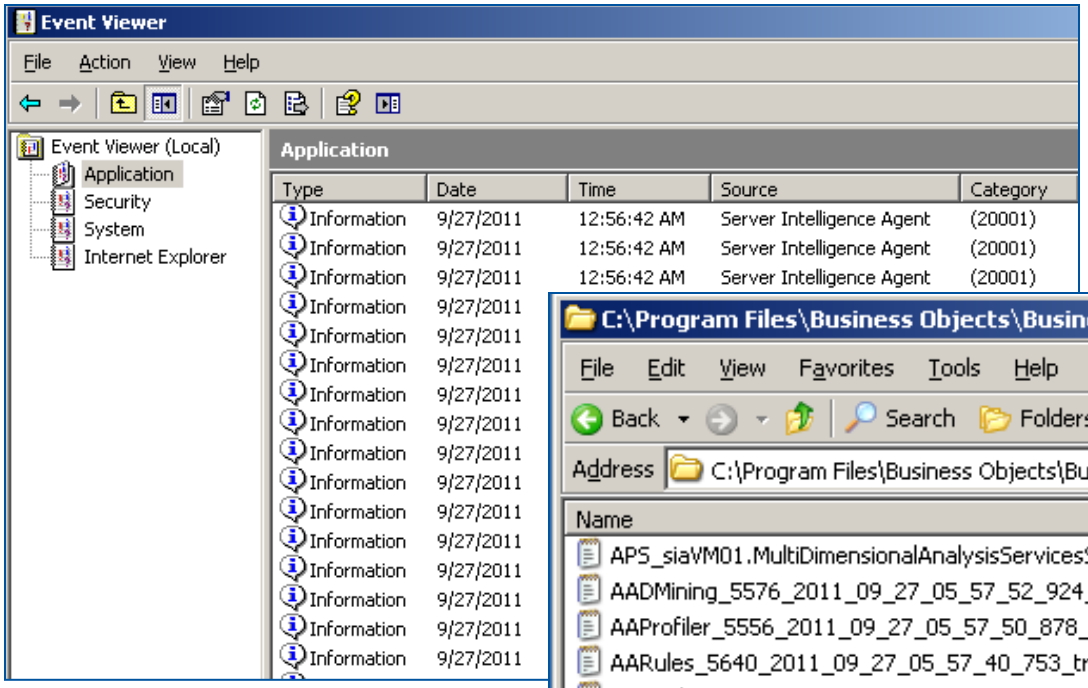
    ```
    log_dir="/var/logs"
    ```
- Stop server logging by setting first line to false
  - Windows and UNIX

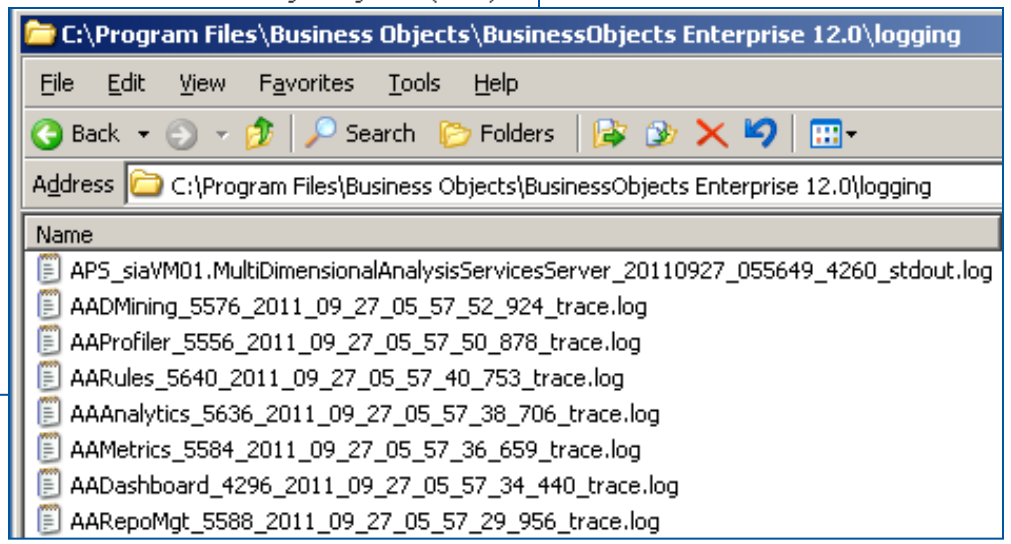
    ```
    active = false;
    ```

BO Server Tools

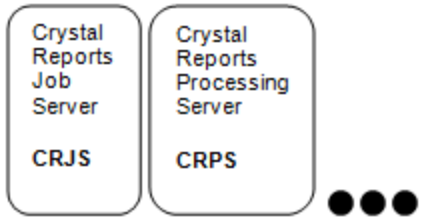


- Examine server assert logs
  - Created as part of normal processing
  - In Windows, examine the Event Viewer and logging directory





BO Server Tools



- Examine server assert logs
  - In UNIX / Linux, locate the logging directory

    `<BO Install>/bobje/logging`

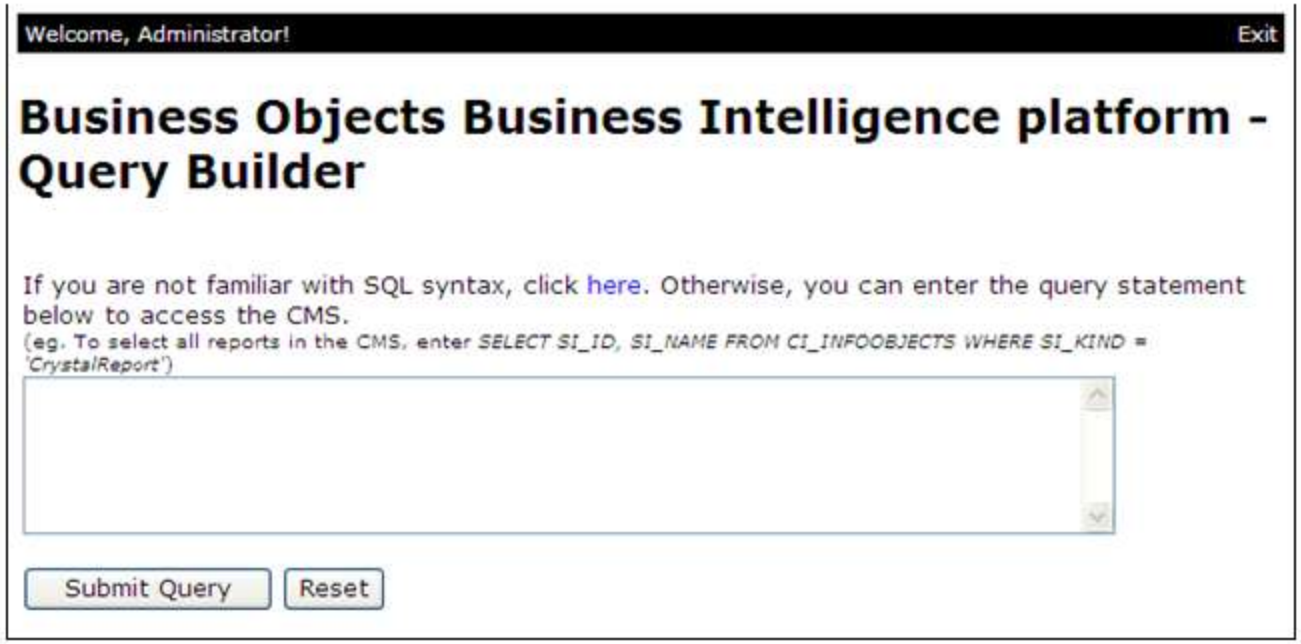
```
-rw-rw-r--  1 boadmin boadmin      0 Sep 25 19:05 wca_20110926_010520.log
-rw-rw-r--  1 boadmin boadmin      0 Sep 25 19:05 SearchServer_20110925_190518.log
-rwxrwxr-x  1 boadmin boadmin   2030 Sep 25 19:05 ccm_20110925_1316999065152.log
-rwxr-xr-x  1 boadmin boadmin    227 Sep 25 19:04 tomcatstartup.log
-rwxr-xr-x  1 boadmin boadmin    227 Sep 15 10:51 tomcatshutdown.log
-rwxrwxr-x  1 boadmin boadmin    191 Sep 15 10:51 ConnectionServer_20110915_121126_6211.log
-rwxrwxr-x  1 boadmin boadmin   3351 Sep 15 10:51 ccm_20110915_1316105486906.log
-rwxrwxr-x  1 boadmin boadmin    447 Sep 15 06:38 wca_20110915_121150_5654.log
-rw-rw-r--  1 boadmin boadmin      0 Sep 15 06:11 wca_20110915_121149.log
-rw-rw-r--  1 boadmin boadmin      0 Sep 15 06:11 SearchServer_20110915_061145.log
-rwxrwxr-x  1 boadmin boadmin   2030 Sep 15 06:11 ccm_20110915_1316088651146.log
```

CMC Tools

Central Management Server

CMS

- Use Query Builder to examine current system state



CMC Tools

Central Management Server

CMS

- Query Builder translates SQL-like language to SDK-based queries
- Information is locked within binary columns within the system database
- Queries can be written against the following pseudo-tables:
  - ci_infoobjects (reports, report folders)
  - ci_systemobjects (users, groups, calendars, servers)
  - ci_appobjects (universes, connections, applications)

CMC Tools

Central Management Server

CMS

- Sample Query Builder queries
  - Find the number of Webi documents in the system

```
select count(si_id)
from ci_infoobjects
where si_kind = 'Webi'
```

  - Find the number of Webi instances created this month

```
select si_id, si_name, si_creation_time
from ci_infoobjects
where si_kind = 'Webi'
and si_instance = 1
and si_creation_time >= '2011-10-01 00:00:00.000'
```

  - Find the number of reports that use a particular universe

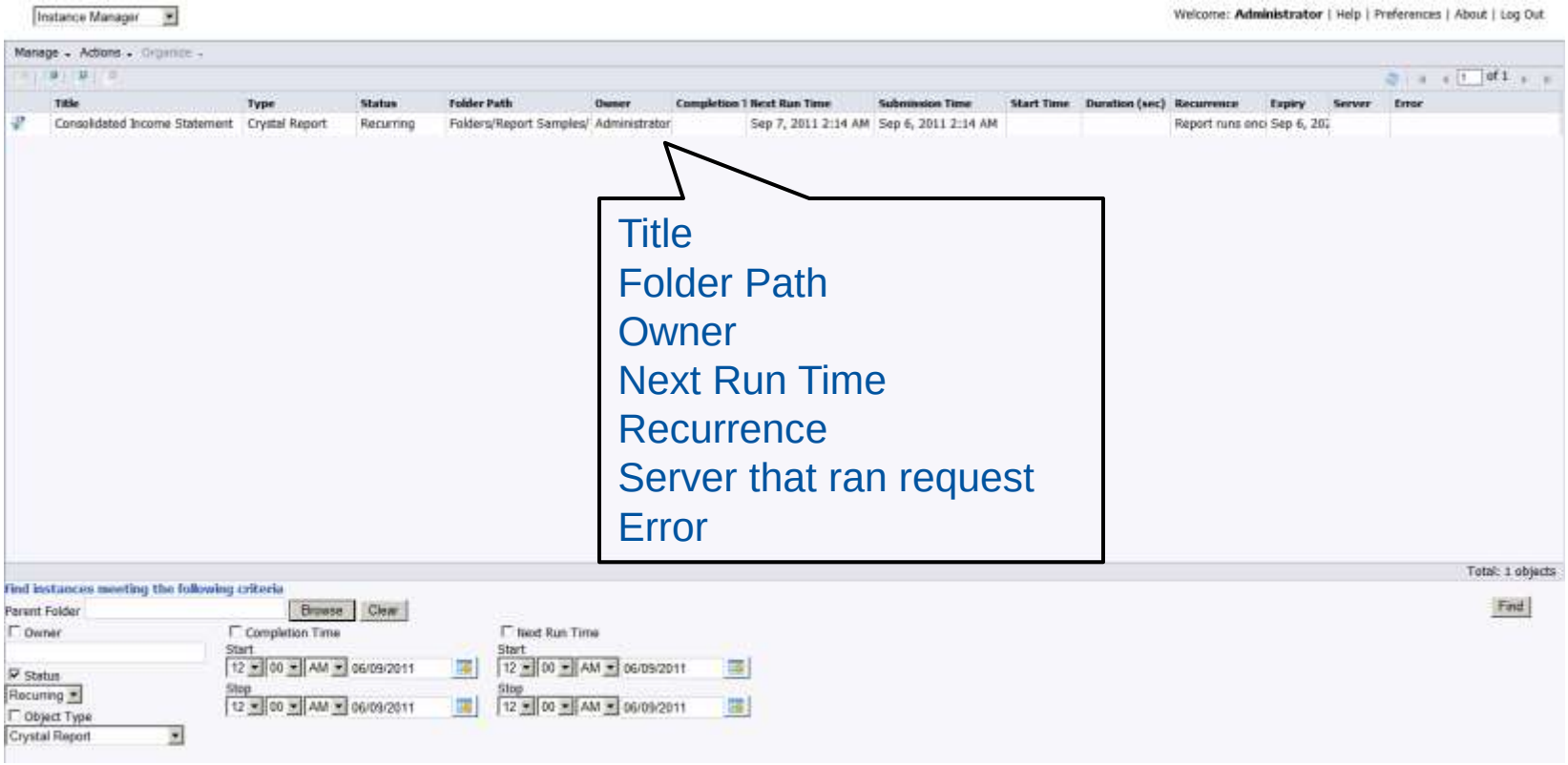
```
select count(si_id)
from ci_appobjects
where si_processinfo.si_fullclientdataproviders like
'%Island Resorts%'
```

CMC Tools

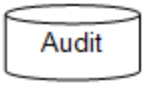
Central Management Server

CMS

- Use Instance Manager to examine scheduled jobs

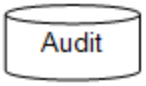


Audit Tools

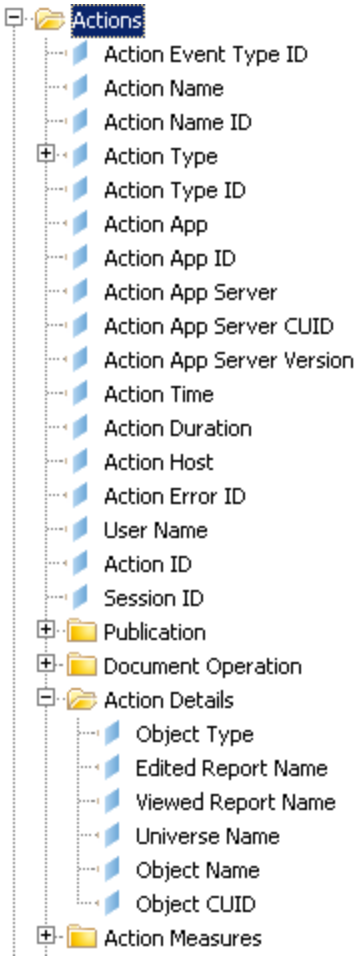


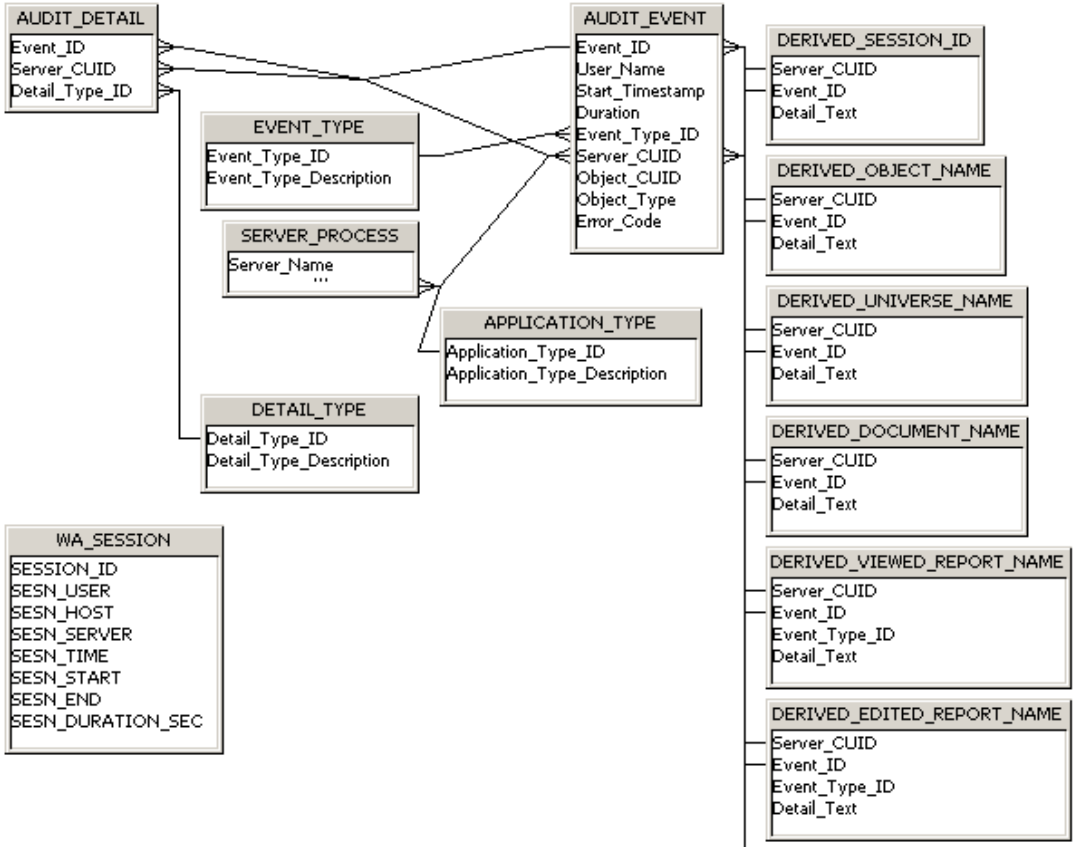
- Use the Activity universe to track past system usage
  - Don't rely on anecdotal evidence
  - Get the real facts on (1) ***what ran*** (2) ***how long*** (3) ***when***
  - Not a perfect tool
    - Problems committing audit logs to database
    - Table structures favor rapid insertion vs. reads

Audit Tools



- Activity Universe
  - Structure is a bit daunting at first …





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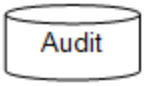


- Typical Audit queries based on Activity
  - Number of schedules run per month
  - Who last edited a universe or report
  - Reports graded by size, rows, duration
  - Most frequently accessed reports
  - Effectiveness of server group throttling (prioritization)

Database Tools

- Trace database connections through the driver
- Advantages:
  - See the SQL as received by the database
  - Prompts replaced by values
- Disadvantages
  - Much more useful for client-server applications
  - Server-based communication may be too busy
  - Other methods allow SQL tracing depending on database
- Several examples should illustrate how it's done

Database Tools

- Oracle
  - Tracing is set up through SQLNET.ORA:

SQLNET Parameter	Description
TRACE_DIRECTORY_CLIENT	Directory the trace files are created in
TRACE_LEVEL CLIENT	Level of trace desired: 0 - OFF, No trace 4 - USER, Includes user errors 6 - ADMIN, Includes adminstrative/system errors 16 - SUPPORT, Includes data packets
TRACE_FILENO_CLIENT	Number of client trace files to generate
TRACE_FILELEN_CLIENT	Size of each client trace file in KB
TRACE_TIMESTAMP_CLIENT	Include a timestamp for each event (to the millisecond)

  - Sample file (most detailed):

```
SQLNET.AUTHENTICATION_SERVICES= (NONE)
NAMES.DIRECTORY_PATH= (TNSNAMES)
TRACE_DIRECTORY_CLIENT= (C:\oracle\trace)
TRACE_LEVEL_CLIENT= (16)
```

Database Tools

- Teradata
  - Tracing is initialized using ODBC.INI

```
[Your DSN]
.
.
TraceAutoStop=0
DSNTraceEnable=YES
DSNTraceFilePath=/tmp/ODBC.Trace.log
DSNTraceFileMaxSize=1000000
DSNTraceOverwrite=NO
DSNTraceLineNumbers=YES
.
.
```

Database Tools

- BusinessObjects Methods
  - Dependant on database
  - END_SQL
    - Tags every SELECT created with comments and variables

```
END_SQL =
/* Universe Island Resorts, user @variable('BOUSER') */
```

    - Common variables allowed
      - BOUSER – the BusinessObjects user
      - DBUSER – the user submitting the database query
      - DOCNAME – name of the BusinessObjects document
      - DPNAME – data provider or query name
      - UNVNAME – universe name

Database Tools

- BusinessObjects Methods
  - Query Bands
    - Associates pairs of attributes and values with a query
    - Teradata only
    - Allows BusinessObjects data to be collected alongside database statistics
      - CPU seconds, spool space, …
    - Commonly added using BEGIN_SQL dynamic universe parameter

```
SET QUERY_BAND='Area=Finance;
Universe='@variable('UNVNAME')';'
FOR SESSION;
```

Operating System Resources

- An operating system has a finite set of resources
  - Memory
  - I/O
  - Network bandwidth
  - CPU
- Use OS commands to find how those resources are consumed

UNIX Tools - Network

- Use the **netstat** command to monitor network traffic:

```
netstat -i -I <network> <sample interval>
Example: netstat -i -I en0 5
```

- Look for collisions > 10% output packets

Name	Mtu	Network	Address	Ipkts	Ierrs	Opkts	Oerrs	Coll
en0	1500	<Link>		96	0	67	0	0
en0	1500	192.100.61	nullarbor	96	0	67	0	0

AIX

UNIX Tools - Network

- **netstat** can also be used to find "busy" ports
- Works in Windows without the grep filter

```
netstat -a | grep <port in question>
Example: netstat -a |grep 6401
```

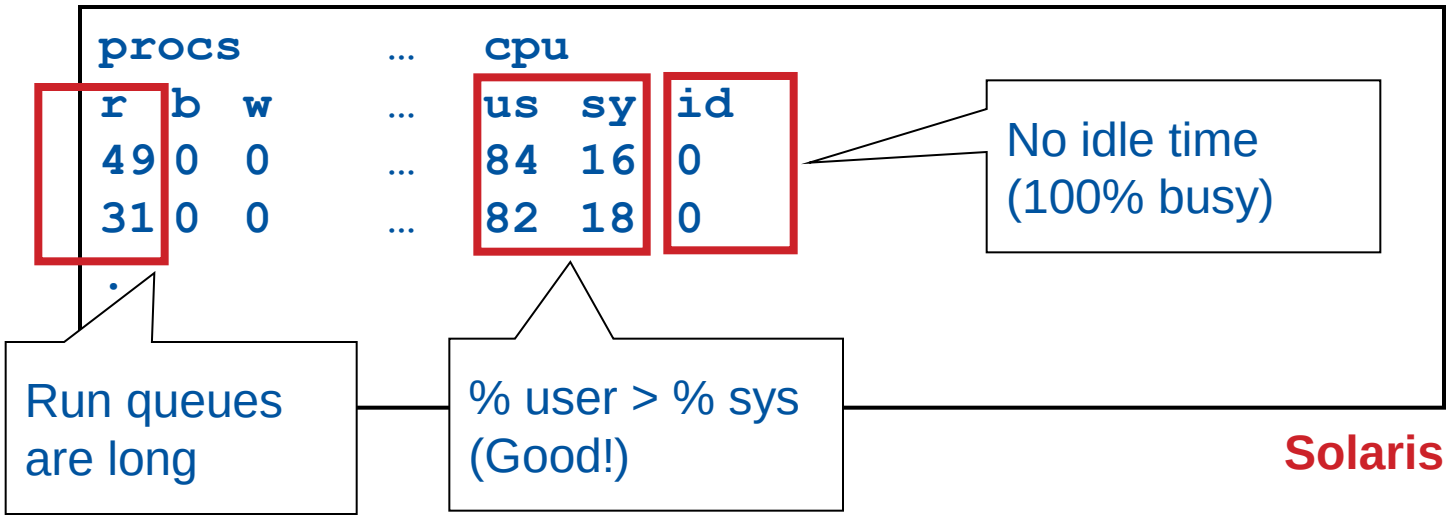
UNIX Tools - Network

- Network: Use **traceroute** to document routes and latencies
  - Starting point is server on Line 1
  - Next server is sent 3 packets. Times recorded per packet
  - Each line between start and destination is a "hop"
  - Look for (1) path taken and (2) longs hops
  - Modified Windows command: tracert

```
traceroute to library.airnews.net (206.66.12.202), 30 hops max, 40 byte packets
 1  rbrt3 (208.225.64.50)  4.867 ms  4.893 ms  3.449 ms
 2  519.Hssi2-0-0.GW1.EWR1.ALTER.NET (157.130.0.17)  6.918 ms  8.721 ms  16.476 ms
 3  113.ATM3-0.XR2.EWR1.ALTER.NET (146.188.176.38)  6.323 ms  6.123 ms  7.011 ms
 4  192.ATM2-0.TR2.EWR1.ALTER.NET (146.188.176.82)  6.955 ms  15.400 ms  6.684 ms
 5  105.ATM6-0.TR2.DFW4.ALTER.NET (146.188.136.245)  49.105 ms  49.921 ms  47.371 ms
 6  298.ATM7-0.XR2.DFW4.ALTER.NET (146.188.240.77)  48.162 ms  48.052 ms  47.565 ms
 7  194.ATM9-0-0.GW1.DFW1.ALTER.NET (146.188.240.45)  47.886 ms  47.380 ms  50.690 ms
 8  iadfw3-gw.customer.ALTER.NET (137.39.138.74)  69.827 ms  68.112 ms  66.859 ms
 9  library.airnews.net (206.66.12.202)  174.853 ms  163.945 ms  147.501 ms
```

UNIX Tools - CPU

- Use the **vmstat** command to check system utilization
- Look for % CPU utilization, large run queues, %sys > %user
- Don't automatically assume that 100% utilization is bad!
  - 100% utilization over extended periods is bad
  - Aim for 65 - 70% utilization



UNIX Tools – I/O

- Use **iostat** to measure disk usage:

```
iostat <interval>
Example: iostat 5 (Sample every 5 seconds
```

- Look for utilization > 60 - 80%, response times > 35 msec, uneven I/O distribution

```
Device  r/s   w/s   kr/s     kw/s  wait  actv  svc_t  %w   %b
sd1     84.7  0.0   10615.1  0.0   0.0   1.6   19.0   1    100
sd4     27.6  6.8   220.5    51.6  0.0   2.9   83.0   0    98 s
sd6     0.0   0.0   0.0      0.0   0.0   0.0   0.0    0    0
```

Solaris

Average service time (response)

Utilization (% busy)

UNIX – Memory

- Use the **vmstat** command to monitor your memory usage:

```
vmstat <delay> <number of iterations>
Example: vmstat 5 10
```

- Look for high pageouts (po or so depending on version)

```
procs      memory
R  b  w     swpd    free   buff  cache   si   so
1  0  0    13344    1444   1308  19692    0   168
1  0  0    13856    1640   1308  18524   64   516
3  0  0    13856    1084   1308  18316   56    64
.
.
```

High paging (> 100/sec)

Linux

UNIX – Overall Monitoring

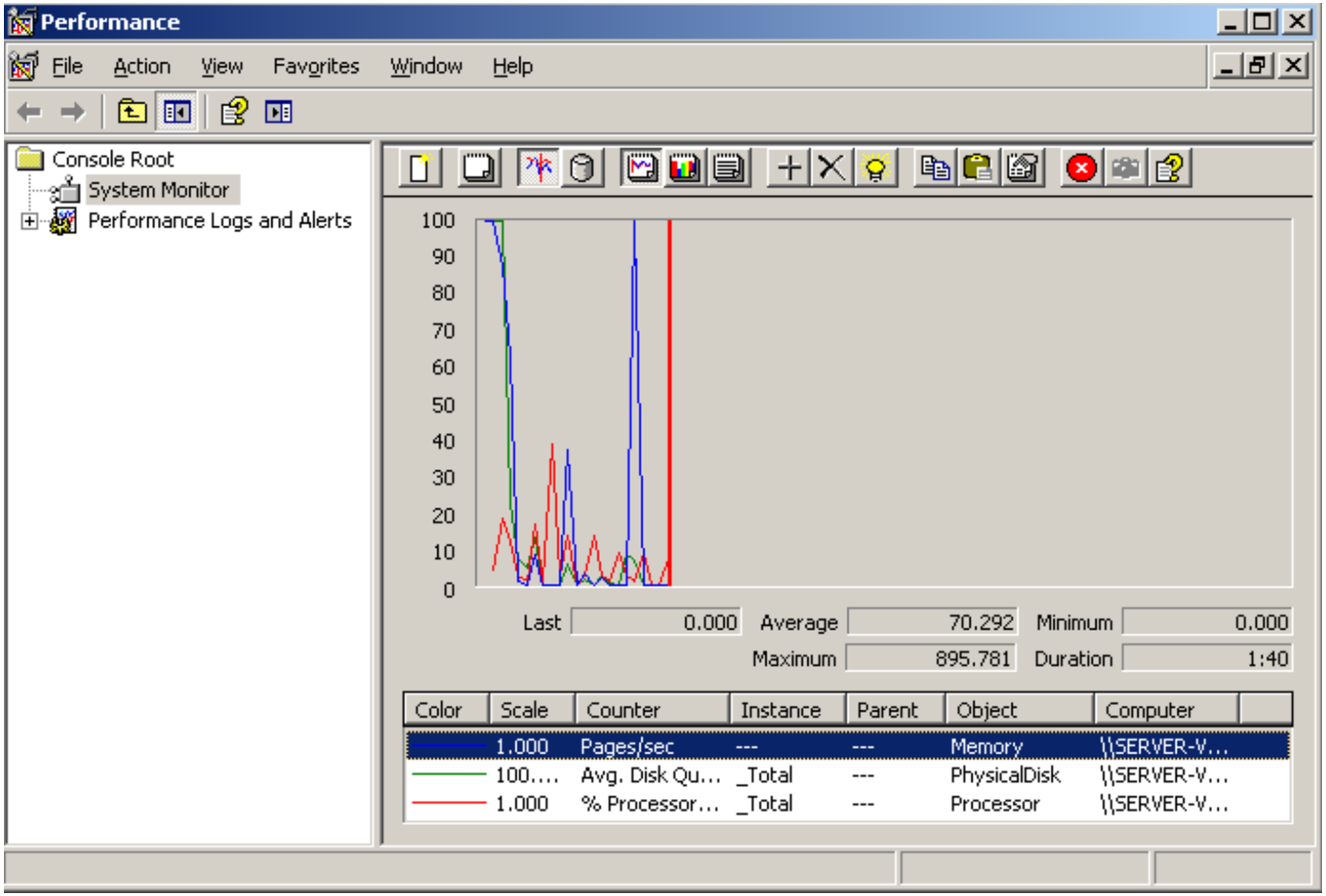
- Use **top** to monitor CPU, memory, and disk
  - Other versions: topas (AIX)

```
top - 19:14:15 up 6 min,  1 user,  load average: 1.60, 2.66, 1.26
Tasks: 112 total,   1 running, 111 sleeping,   0 stopped,   0 zombie
Cpu(s):  0.0% us,  0.0% sy,  0.0% ni, 100.0% id,  0.0% wa,  0.0% hi,  0.0% si
Mem:   2074860k total,   848780k used,  1226080k free,    32388k buffers
Swap:  2064376k total,        0k used,  2064376k free,   487352k cached

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+  COMMAND
 5276 root      16   0  6092 2696 1308 S  0.3  0.1   0:01.38 hald
 8143 root      16   0  8156 2300 1832 S  0.3  0.1   0:00.12 sshd
    1 root      16   0  2240  544  464 S  0.0  0.0   0:00.83 init
    2 root      RT   0     0    0    0 S  0.0  0.0   0:00.00 migration/0
    3 root      34  19     0    0    0 S  0.0  0.0   0:00.00 ksoftirqd/0
    4 root       5 -10     0    0    0 S  0.0  0.0   0:00.00 events/0
    5 root       5 -10     0    0    0 S  0.0  0.0   0:00.04 khelper
    6 root       6 -10     0    0    0 S  0.0  0.0   0:00.00 kthread
    7 root      15 -10     0    0    0 S  0.0  0.0   0:00.00 kacpid
   87 root       5 -10     0    0    0 S  0.0  0.0   0:00.12 kblockd/0
   88 root      15   0     0    0    0 S  0.0  0.0   0:00.00 khubd
  105 root      20   0     0    0    0 S  0.0  0.0   0:00.00 pdflush
  106 root      15   0     0    0    0 S  0.0  0.0   0:00.08 pdflush
  107 root      25   0     0    0    0 S  0.0  0.0   0:00.00 kswapd0
  108 root       6 -10     0    0    0 S  0.0  0.0   0:00.00 aio/0
  254 root      25   0     0    0    0 S  0.0  0.0   0:00.00 kseriod
  492 root      24   0     0    0    0 S  0.0  0.0   0:00.00 scsi_eh_0
```

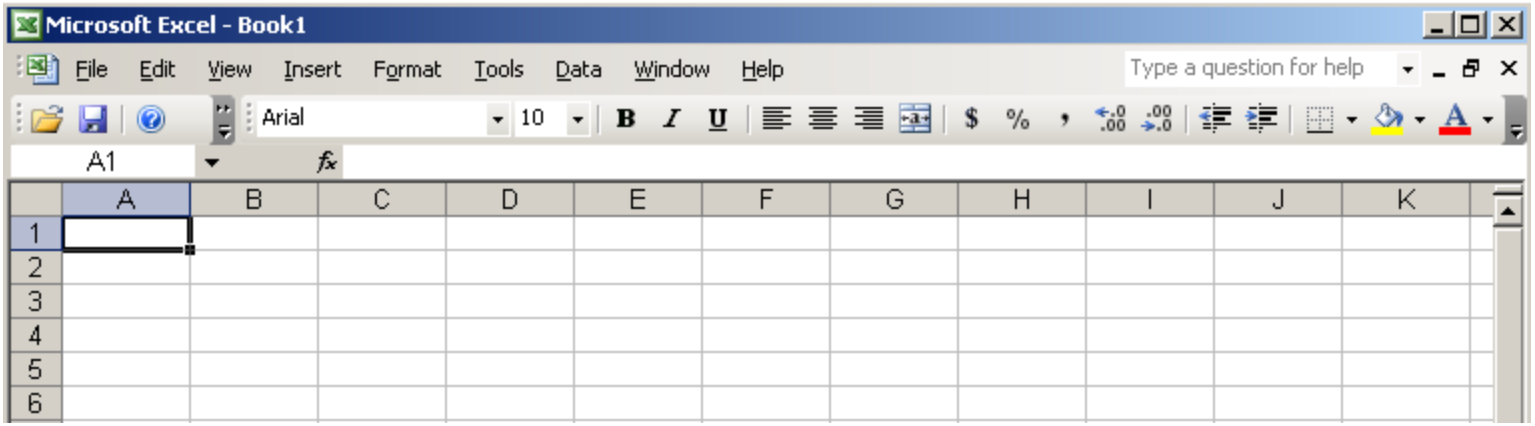
Windows – Overall Monitoring

- Use **perfmon** to monitor CPU, memory, disk, and network



Reporting Tools – MS Excel

- Use Excel to prototype complex report formulas
  - Great from a user's perspective
  - They know Excel and can model their logic quickly
  - You translate to the Crystal / Web Intelligence equivalent



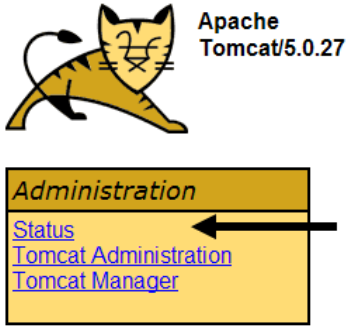
Agenda

- Introduction
- The Approach
- Process Flows
- Tools
- Case Studies
- Conclusion

Case Study 1 – Unstable Servers

- Scenario
  - System upgraded from XIR2 to 3.1 FixPack 6 (3.1.6)
  - Tomcat instances crashing every 1 – 2 weeks
  - Webi Processing Servers crashing regularly
  - Those servers restarted every 2 days
  - CMS taking up to 100% CPU over several days uptime
  - SAP Messages for all cases open for over 4 weeks

Case Study 1 – Unstable Servers



- Troubleshooting - 1
  - Multiple problems
  - Started by isolating Tomcat issues
  - Two Tomcat instances
  - Tomcat Manager showed heap memory rose to1024MB
  - Heap memory increased to **1536MB** for both instances
    - Advised by Tech Support to increase to 2048MB
    - This required special settings and was unnecessary

Case Study 1 – Unstable Servers

- Troubleshooting - 2
  - Webi Processing Servers still crashing
  - Combination of CMS and Webi Processing Servers taking 80 - 100% CPU
  - Added two more servers – Now four node cluster
  - Problems delayed but not resolved
  - Veered from our troubleshooting methodology
    - Volume on XIR2 cluster was HIGHER than XI 3.1
    - Errors did not point to a capacity problem

Case Study 1 – Unstable Servers

- Troubleshooting - 3
  - Finally focused on errors that were occurring
  - Studied resolved issues for FUTURE fix packs
  - Found similar stability errors fixed in 3.1.9

XI3.1 LAFix0.0.49
ADAPT01245312

Unable to refresh reports more than once, WebI hangs for up to 16 minutes utilizing a high amount of CPU & Memory which affects overall performance of the server.

Resolved in XI 3.1 Windows XI 3.1 FP1.9, XI 3.1 SP2 FP2.2

Case Study 1 – Unstable Servers

- Troubleshooting - 4
  - Found more errors resolved by 3.1.9
  - Not the exact error we experienced but close …

ADAPT01260624

When the Secure Socket Layer (SSL) protocol is enabled on the Server Intelligence Agent (SIA), the Crystal Management Server
(CMS) CPU usage will rise and remain at 100% CPU usage.

New Behavior:
This problem is resolved (3.1.9)

Case Study 1 – Unstable Servers

- Troubleshooting - 5
  - Used the Fixed Issues from fix packs to identify similar errors
  - Used Customer Fix List (LAFix) to identify stable version
  - Upgraded to 3.1.9
  - 95% of all problems disappeared

LAFix ID	Problem Report ID	Synopsis	Applies on top of	Operating System	Included in
XI3.1 LAFix0.2.29	ADAPT01232664	WebI load balancer does not check if WebI memory usage metrics are exceeded	XI 3.1 FP1.2	Linux, Windows	XI 3.1 FP1.9, XI 3.1 SP2 FP2.1, XI 3.1 SP3

Case Study 2 – Too Long To Save

- Scenario
  - Restricted to Webi documents
  - Creating and editing the document is fine …
  - … But saving the document takes too much time
  - Particular problem: Save window took too long to refresh
  - Employees using the Java Report Panel

Case Study 2 – Too Long To Save

- Troubleshooting - 1
  - Tried an alternative report editor (HTML Report Panel)
  - No problem quickly saving the Webi report
  - Seems that different logic is being used by both tools
  - But how to prove that point?

Case Study 2 – Too Long To Save

- Troubleshooting - 2
  - Solution – Trace the save process on the server
  - Which application is involved? Use the Java Console.
  - Saving involves the **AnalyticalReporting** web application
  - How to trace a web app? Activate log4j logging!
  - Ran two logs
  - Saved from Java Report Panel then from HTML Panel

Case Study 2 – Too Long To Save

- Troubleshooting - 3
  - The log4j log is not for cowardly souls …
  - Don't have to understand all of it
  - Focus on the actions when saving

```
2010/02/04 18:14:14.162|<<|||0|8080-Processor22| ||||||||||||||||[com.businessobjects.cdzlet.repoexplorer.CMSQuery] - CadenzaCalls.getFolderRoots
2010/02/04 18:14:14.162|<<|||0|8080-Processor22| ||||||||||||||||[com.businessobjects.cdzlet.repoexplorer.CMSQuery] - cdzSession=server-vm01:6400@4601JU9MtUSqO3d3T7mI4600JpKiG9dhiG1dh2nr
2010/02/04 18:14:14.162|<<|||0|8080-Processor22| ||||||||||||||||[com.businessobjects.cdzlet.repoexplorer.CMSQuery] - Generates roots
2010/02/04 18:14:14.381|<<|||0|8080-Processor22| ||||||||||||||||[com.businessobjects.cdzlet.repoexplorer.CMSQuery] - XML generated
2010/02/04 18:14:14.381|<<|||0|8080-Processor22| ||||||||||||||||[com.businessobjects.cdzlet.repoexplorer.CMSQuery] - <itemlist>
<item type="ROOT_FOLDER" id="">
<name></name>
<description></description>
<children>
<item type="FAVORITE_FOLDER" id="721">
<name></name>
<description></description>
<children/>
</item>
<item type="PUBLIC_FOLDER" id="23">
<name></name>
<description></description>
<children/>
</item>
</children>
</item>
</itemlist>
```

Case Study 2 – Too Long To Save

- Troubleshooting - 4
  - SELECT statements extracted from both logs:

HTML Report Editor

```
SELECT SI_ID, SI_NAME, SI_KIND, SI_DESCRIPTION
FROM CI_INFOOBJECTS
WHERE SI_PARENTID=721
AND SI_KIND NOT IN
('ObjectPackage',
 'Folder',
 'FavoritesFolder',
 'PersonalCategory',
'Category')
ORDER BY SI_KIND, SI_NAME ASC
```

SI_PARENTID is indexed, SI_PARENT_FOLDER is not

Java Report Panel

```
SELECT SI_ID,SI_NAME,SI_DESCRIPTION,SI_OWNER,SI_KIND,SI_FILES
FROM CI_INFOOBJECTS
WHERE SI_KIND='Webi'
AND SI_PARENT_FOLDER='Finance Reports'
AND SI_INSTANCE = 0
```

Case Study 2 – Too Long To Save

- Troubleshooting - 5
  - Solution: Customer fix (LA Fix) for the Java Report Panel !
  - Had to be fixed by SAP
  - SAP Message was **VERY** focused

Case Study 3 – CMS Unavailable

- Scenario
  - Installing BusinessObjects using an Oracle Repository
  - Linux platform
  - Installation fine until database credentials supplied
  - Installation continued passed this point but several errors resulted

```
Error: Unable to start CMS server.
Now enabling all servers...
Creating session manager...
Logging onto CMS...
err: Error: Couldnt logon to CMS
err: Error description: The system ddswmbox1 can be contacted, but there is no C
entral Management Server running at port 6400.

Creating session manager...
Logging onto CMS...
err: Error: Couldnt logon to CMS
err: Error description: The system ddswmbox1 can be contacted, but there is no C
entral Management Server running at port 6400.
```

Case Study 3 – CMS Unavailable

- Troubleshooting - 1
  - Verified that Oracle*Net client was installed
    - Could start a SQL*Plus session with the database
  - CMS tables were created
  - But … not all tables had all default rows
  - Also, rate at which tables were created was very slow

Case Study 3 – CMS Unavailable

- Troubleshooting - 2
  - Incomplete CMS system database was created, but why?
  - Oracle DBAs involved had no immediate resolution
  - Seemed as if Oracle allowed DDL statements but filtered the DML statements
  - INSERTs especially slow

Case Study 3 – CMS Unavailable

- Troubleshooting - 3
  - Solution: Firewall involved … around the database!
  - Oracle SQL*Net Inspection turned on
  - Turned Inspection off – installation completed

Case Study 4 – Report Formulas Changed

- Scenario
  - Formula on user's report stopped working
  - Occurred after BO upgrade (3.1.9 to 3.3.4)
  - Upgrade did not corrupt the report
  - All environments had been upgraded
    - No 3.1.9 environment to test against

Case Study 4 – Report Formulas Changed

- Troubleshooting - 1
  - Tried to troubleshoot formula
  - Somewhat complex for a weighted average:

```
Sum(
     [Regional Qty] In Body
                    Where([Quarter] InList (0;1)
                          And [Country] = "France")
     /
     Sum([Regional Qty] In Section
                        Where([Quarter] InList (0;1)
                              And [Country)] = "France")
         In ([Parent(Merged)];[Country]))
     *
     [Target Supply]
    )
```

Case Study 4 – Report Formulas Changed

- Troubleshooting - 2
  - Another way of restating the formula:

sum((Outlook per row / Outlook per Country) * Target Supply)

Outlook per row

```
Sum(
    [Regional Qty] In Body
                   Where([Quarter] InList (0;1)
                         And [Country] = "France")
    /
```

Outlook per country

```
    Sum([Regional Qty] In Section
                       Where([Quarter] InList (0;1)
                             And [Country)] = "France")
        In ([Parent(Merged)];[Country]))
    * [Target Supply]
)
```

Case Study 4 – Report Formulas Changed

- Troubleshooting - 3
  - The report author used Excel to explain how the formula should work:

Weighted Average

Parent	Country	City	Target Supply	Outlook	
A	France	Paris	3	700	2100
A	France	Cannes	4.5	300	1350
A	France	Bordeaux	7	450	3150
A	France	Nice	2.5	80	200
A	France	Gap	4	120	480
A	France	Troyes	5.5	250	1375
A	France	Valence	1	100	100
				2000	**8755**
				8755/2000 =	**4.4**

Case Study 4 – Report Formulas Changed

- Troubleshooting - 4
  - This explanation was great, but did not match the report's logic:

Report:

sum((Outlook per row / Outlook per Country) * Target Supply)

Spreadsheet:

sum(Target Supply * Outlook) / sum(Outlook)

Case Study 4 – Report Formulas Changed

- Troubleshooting - 5
  - The report formula was recoded to match the spreadsheet

```
=Sum([Target Supply] * [Regional Qty]
    Where ([Rolling Quarter] InList (0;1)
    And [Country] = "France"))
 /
 Sum([Regional Qty]
    Where ([Rolling Quarter] InList (0;1)
    And [Country] = "France"))
```

  - The result now matched the spreadsheet
  - Not sure whether the original formula should have worked correctly in the old software version.

Agenda

- Introduction
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Don’t like Methodologies?

Conclusion

- Learning ***how*** to troubleshoot is Job #1
- This presentation has shown you the basic steps
  - Isolate the problem
  - Gather evidence. Don't ignore anything
  - Use the right tool for the job
  - Pounce on differences
  - Let your findings speak for themselves

Questions?

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