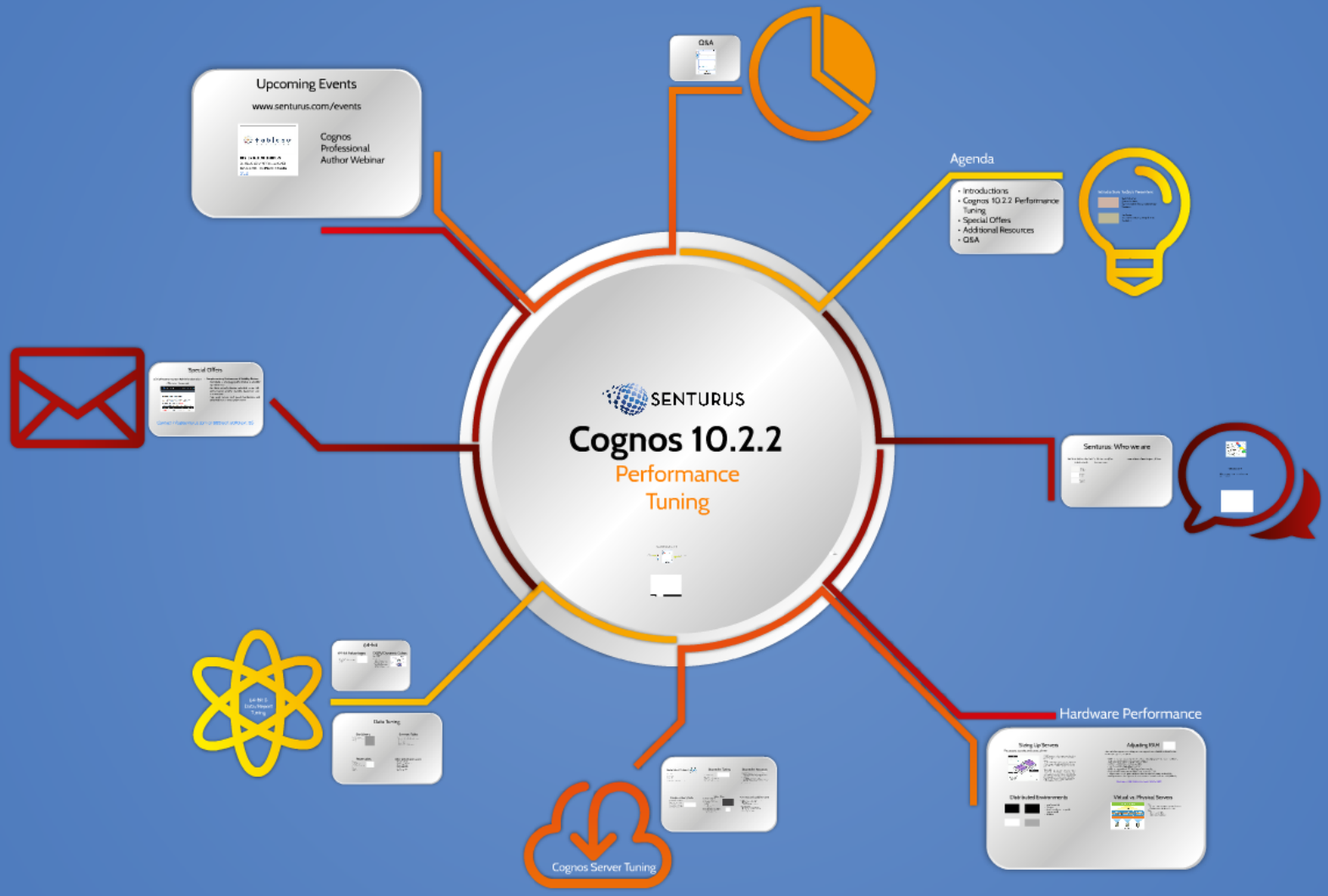
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• Cognos 10.2.2 Performance Tuning
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Senturus. Who we are
Hardware Performance
Cognos Server Tuning

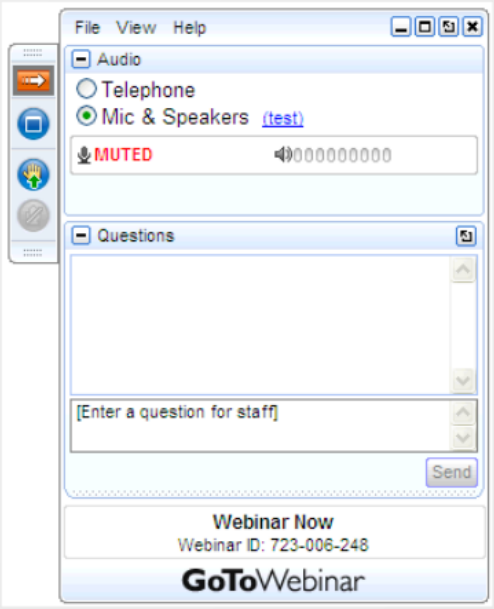
SENTURUS

Cognos 10.2.2

Performance Tuning

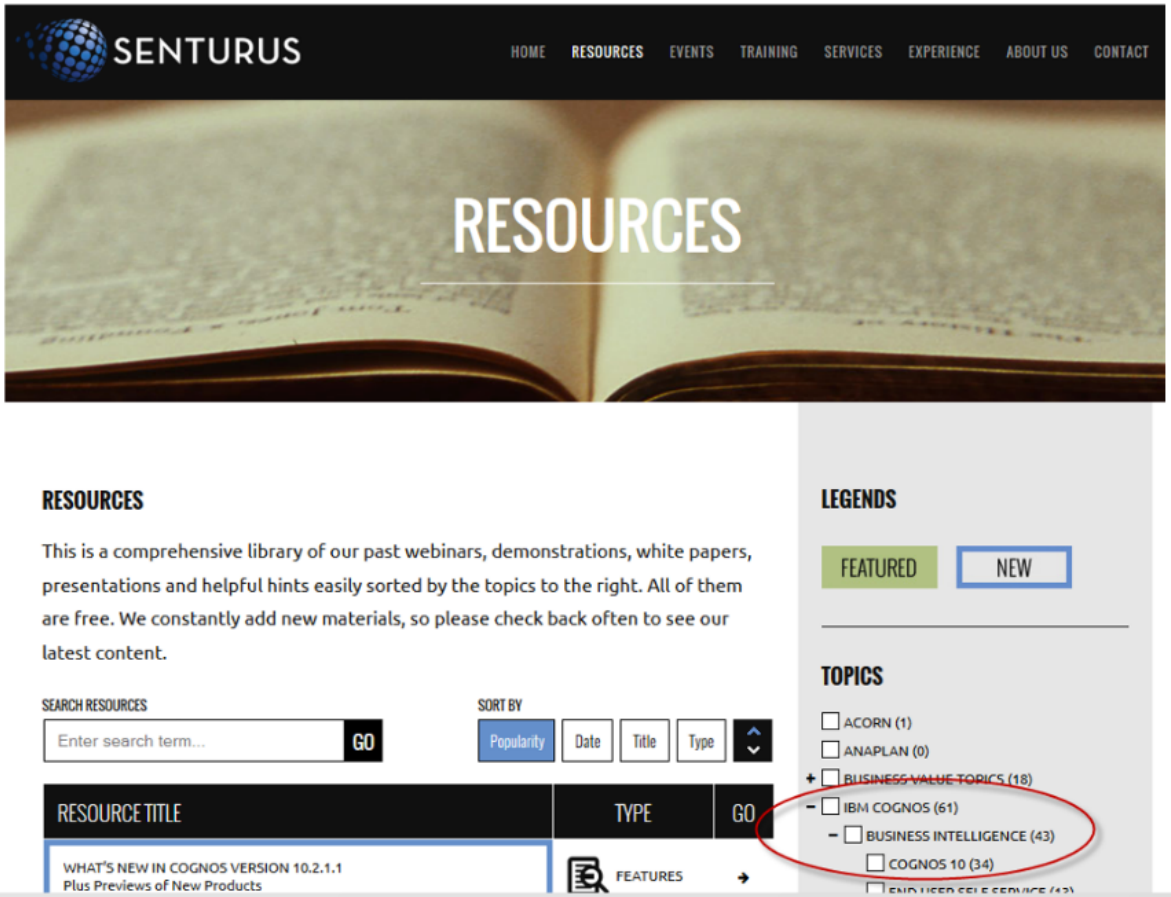
GotoWebinar Control Panel

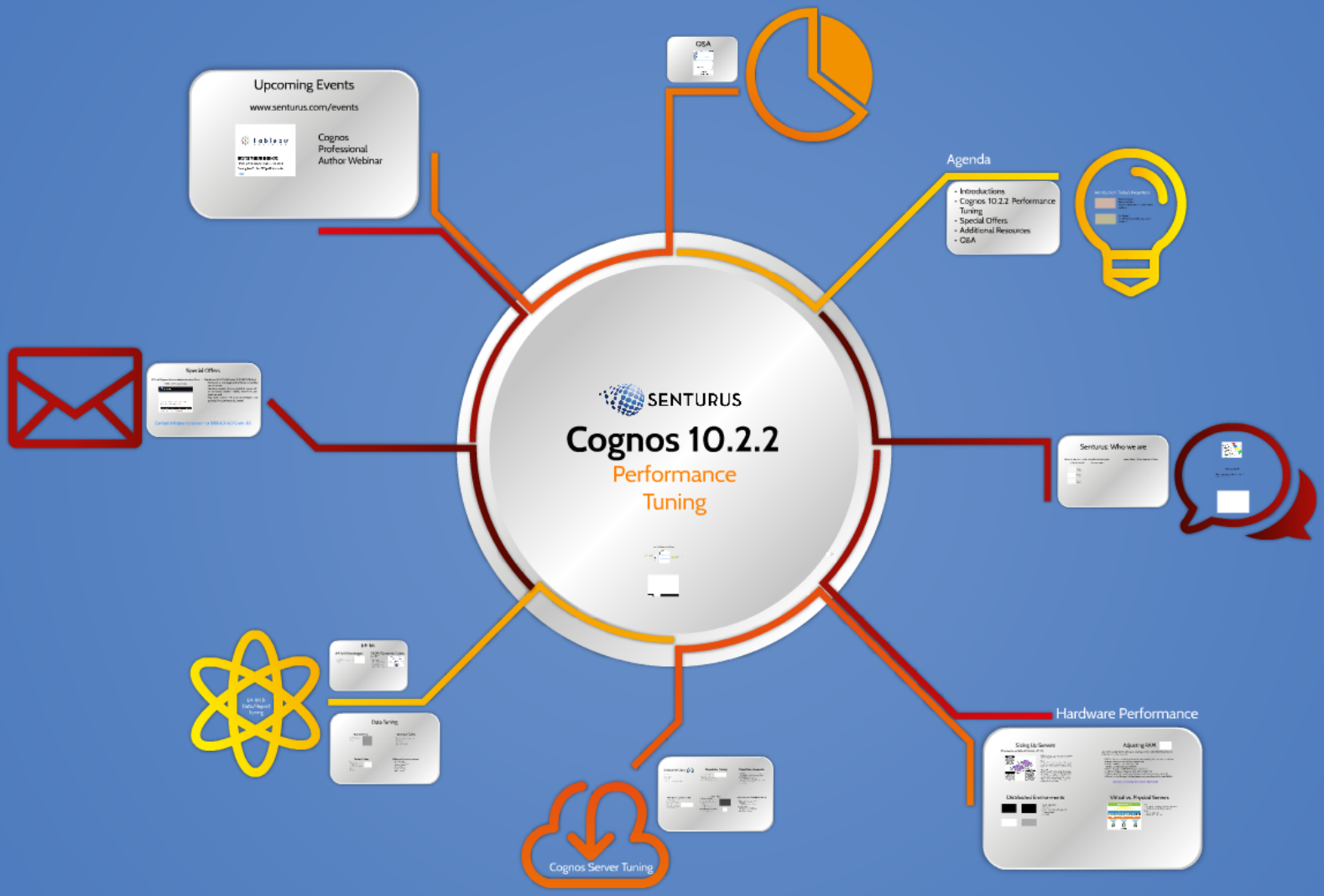
Click arrow to restore full control panel



Submit Questions Here

Presentation Slide Deck on www.senturus.com

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Introduction: Today's Presenters

Todd Schuman
Senior Architect,
Systems Integration & Optimization
Senturus

Jim Frazier
Vice President of Client Solutions
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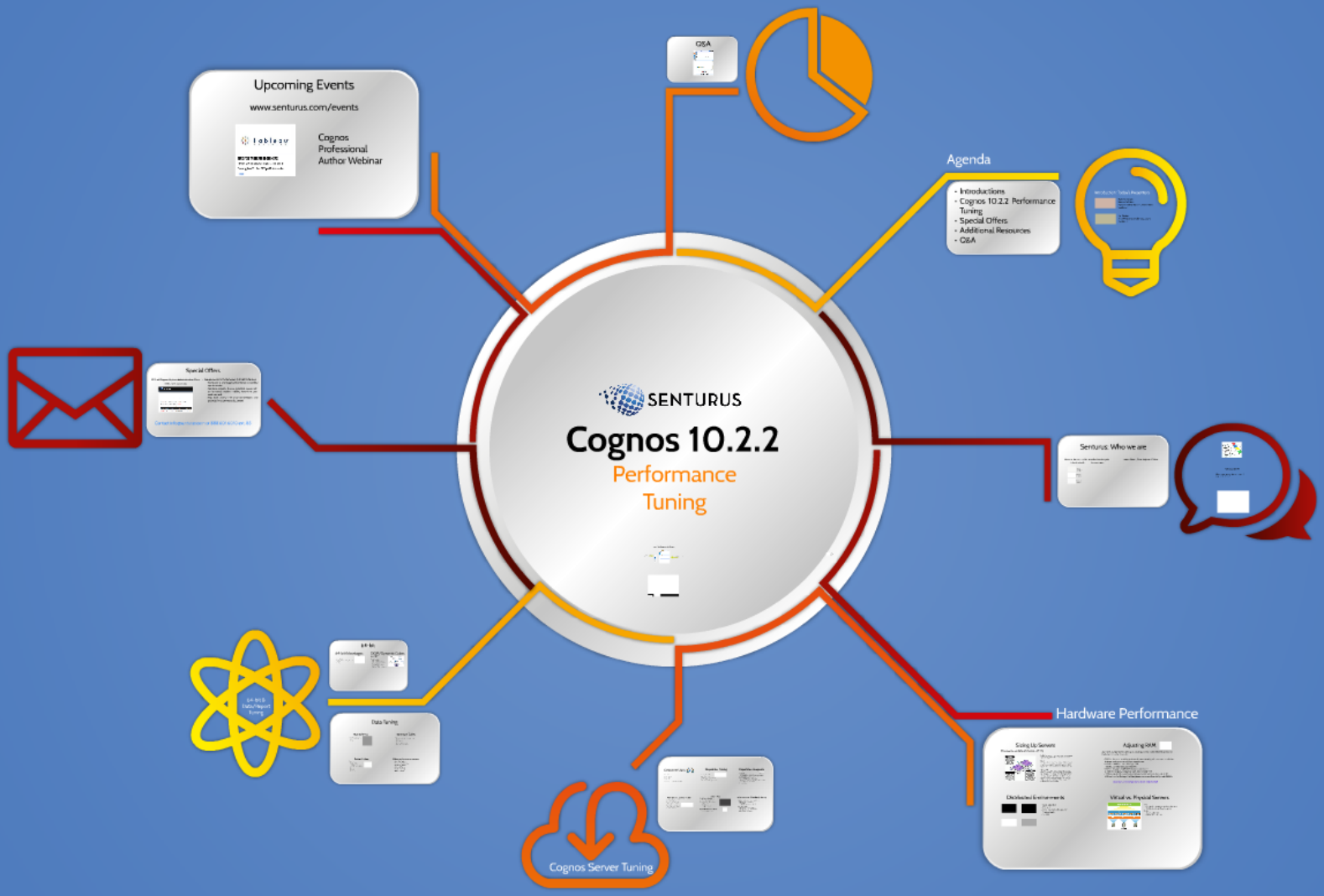
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Senturus: Who we are

Senturus: Business Architects for Business Analytics

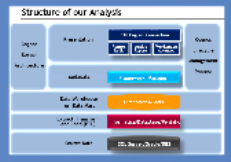
Technology Depth

Business Acumen

900+ Clients, 1700+ Projects, 15 Years

Poll Question #1

What are your current pain points in terms of Cognos performance?



Senturus: Business Architects for Business Analytics

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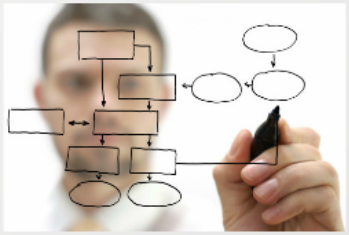
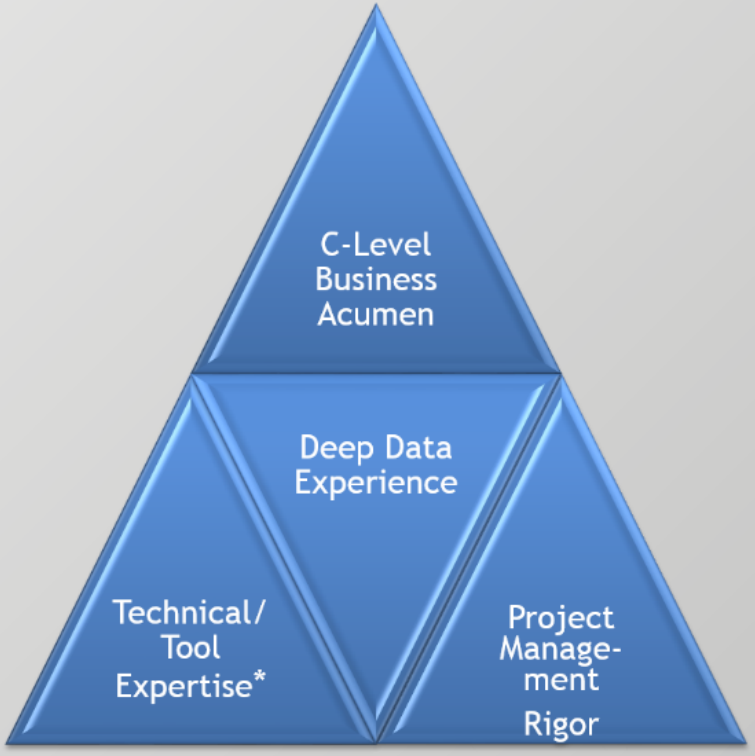


Business Intelligence

Enterprise Planning

Predictive Analytics

Business Acumen



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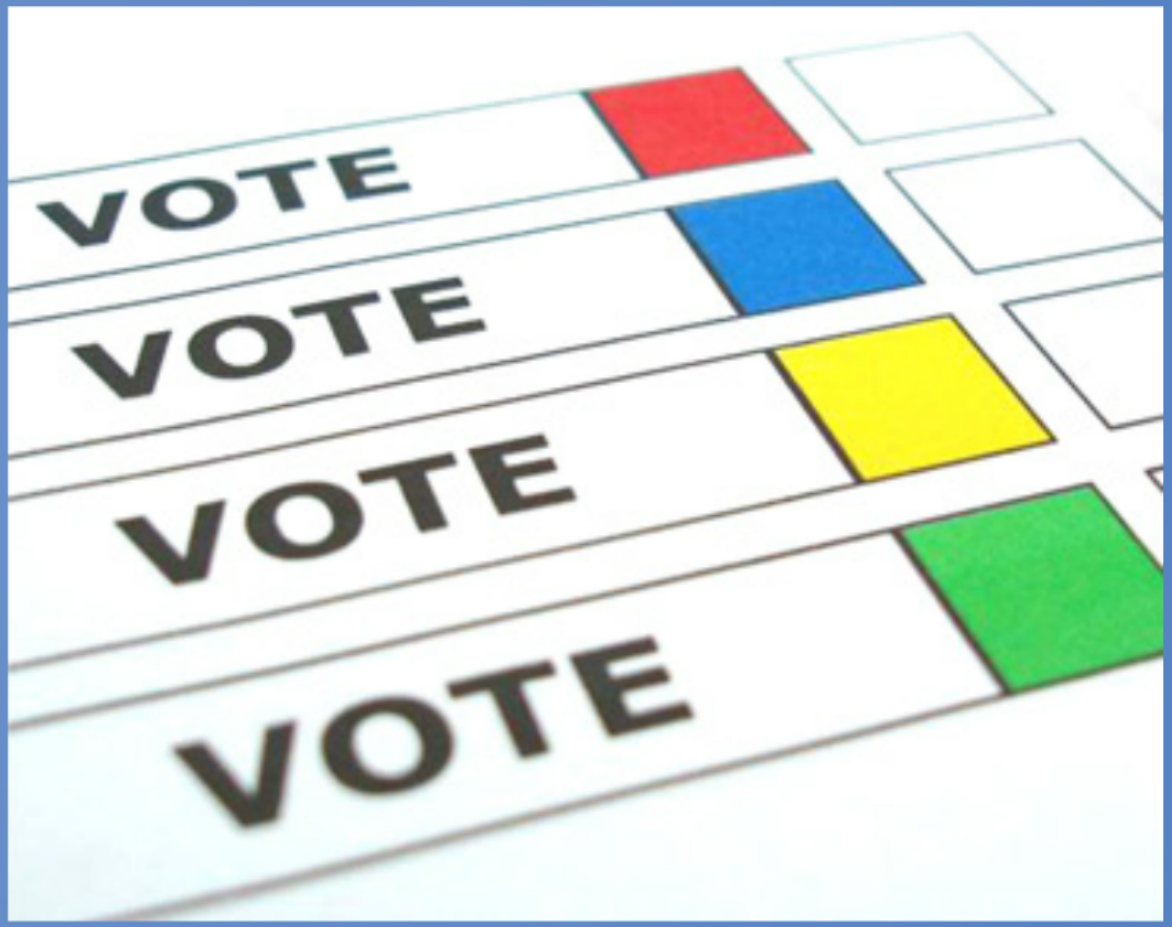
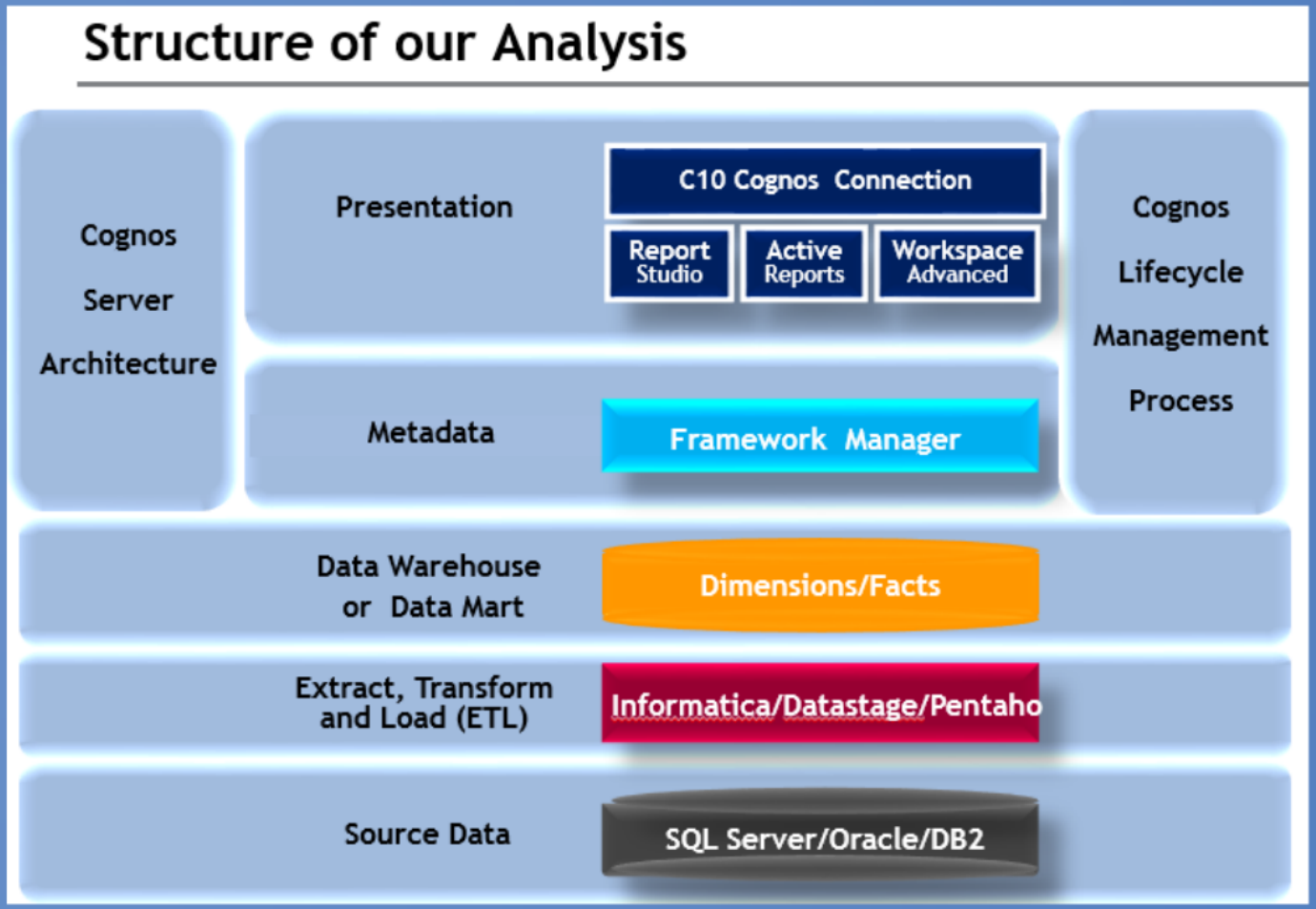
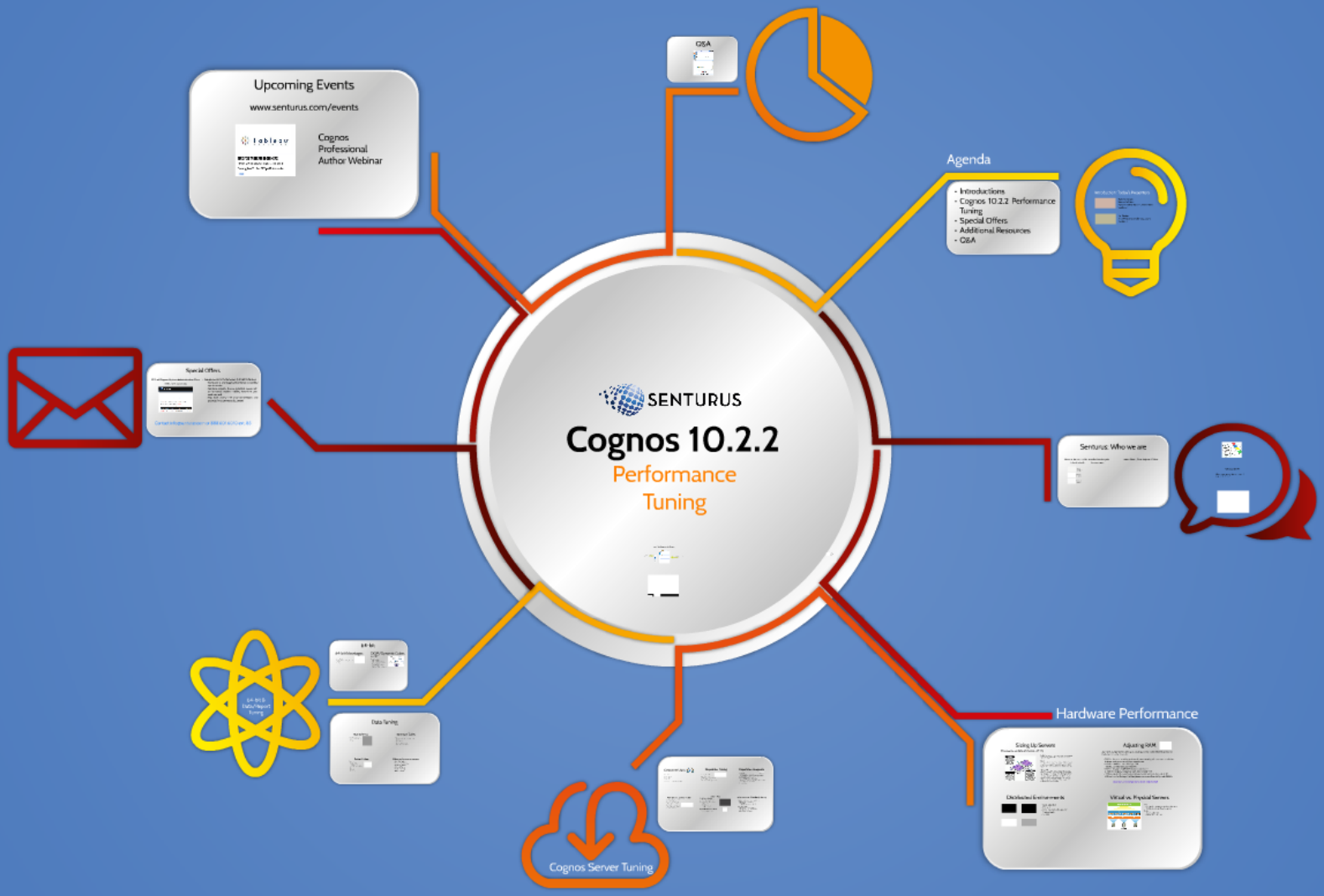

VOTE
VOTE
VOTE
VOTE

Poll Question #1

What are your current pain points in terms of Cognos performance?

Structure of our Analysis

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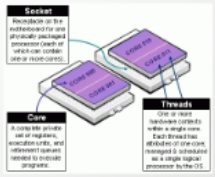
Hardware Performance

Sizing Up Servers

Processors, sockets, and cores...oh my



- **Processes**
An independent program running on a computer. A process has a full stack of memory associated for its own use, and does not depend on another process for execution.
- **Thread**
A thread is essentially a process that does not have a full stack of memory associated for it. The thread is tied to a parent process, and is merely an offshoot of execution. Typically threads processes exist in even the same computer, but can execute simultaneously on separate cores of the same node.
- **Hyper-threading**
Hyper-threading is an Intel technology that originally preceded multi-core systems, and was used to make a single core appear logically as multiple cores on the same chip. Intel abandoned hyper-threading briefly during the advent of multi-core processors but reintroduced the technology in 2008. Since then, Intel has used it extensively to improve the performance of parallel computations in its multi-core processors. Hyper-threading improves performance by sharing the computational workload between multiple cores wherever possible, allowing the operating system to schedule more than one process at a time.

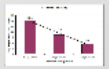
Adjusting RAM

Use the following memory settings as a starting point and adjust them based on the memory usage of your system.

- 2 GB for the base operating system and accompanying software, such as antivirus, back up, and enterprise management software
- 4 GB for a 64-bit Content Manager JVM
- 4 GB for a 64-bit Application Tier JVM
- 2 GB for the graphics JVM (IBM Cognos Workspace)
- 2-4 GB for the query service (dynamic query mode) JVM
- 1 GB per core for the report services processes (dynamic query mode) (JVM)
- 2 GB per core for the report services processes (compatible query mode) (BIBuS)

Dual Core, 64-bit Single Server needs 16GB for CQM

Distributed Environments

- Load Balancing
- Fail over
- Hardware aligned for specific Cognos needs
- Scalable

Virtual vs. Physical Servers

Pros
- Reduced maintenance on physical servers
- Easily allocate additional resources

Cons
- Overhead: 5-10%
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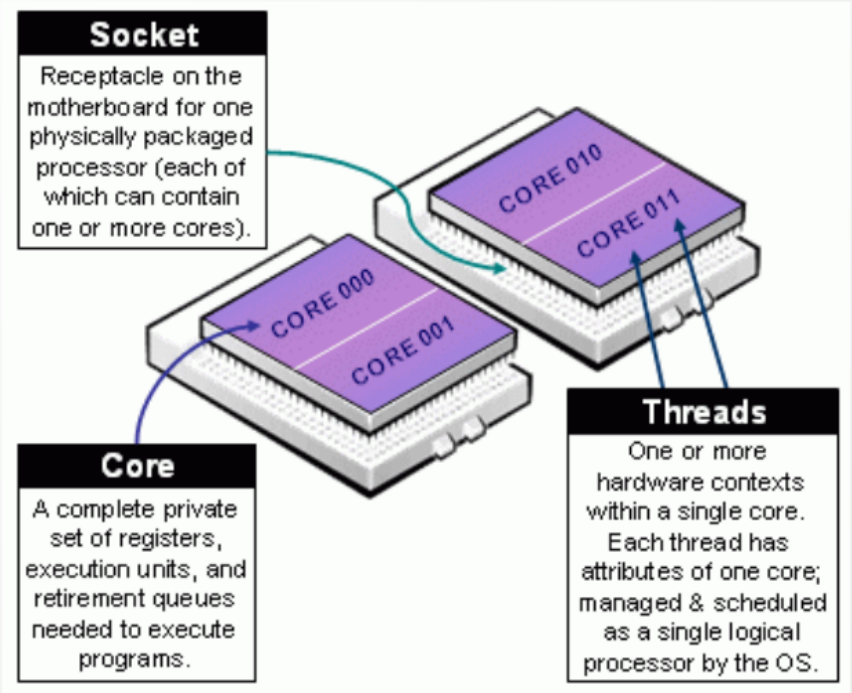
Sizing Up Servers

Processors, sockets, and cores...oh my



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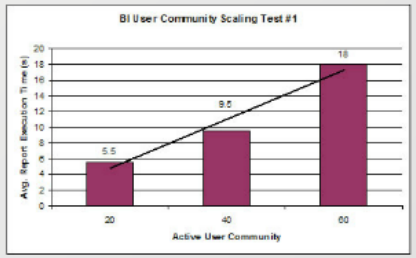

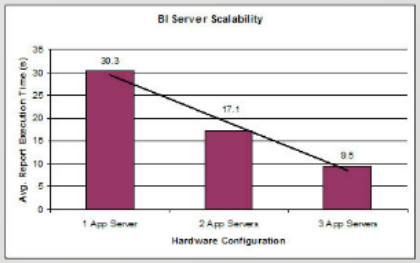

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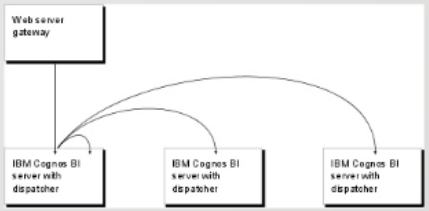
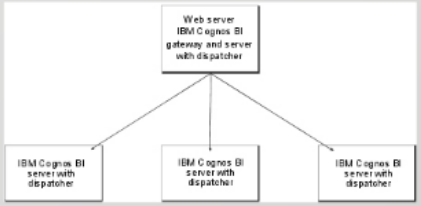
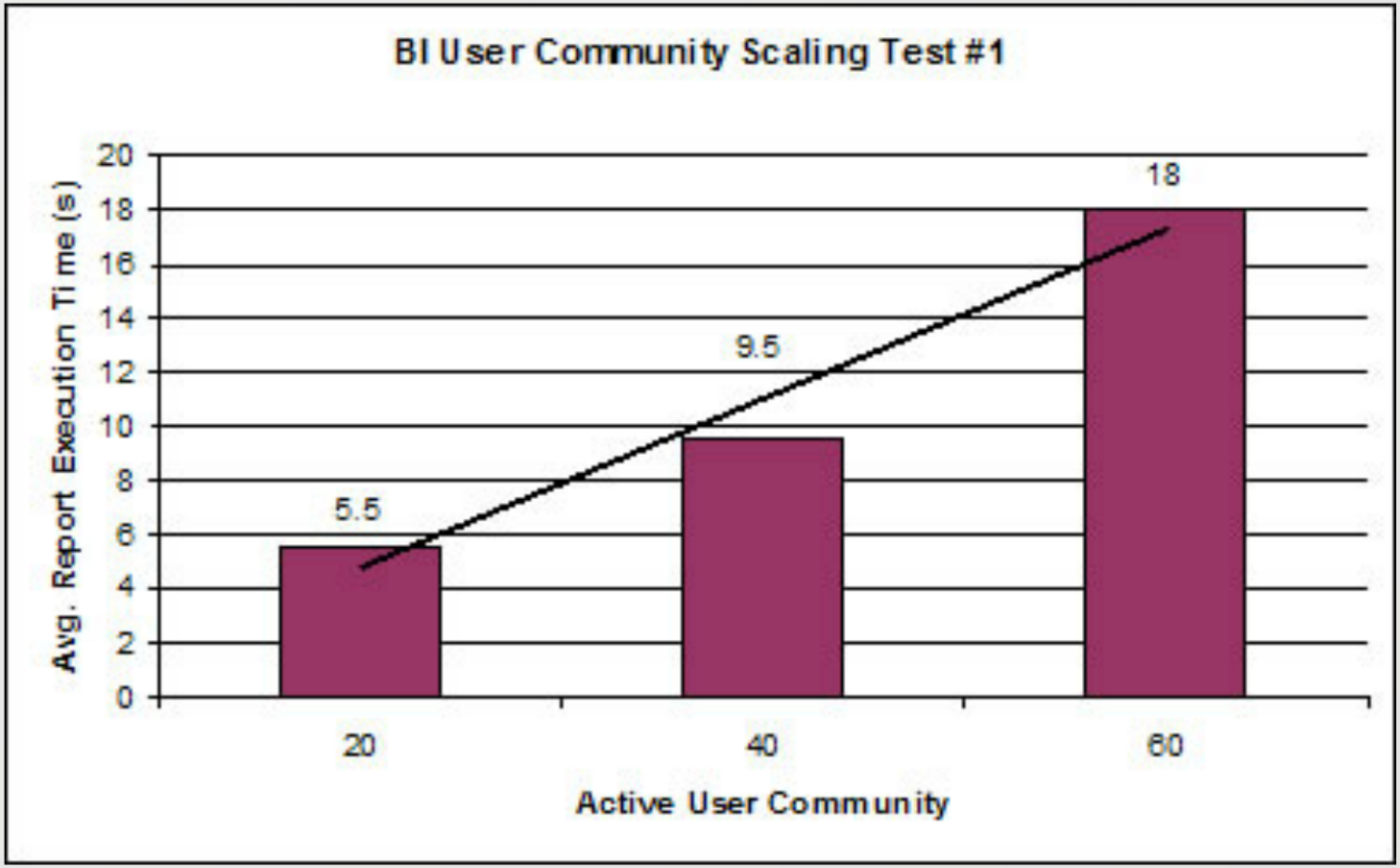
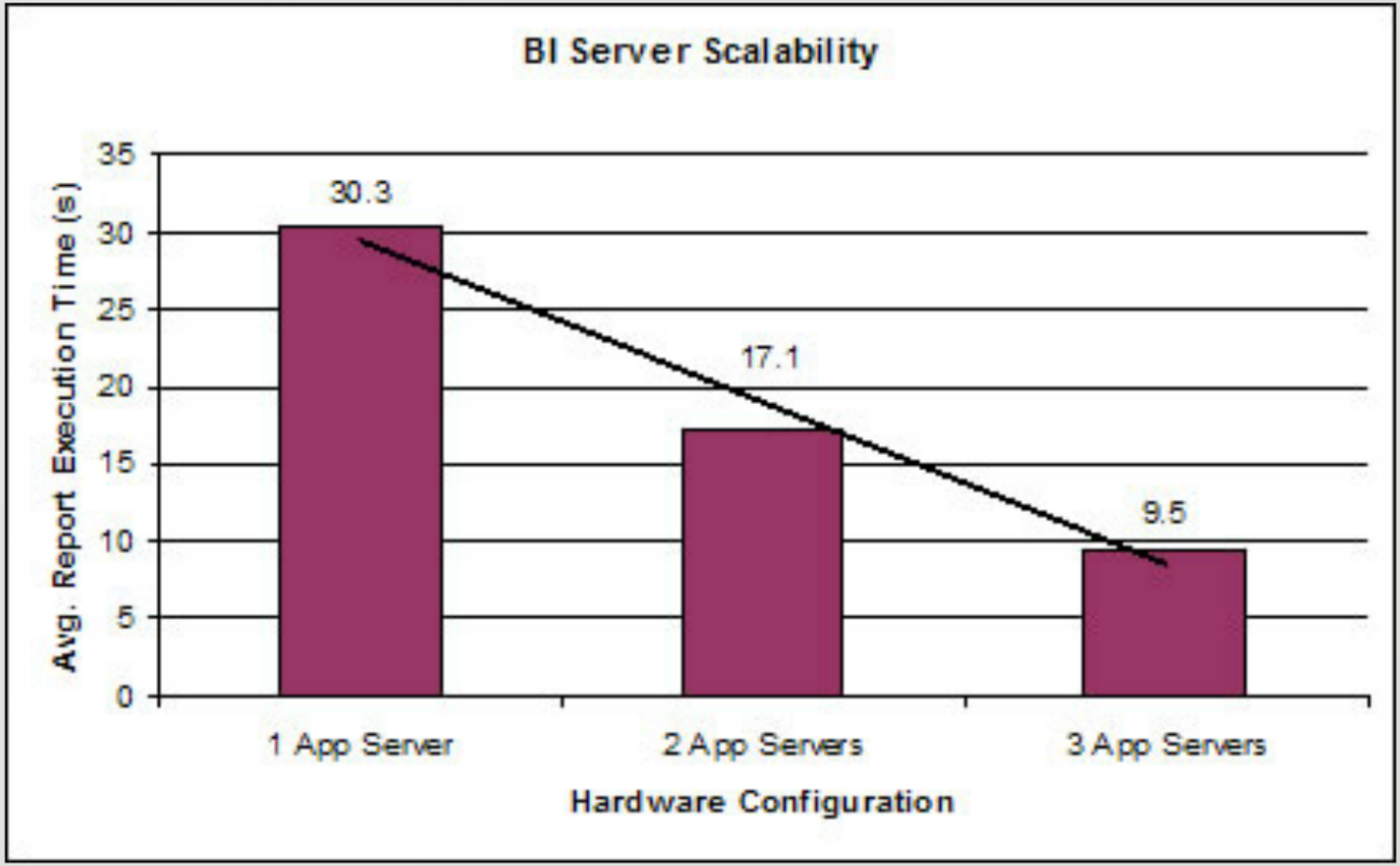
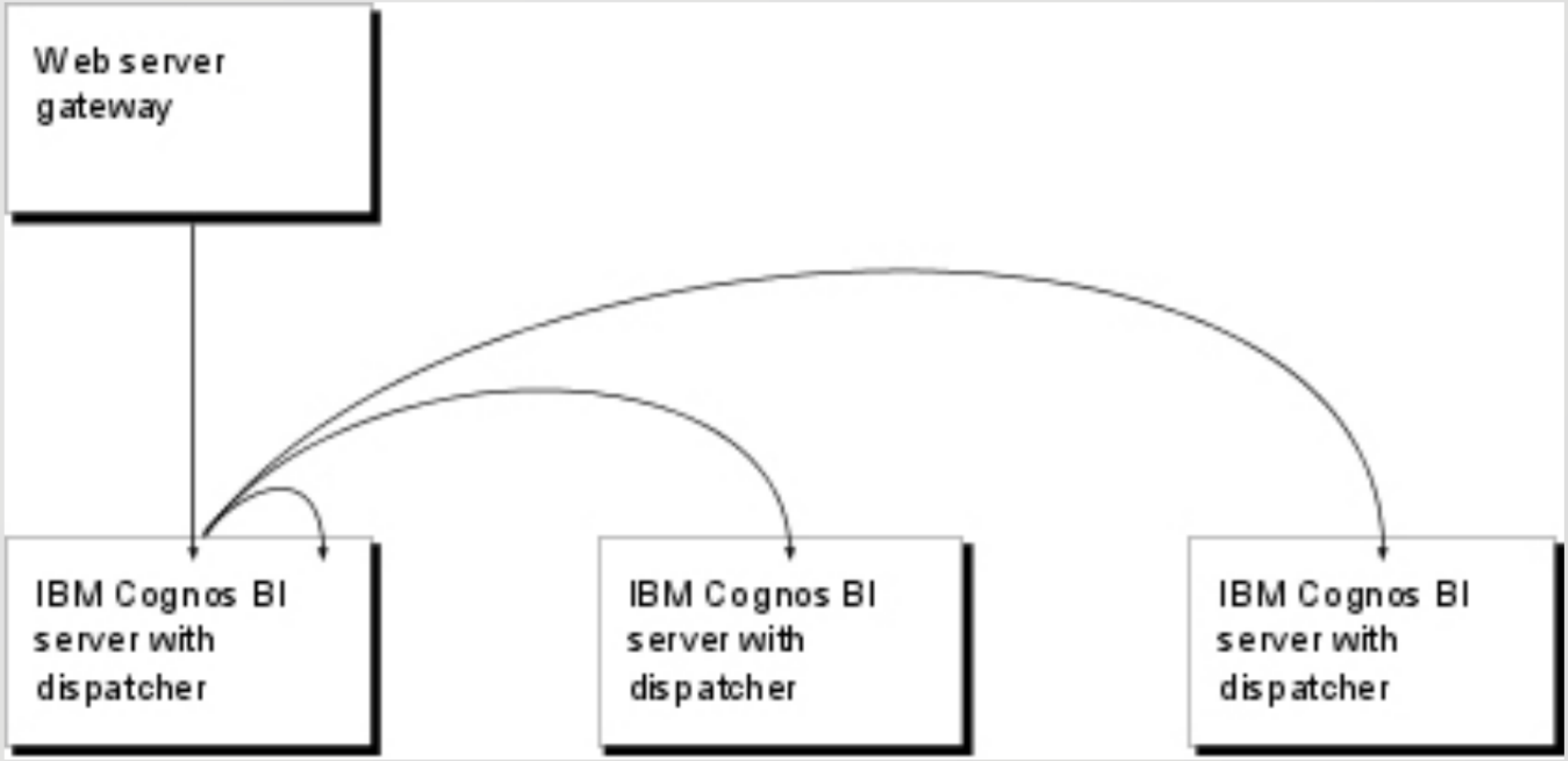
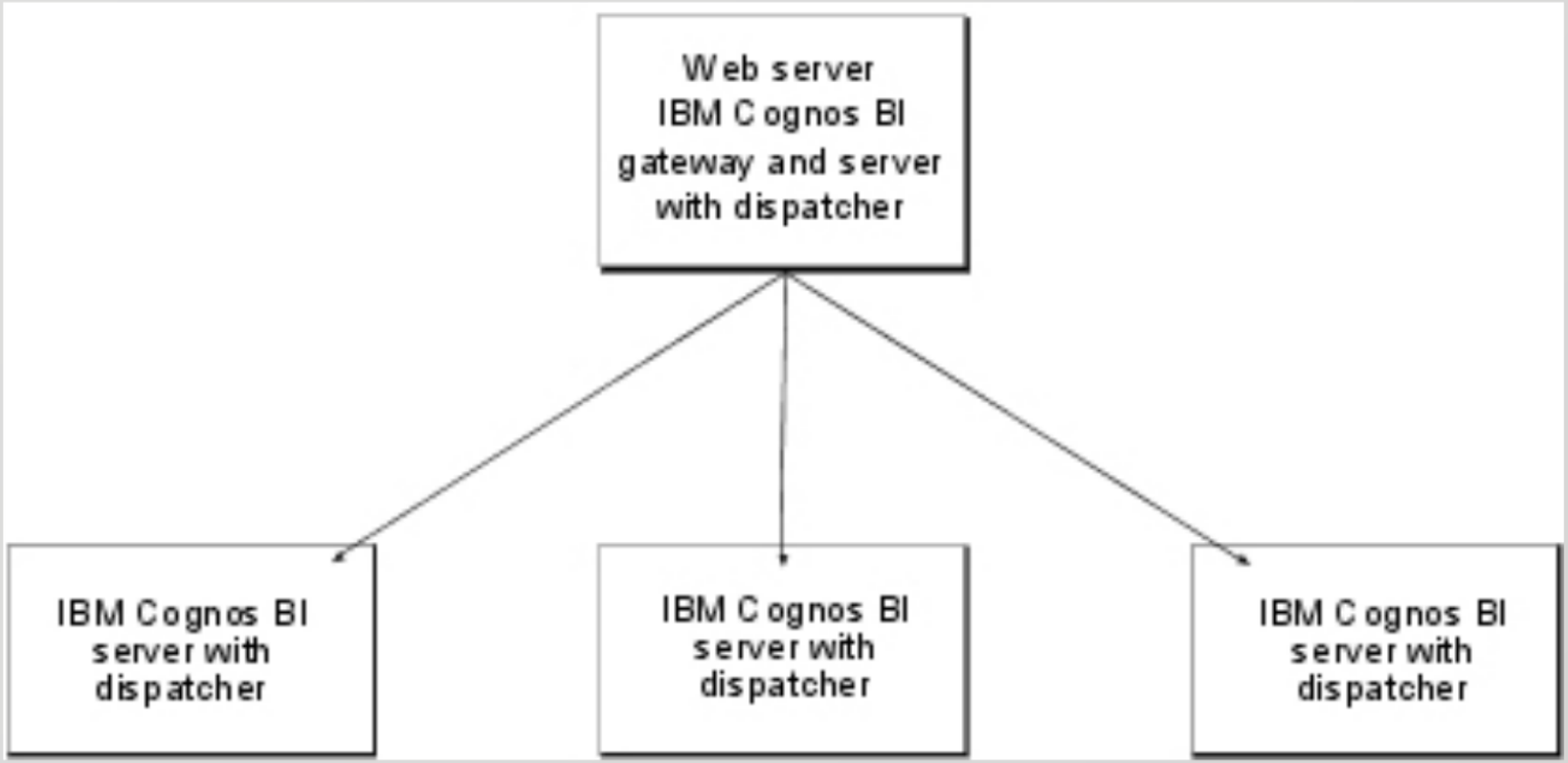




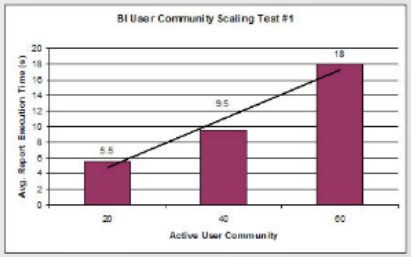

BI User Community Scaling Test #1
Avg. Report Execution Time (s)
0
2
4
6
8
10
12
14
16
18
20
5.5
9.5
18
20
40
60
Active User Community

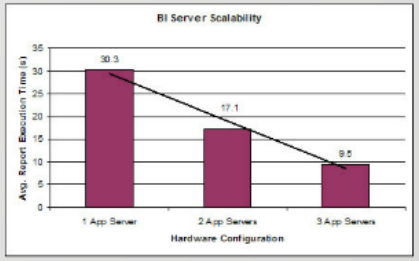

BI Server Scalability
Avg. Report Execution Time (s)
35
30
25
20
15
10
5
0
30.3
17.1
9.5
1 App Server
2 App Servers
3 App Servers
Hardware Configuration


Web server gateway
IBM Cognos BI server with dispatcher
IBM Cognos BI server with dispatcher
IBM Cognos BI server with dispatcher


Web server
IBM Cognos BI
gateway and server
with dispatcher
IBM Cognos BI
server with
dispatcher
IBM Cognos BI
server with
dispatcher
IBM Cognos BI
server with
dispatcher

Distributed Environments





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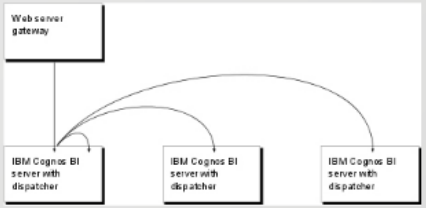
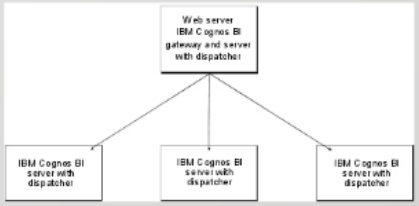
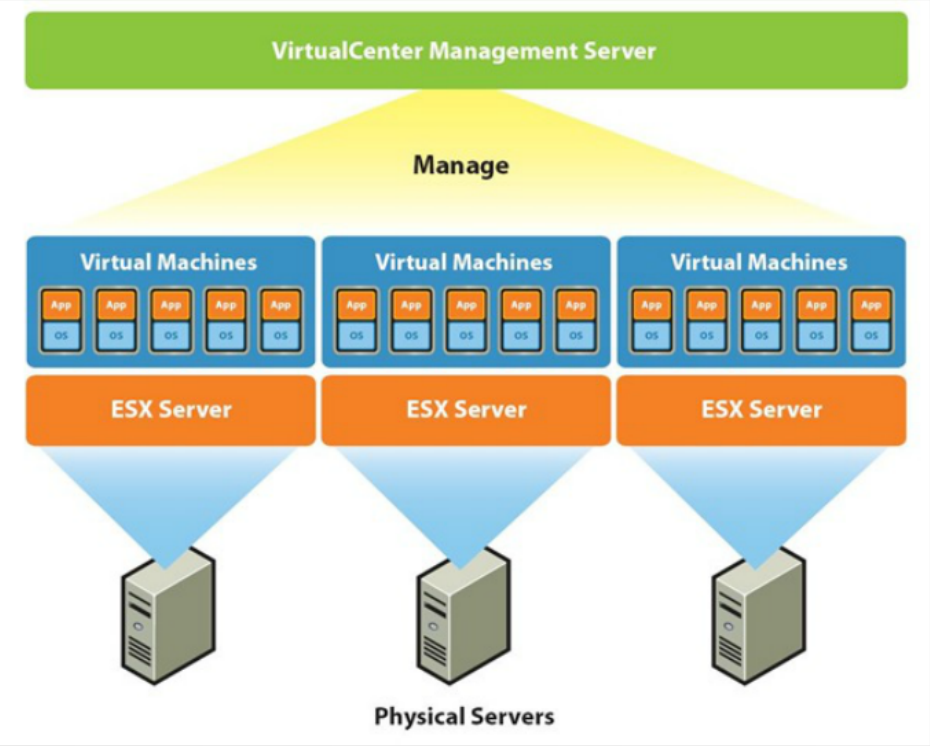




Virtual vs. Physical Servers



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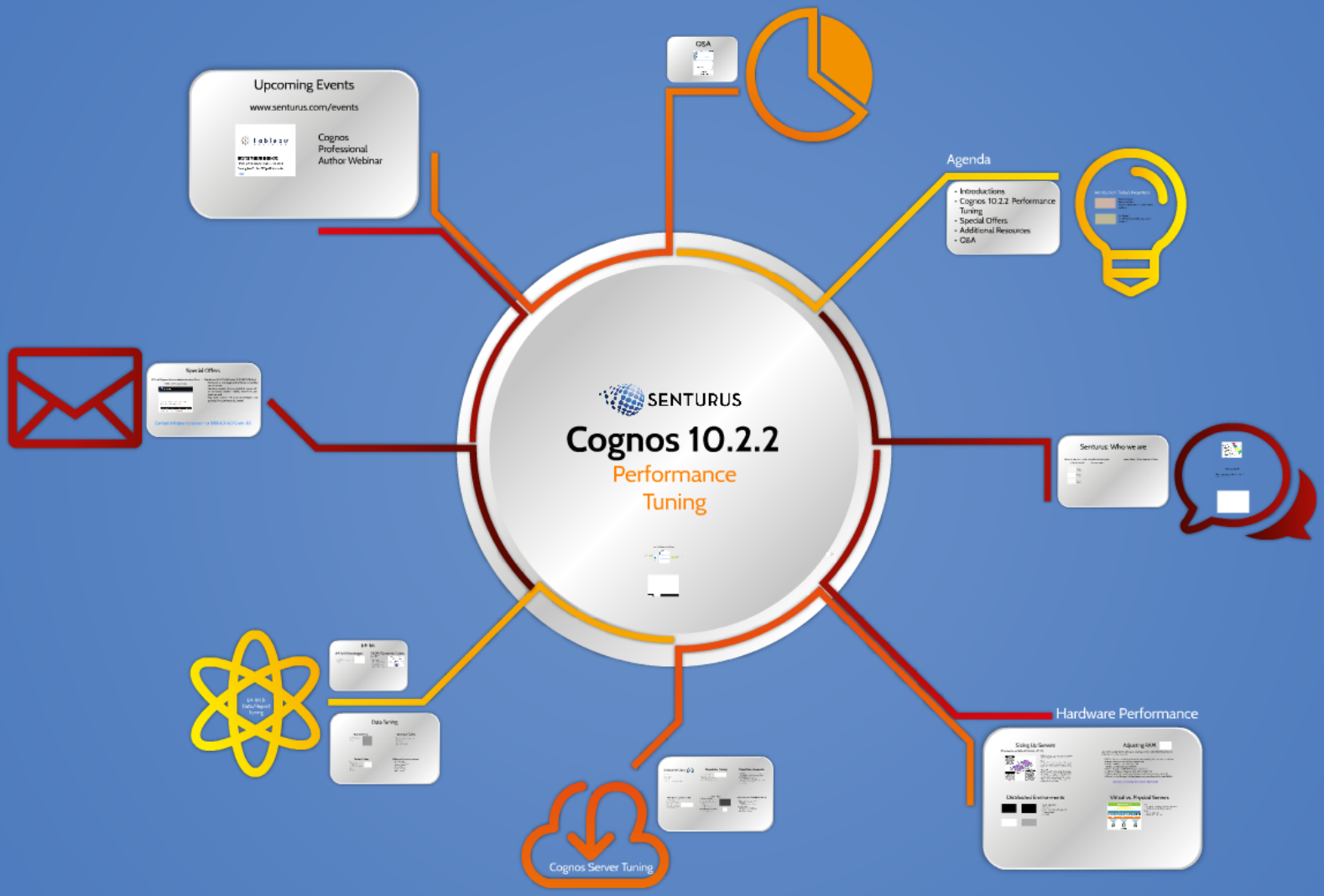
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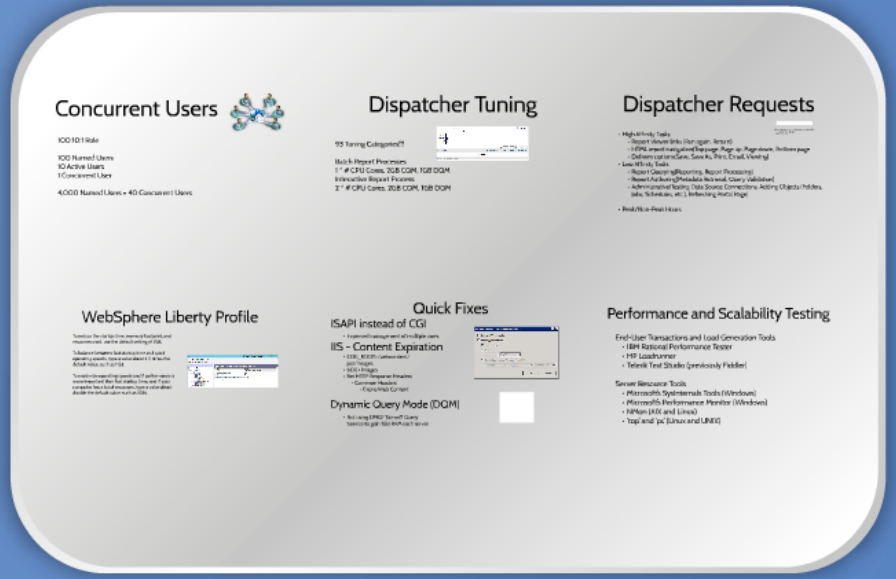


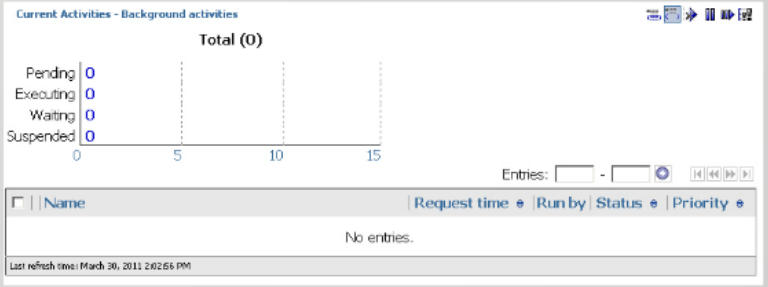
Concurrent Users

100:10:1 Rule

100 Named Users
10 Active Users
1 Concurrent User

4,000 Named Users = 40 Concurrent Users

Dispatcher Tuning



93 Tuning Categories!!!

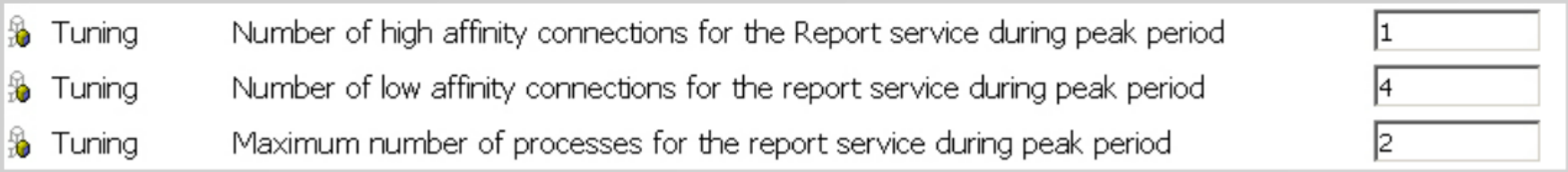
Batch Report Processes
1 * # CPU Cores, 2GB CQM, 1GB DQM
Interactive Report Process
2 * # CPU Cores, 2GB CQM, 1GB DQM

Dispatcher Requests

In the example above there are 2 report processes so connections will be:
- 2 x 4 Low Affinity = 8 connections
- 2 x 1 High Affinity = 2 connections
- 10 connections total

- High Affinity Tasks
  - Report Viewer links (Run again, Return)
  - HTML report navigation(Top page, Page up, Page down, Bottom page
  - Delivery options(Save, Save As, Print, Email, Viewing)
- Low Affinity Tasks
  - Report Querying(Reporting, Report Processing)
  - Report Authoring(Metadata Retrieval, Query Validation)
  - Administrative(Testing Data Source Connections, Adding Objects (Folders, Jobs, Schedules, etc.), Refreshing Portal Page)

- Peak/Non-Peak Hours



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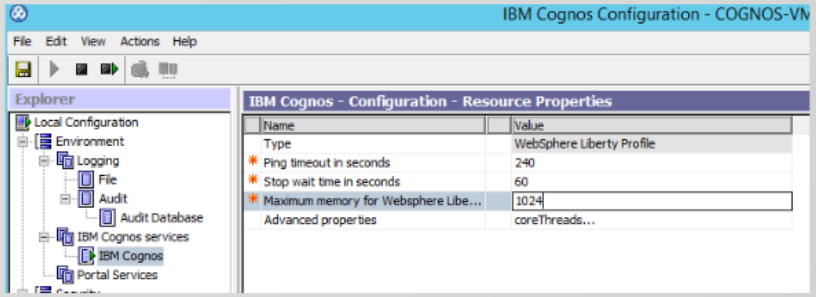
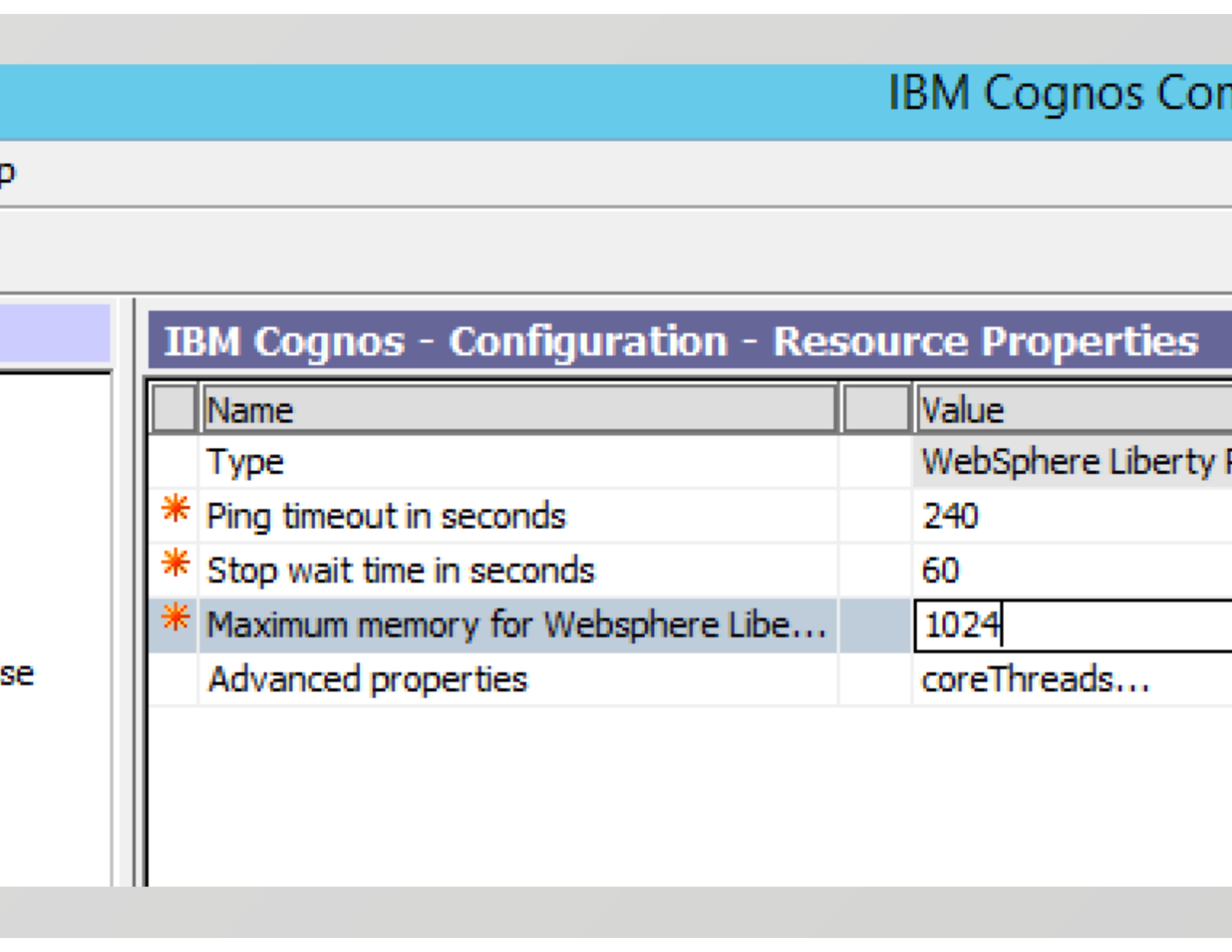
WebSphere Liberty Profile

To reduce the startup time, memory footprint, and resources used, use the default setting of 768.

To balance between fast startup time and quick operating speeds, type a value about 1.5 times the default value, such as 1152.

To maximize operating speeds and if performance is more important than fast startup time, and if your computer has a lot of resources, type a value about double the default value, such as 1536.




IBM Cognos Con
p
se
IBM Cognos - Configuration - Resource Properties
Name
Value
Type
WebSphere Liberty
Ping timeout in seconds
240
Stop wait time in seconds
60
Maximum memory for Websphere Libe...
1024
Advanced properties
coreThreads...

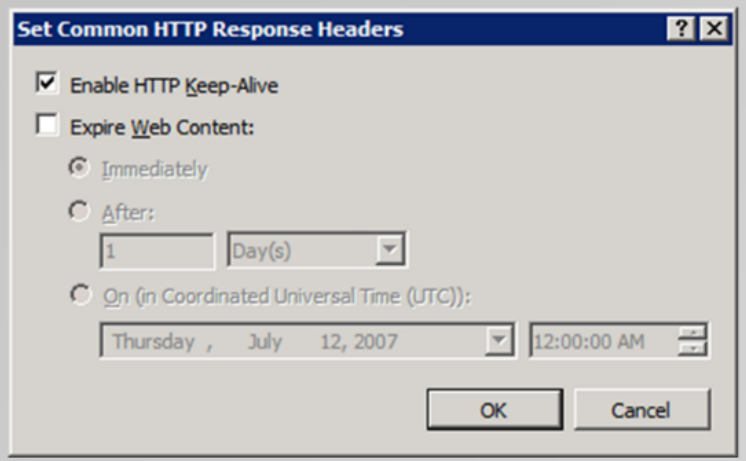
Quick Fixes

ISAPI instead of CGI

- Improved management of multiple users

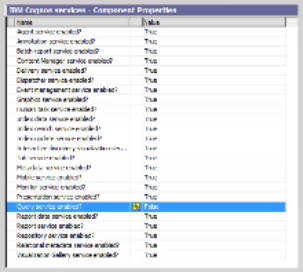
IIS - Content Expiration

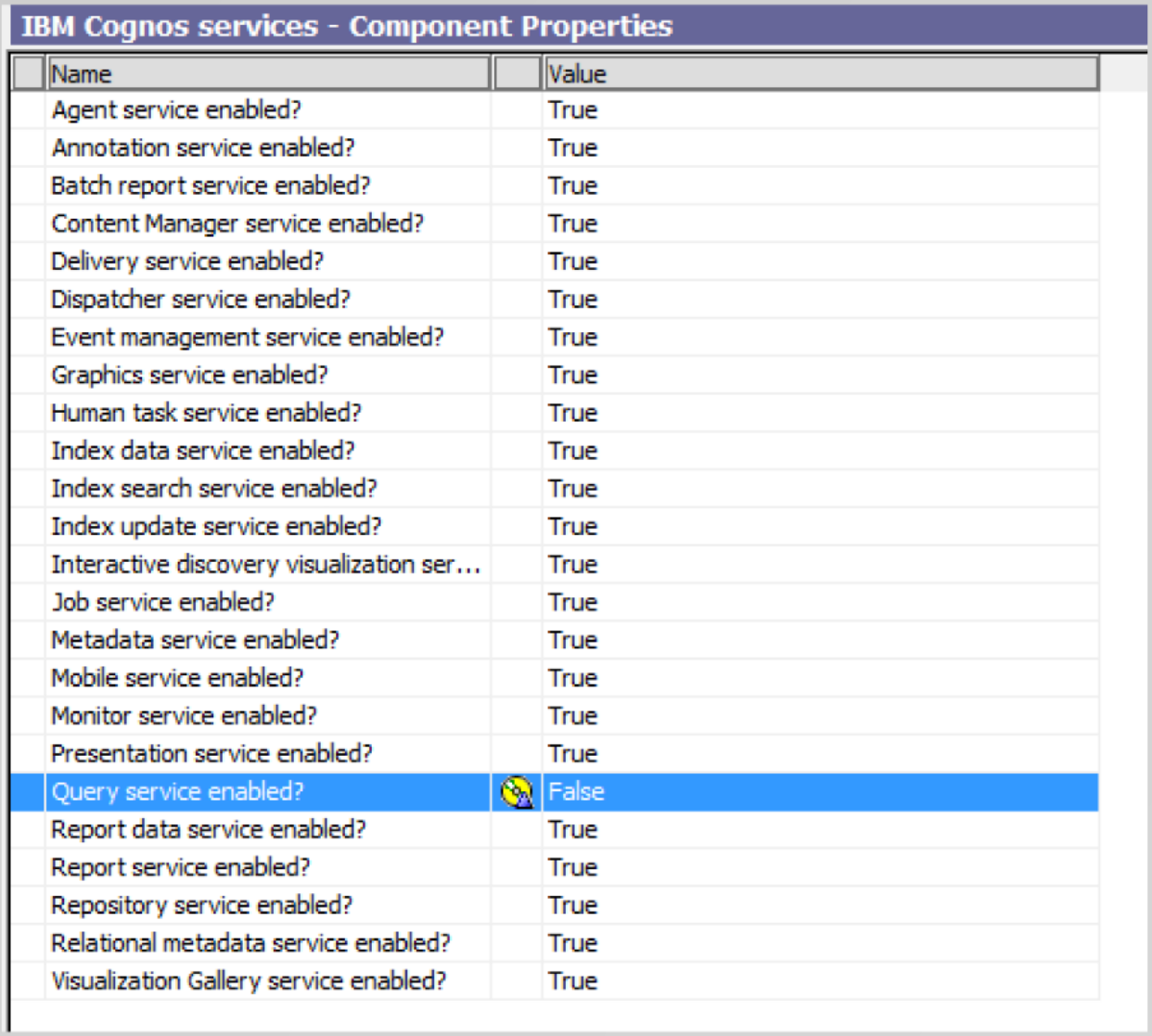
- COG_ROOT>/webcontent/pat/images
- 600+ Images
- Set HTTP Response Headers
  - Common Headers
    - Expire Web Content



Dynamic Query Mode (DQM)

- Not using DMQ? Turn off Query Service to gain 1GB RAM each server




IBM Cognos services - Component Properties
Name
Value
Agent service enabled?
True
Annotation service enabled?
True
Batch report service enabled?
True
Content Manager service enabled?
True
Delivery service enabled?
True
Dispatcher service enabled?
True
Event management service enabled?
True
Graphics service enabled?
True
Human task service enabled?
True
Index data service enabled?
True
Index search service enabled?
True
Index update service enabled?
True
Interactive discovery visualization ser...
True
Job service enabled?
True
Metadata service enabled?
True
Mobile service enabled?
True
Monitor service enabled?
True
Presentation service enabled?
True
Query service enabled?
False
Report data service enabled?
True
Report service enabled?
True
Repository service enabled?
True
Relational metadata service enabled?
True
Visualization Gallery service enabled?
True

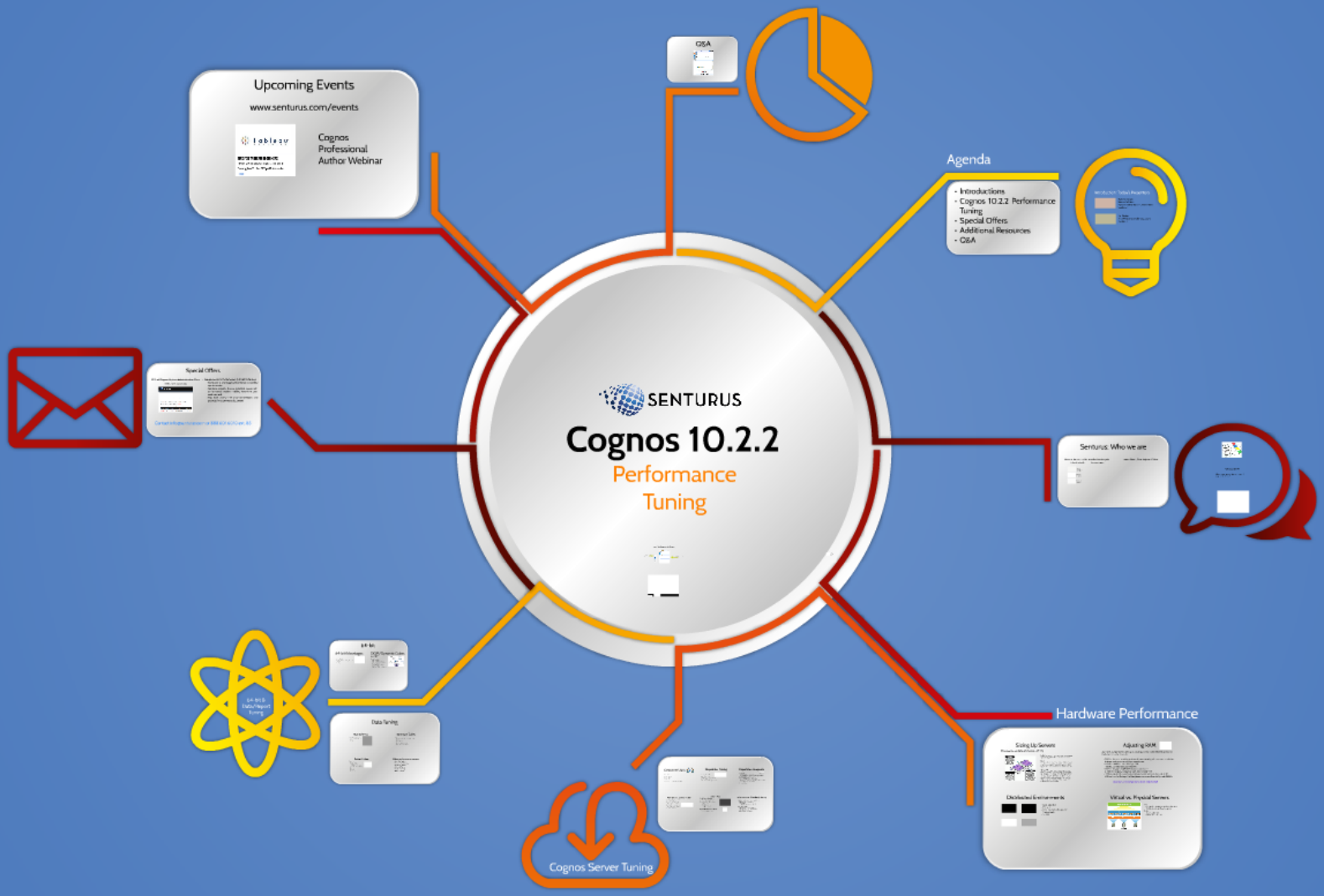
Performance and Scalability Testing

End-User Transactions and Load Generation Tools

- IBM Rational Performance Tester
- HP Loadrunner
- Telerik Test Studio (previously Fiddler)

Server Resource Tools

- Microsoft's SysInternals Tools (Windows)
- Microsoft's Performance Monitor (Windows)
- NMon (AIX and Linux)
- 'top' and 'ps' (Linux and UNIX)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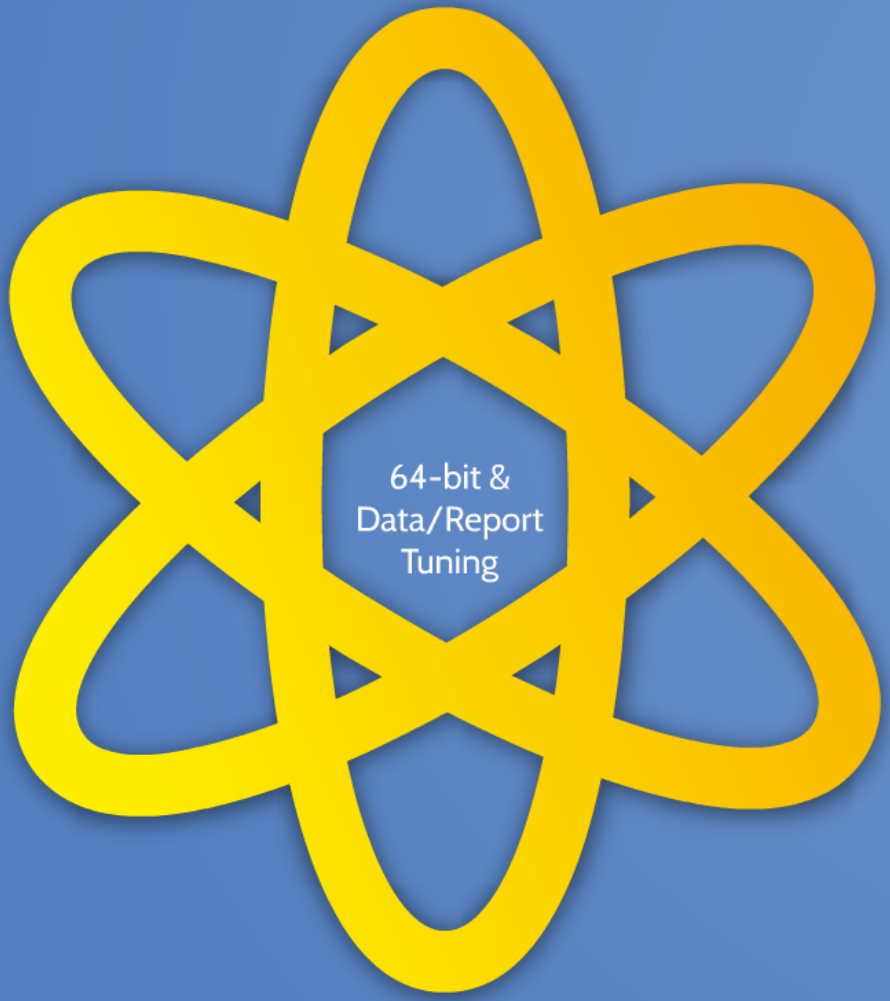


64-bit

64-bit Advantages

DQM/Dynamic Cubes

Data Tuning

Star Schema

Summary Tables

Power Cubes

Other performance causes:

- Reporting Design
- Database Performance
- Network/Firewall
- Stitched Queries
- Local Processing
- Infinite Others

64-bit Advantages

- Access more memory
- 64 bit registers allow faster, more efficient execution
- Stability

DQM/Dynamic Cubes

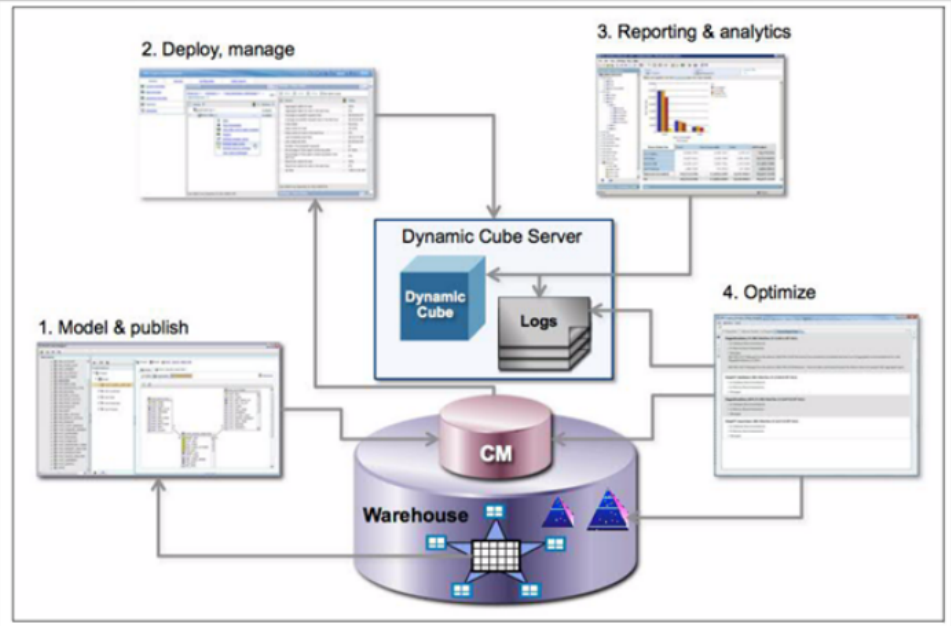
In Memory Aggregation
Relational - DMR

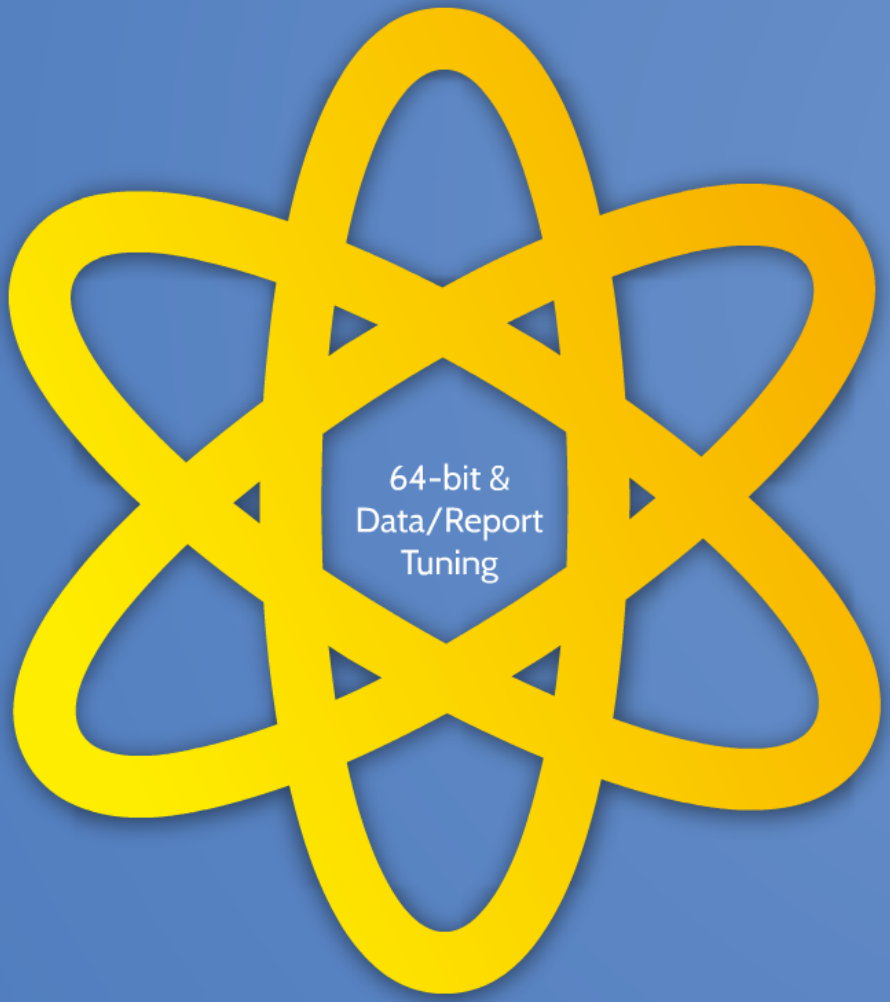
Run DQM

- Install JDBC Drivers
- Enable JDBC Connections
- Enable JDBC in Framework Manager

Senturus.com/Resources

- Beyond Powerplay: Choosing OLAP
- Dynamic Cubes in 10.2
- IBM Cognos Dynamic Cubes Deep Dive





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64-bit Advantages

DQM/Dynamic Cubes

Data Tuning

Star Schema

Summary Tables

- Eliminate need for on-the-fly aggregation of large tables
- Fast Performance

Cons

- Requires DBA/Administrator
- Built at only one level of aggregation

Power Cubes

Pros

- Cell up/down
- Aggregation at every dimension level
- Cognos dimensional functions

Cons

- Flat-file
- Latency
- Build time

Other performance causes:

- Reporting Design
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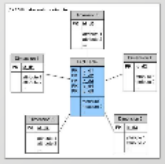
Data Tuning

Star Schema

- Less join paths
- Allows quick understanding, navigation and analysis of large multidimensional data sets
- Flexibility



Summary Tables

Pros
- Eliminate need for on-the-fly aggregation of large tables
- Fast Performance

Cons
- Requires DBA/maintenance
- Built at only one level of aggregation

Power Cubes

Pros
- Drill up/down
- Aggregation at every dimension lever
- Cognos dimensional functions

Cons
- File size
- Latency
- Build time

Other performance causes:

- Reporting Design
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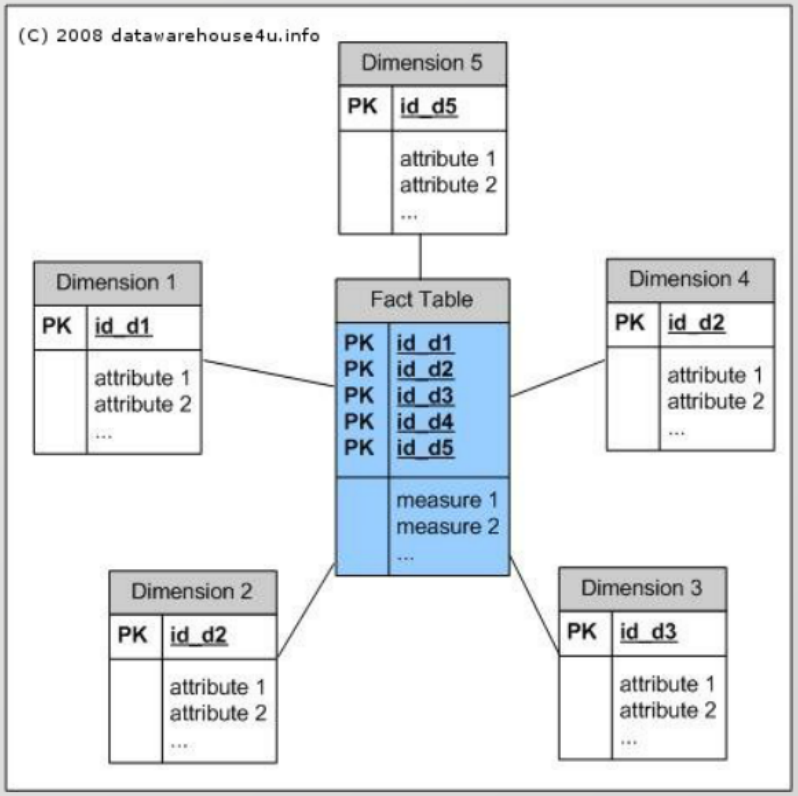

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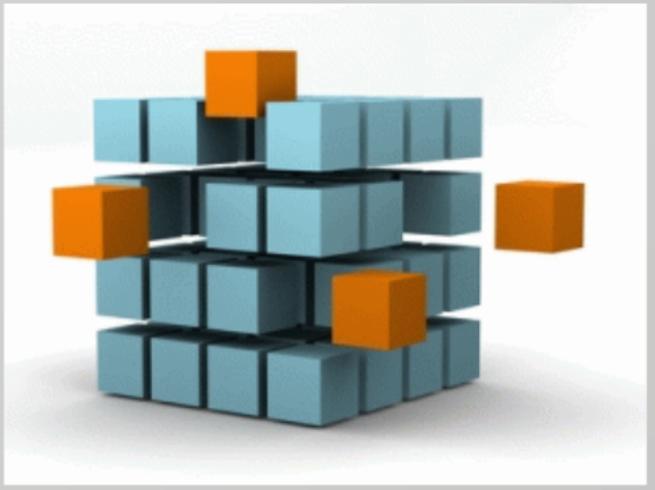

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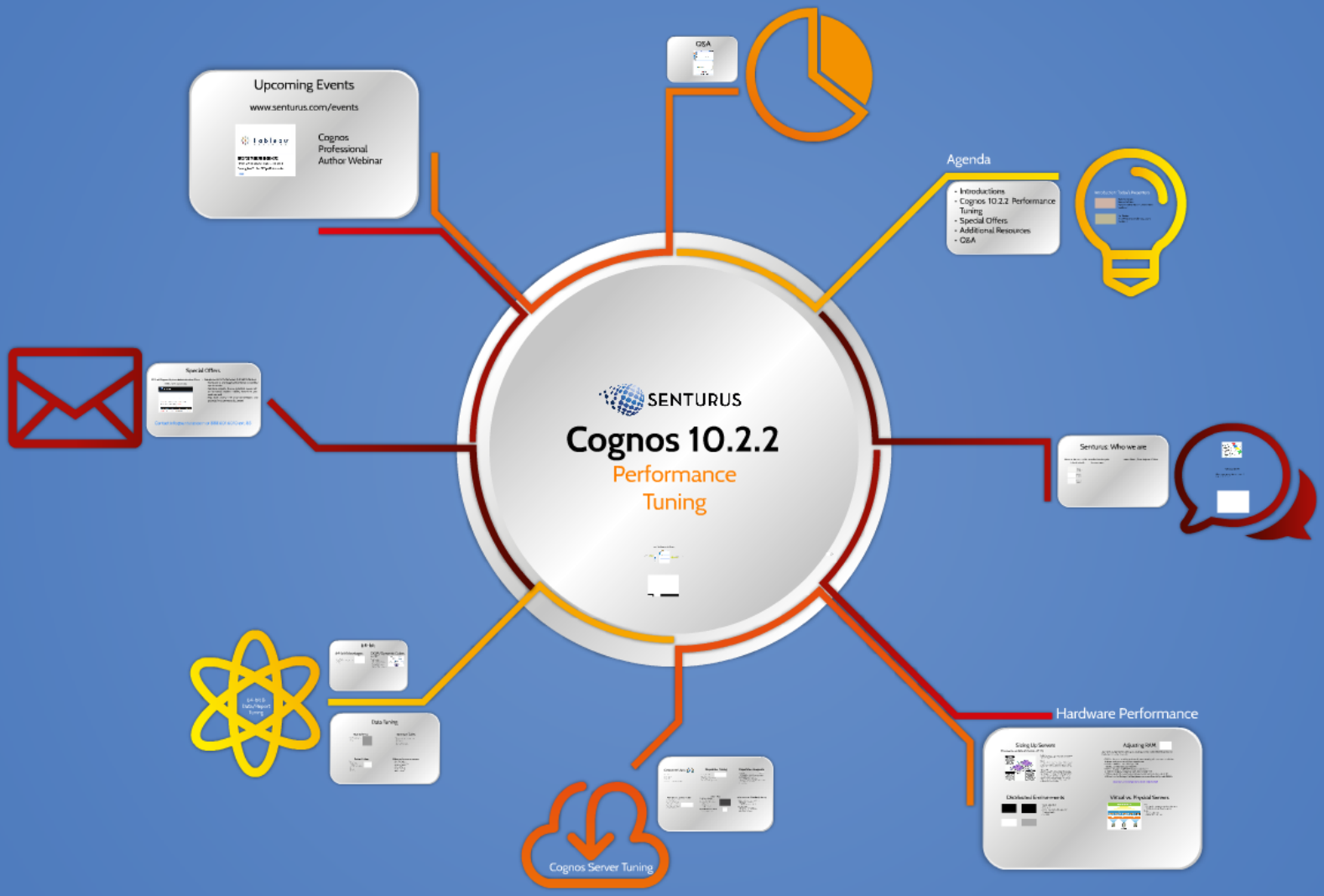
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Special Offers

25% off Cognos System Administration Class

Offer ends tomorrow

- **Complementary Performance & Stability Review**
  - Complete a one-page performance & stability questionnaire
  - Senturus experts discuss potential issues with performance and/or stability based on your environment
  - Top level review and recommendations and provided in a summary document

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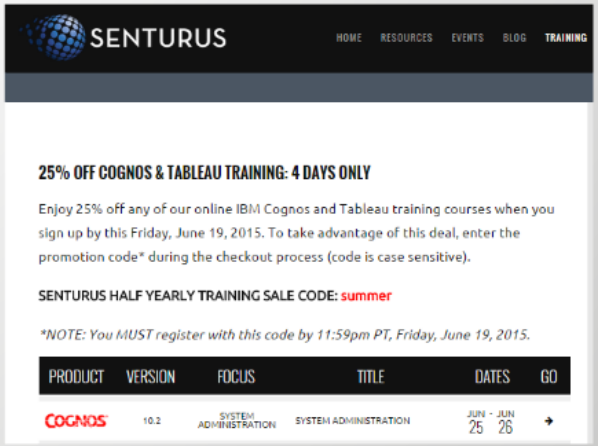

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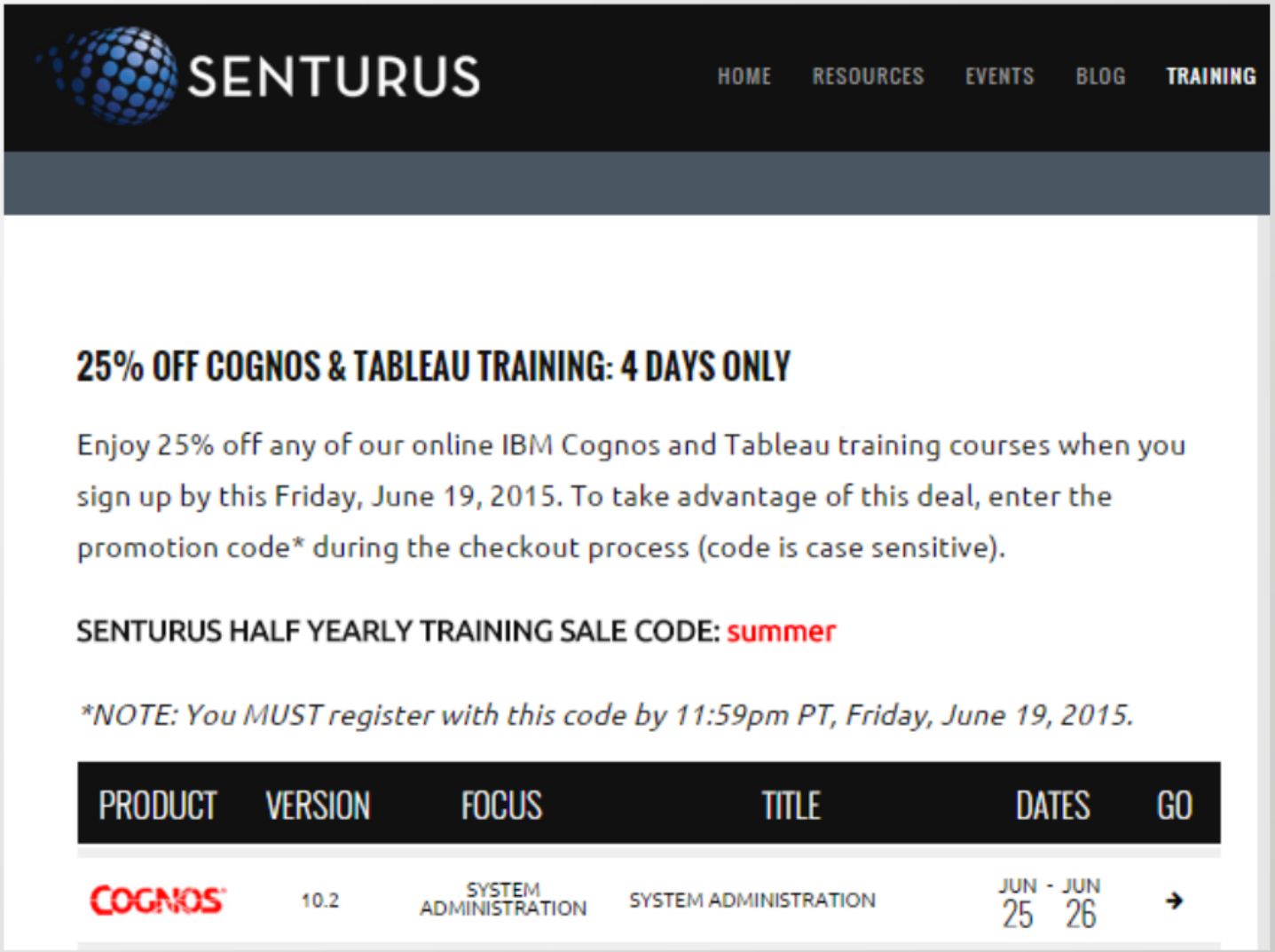

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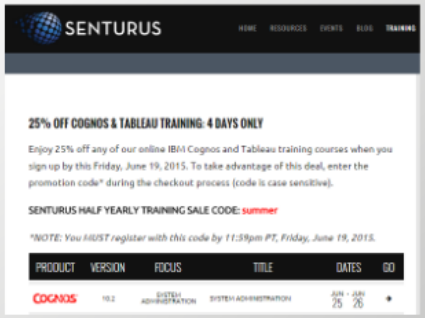

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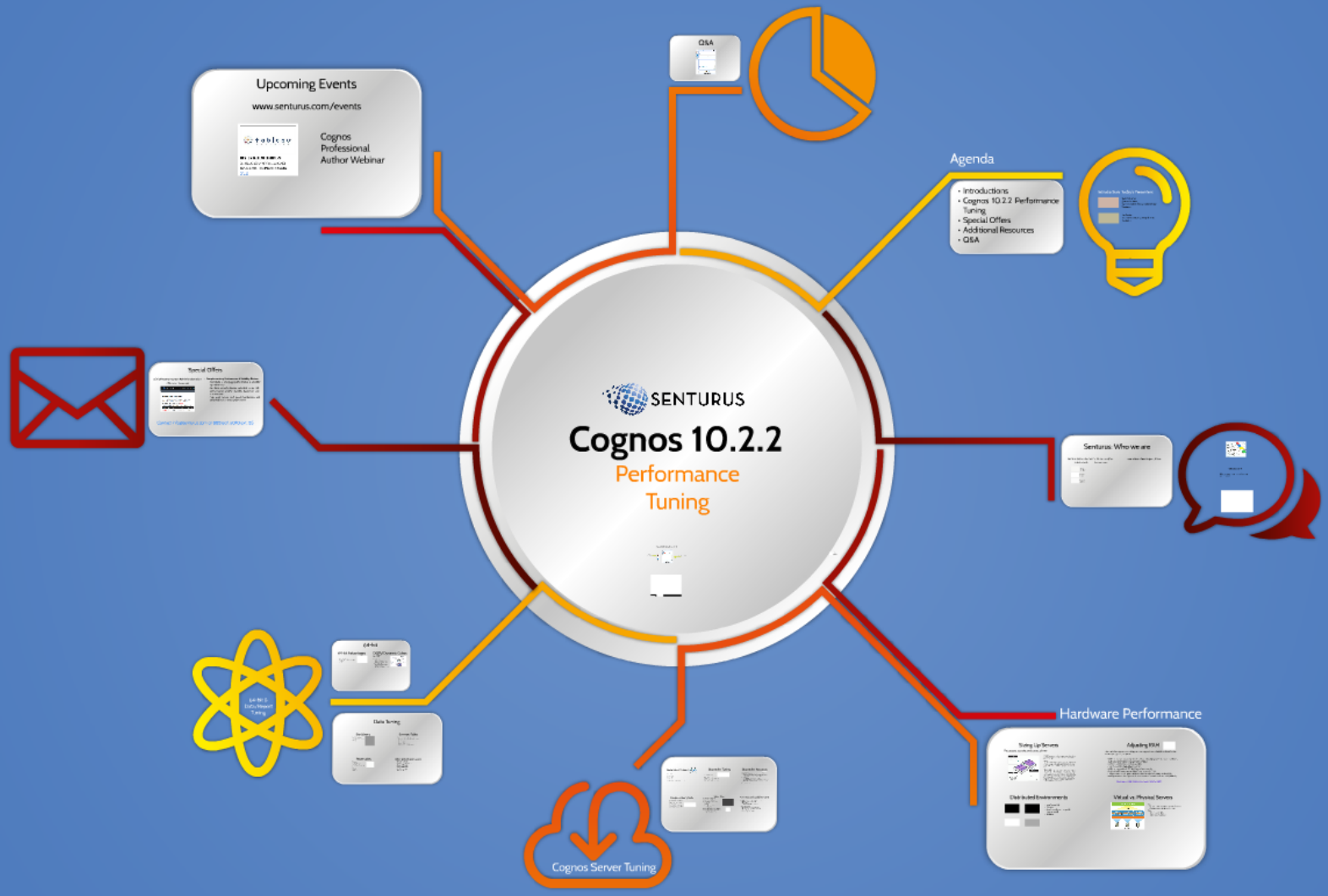
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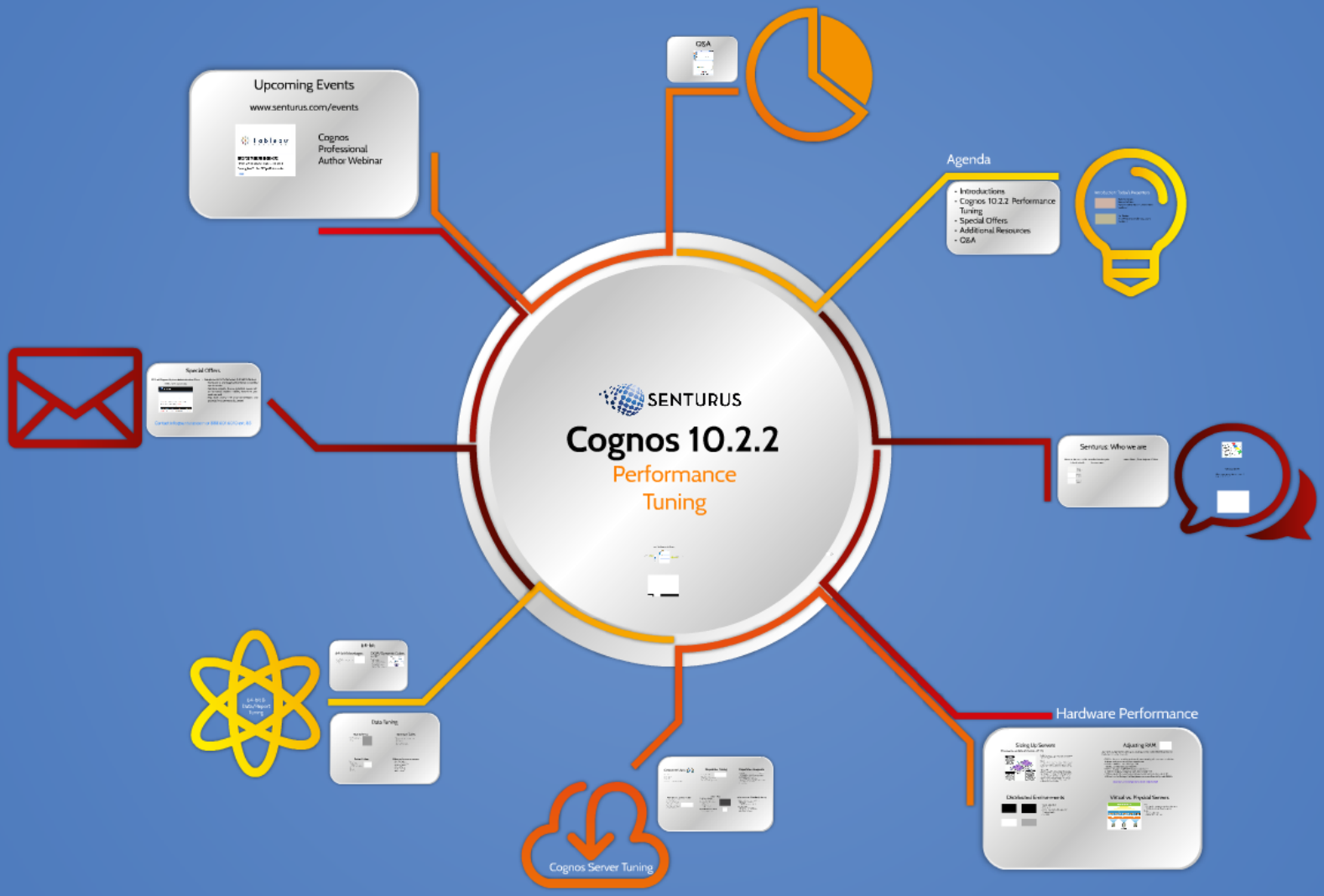
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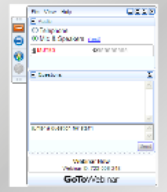

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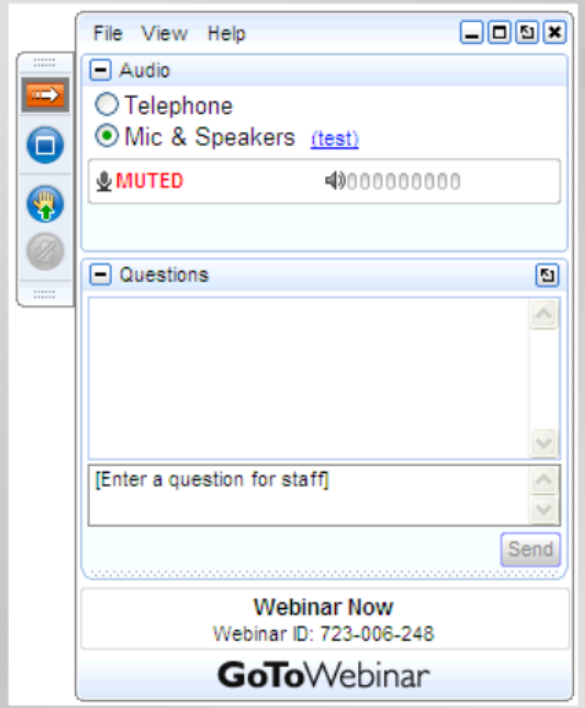
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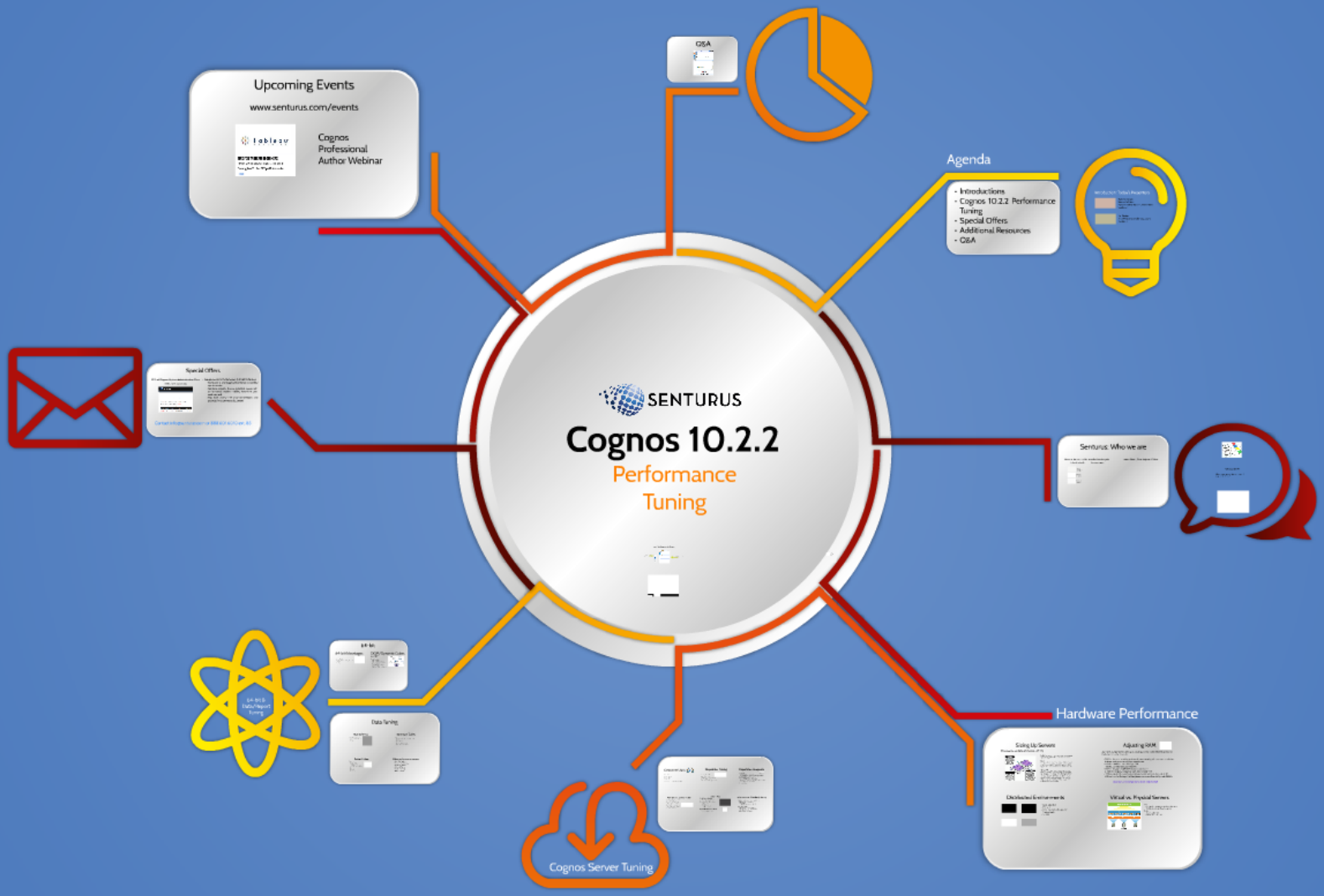
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