



Using Sentinel to Monitor and Manage your IDS Server Performance

Lester Knutsen

Advanced DataTools Corporation

Advanced DataTools

IDUG/IIUG North American Conference 2007

- May 6-10, 2007 *San Jose California*
- 6 half day Educational Seminars - Sunday May 6, 2007
- 52 Informix sessions - Monday May 6 thru Thursday May 10
- First public appearance of IDS - Cheetah!
- Informix only technical sessions given by Users, IBM Developers/Advanced support and Business Partners:
 - Information on the upcoming Cheetah release
 - Performance tuning and monitoring IDS
 - Application Development (Java, XML, PHP....)
 - Utilities that work with IDS
 - Much More!!



Speaker Developer Reception - At IBM at Silicon Valley Labs Meet many of the Informix developers!

Welcome Reception

Exhibition Hall

Special Interest Groups (SIGS)

Informix Best Practices

BI/Data Warehousing with Informix

Informix on Linux

Informix Spotlight Session with Kevin Brown Chief Architect of IDS from IBM

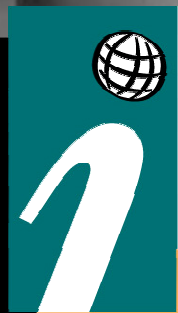
IIUG "Ask the Experts" Panel

Informix User Feedback Opportunities

Informix Certification Exams are Free!

To Register visit the IIUG web site or the conference page at www.iiug.org/conf

Email Cindy Lichtenauer - IIUG Board of Directors with questions. Cindy@iiug.org



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Using Sentinel to Monitor and Manage your IDS Server Performance

- What is Server Studio – Sentinel?
- Quick Start Guide to Setting up Sentinel
- What Parameters Should I Monitor?
- More Information on Server Studio and Sentinel

Lester Knutsen

Lester Knutsen has been developing database applications with Informix databases since 1983. He is president of Advanced DataTools, an IBM-Informix Consulting, Training, and Tools Partner specializing in data warehouse development, database design, performance tuning, and Informix training and support.

Currently, Lester specializes in developing web-enabled data warehouse systems. He provides training and consulting in database design and performance tuning, and is widely known in the Informix community for his extensive experience and teaching skill.

Lester is also president of the Washington D.C. Area Informix Users Group, one of the largest and most active Informix user groups, and is one of the founding members of the International Informix Users Group. Lester is also a member of the IBM Gold Consultant program.

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What is Server Studio – Sentinel?

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Server Studio™ with Sentinel™

Command & Control Center for IBM Informix® DBMS Servers

- A comprehensive multi-platform suite of proven system management tools for IBM Informix® DBMS servers that help database professionals to be more effective and productive by simplifying complexities of daily tasks.
- Highly intuitive graphical console provides a powerful set of seamlessly integrated database management tools.
- Keeps database servers performing at peak levels with an extensive assortment of analytical tools to diagnose and respond to performance and availability problems in real time.
- Improves utilization of data storage resources by efficiently reorganizing vital databases with minimal application downtime.
- Preserves database investment with a comprehensive configuration auditing and change management solution.
- Maximizes availability of vital databases by enabling fully automatic responses to critical server events.

Maximize Informix

availability • performance • maintainability

Local DBMS Server



Automate real-time 24 x 7 operational monitoring of entire IBM Informix DBMS Infrastructure, and manage automatic responses to server events.

Remote DBMS Servers



Manage multiple databases locally, or half-way around the world with ease!

Make error-prone, time-consuming, command-line driven administrative tasks a thing of the past!

Sentinel

Server Studio

LAN WAN

INTERNET

DBA

Developer



Partnership: IBM + AGS = Server Studio™

- IBM and AGS have been cooperating on DBMS tools since 1999.
- IBM ships Server Studio™ with all Informix Dynamic Servers.
- Server Studio™ had 6 major releases since September 2000.

IBM is Committed to Informix Customers

“IBM is dedicated to supporting and enhancing Informix database products to meet the needs of our customers now and in the future. The new release of Server Studio™ with Sentinel™ represents a significant addition to the IBM Informix product offering and demonstrates IBM’s unwavering commitment to provide our customers with the best-of-bread, state-of-the-art database application development, management and optimization tools to improve ease-of-use and productivity, help ensure that vital databases remain up and perform at peak levels, reduce total cost of ownership and protect substantial investments IBM customers have made in Informix database products.”

Bruce Weed
Program Director – Informix Business Leader
IBM Software Group



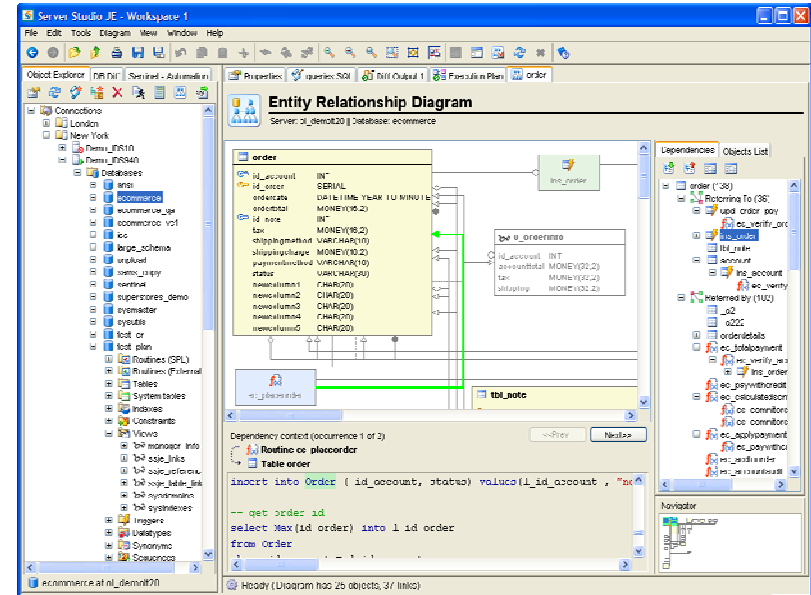
The Choice Facing IBM Informix® DBMS Users

```

DBAccess
ALTER TABLE >>
Enter the table name you wish to alter with the schema editor.
----- ecommerce@ol_agsny01 ----- Press CTRL-W for Help
'informix'._exte+ dfghj 'informix'._ssd_t2
'informix'._aa3 'informix'._discou+ 'informix'._ssd_t3
'informix'._aaa123 'informix'._dododo 'informix'._ssd_t4
'informix'._blob 'informix'._dps_fn+ 'informix'._ssd_t5
'informix'._hjk 'informix'._enums 'informix'._ssd_t6
'informix'._large 'informix'._ggg 'informix'._ssd_t7
'informix'._long_+ 'informix'._gggg 'informix'._ssd_vc+
'informix'._t1 'informix'._images 'informix'._ssd_vc+
'informix'._t2 'informix'._lizenz+ 'informix'._ssje_i+
'informix'._t4 'informix'._neutab 'informix'._ssje_t+
'informix'._test 'informix'._order 'informix'._ssje_t+
'informix'._test1 'informix'._orderd+ 'informix'._ssje_t+
'informix'._test_+ 'informix'._payment 'informix'._ssje_t+
'informix'._test_+ 'informix'._pnl_ad+ 'informix'._ssje_t+
'informix'._testi+ 'informix'._product 'informix'._ssje_t+
'informix'._ausstr+ 'informix'._reg_bu+ 'informix'._ssje_t+
'informix'._date1 'informix'._ssd_co+ 'informix'._ssje_t+
'informix'._date2 'informix'._ssd_t1 ...

d:\Program Files\informix>set DBLANG=EN_US.CP1252
d:\Program Files\informix>mode con codepage select=1252

Status for device CON:
Lines: 300
Columns: 80
Keyboard rate: 31
Keyboard delay: 1
Code page: 1252
    
```



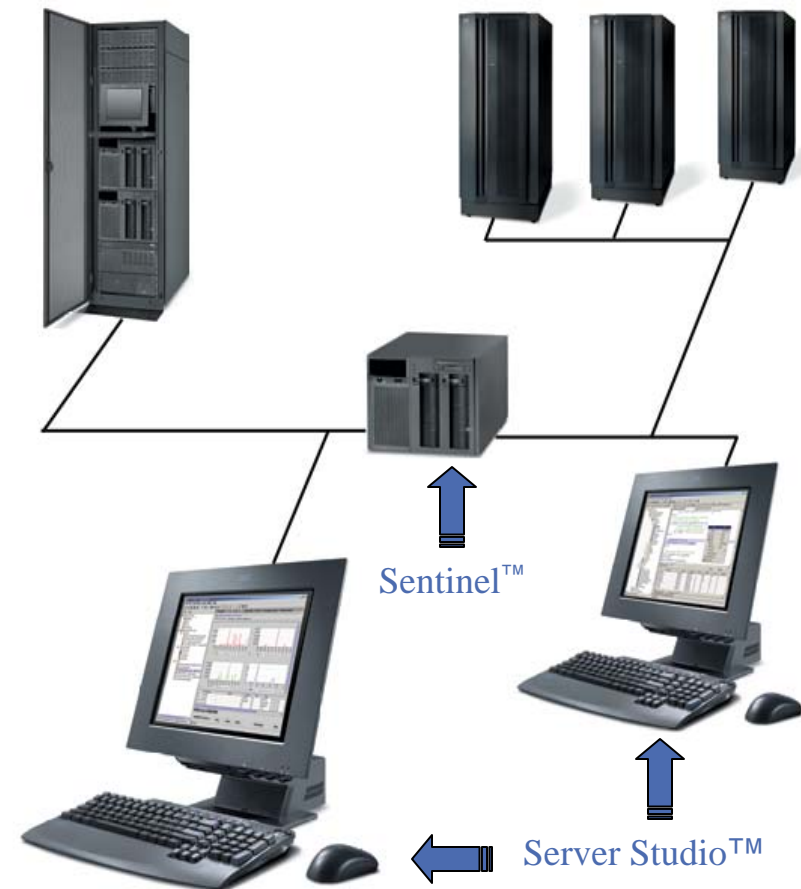
- A sparse collection of command-line, difficult to use, unintuitive, error-prone native tools - circa 1999.
- IT management is concerned with the lack of available qualified personnel capable of operating in such complicated environment.
- Valuable DBA skills acquired on other DBMS platforms are not readily transferable to Informix.
- New generation of DBAs expect modern, intuitive graphical tools and may not have the requisite skills to operate effectively at the command line prompt.

- **Server Studio™ with Sentinel™** is the premier graphical development and management environment for IBM Informix® DBMS servers that features a rich collection of modern, easy-to-use, and highly intuitive tools.
- **Server Studio™ with Sentinel™** provide wide-ranging functionality to support customers' vital IBM Informix® databases — from initial design, development and testing — all the way through to production deployment and successful operational service.



Flexible Multi-Platform Command & Control Center for IBM Informix® DBMS

- Manage your entire infrastructure of IBM Informix® DBMS servers from a centralized point of control, regardless of whether your servers are all in one location, or at remote sites half-way around the world.
- Agentless architecture enables painless and rapid deployment of flexible and effective DBMS command and control solutions.
- Assure availability, maintainability and peak performance of your vital databases with ease.



Server Studio™ *with* Sentinel™ Release 6



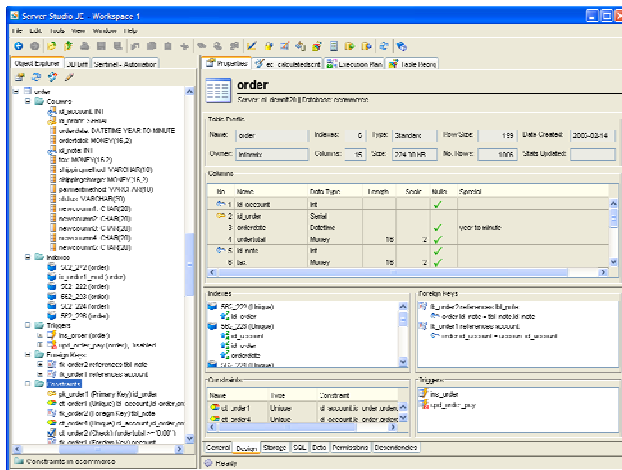
The most feature-rich, productive and capable release ever!

- Full E/R Diagramming and Object Dependencies Analysis
- Graphical Explain Plan Analyzer to help tune SQL performance
- Data Difference Analyzer has been added to manage data integrity
- Comprehensive Database Configuration and Change Management
- Vastly Improved Database Reorganization Facilities
- Integrated intuitive management of IDS' High Performance Loader
- Comprehensive host platform monitoring has been added to Sentinel
- Autonomic Management Facilities have been substantially enhanced
- Integrated Version Control System for Databases
- Automated Configuration and Regulatory Compliance Audits



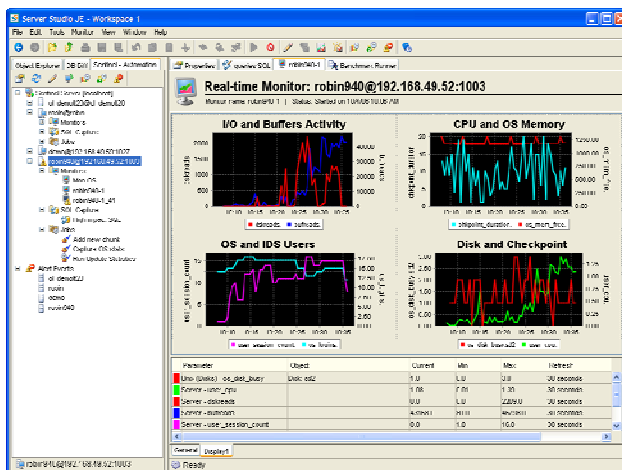
Avant-garde Management Tools for IBM Informix® DBMS

Server Studio™ and **Sentinel™** together provide powerful multi-platform suite of integrated, intuitive tools that help seasoned database professionals and novices alike improve productivity and ensure that critical IBM Informix® databases remain up and perform at peak levels, manage change and assure availability of vital business information.



Server Studio™ provides a comprehensive collection of modern, proven, easy-to-use tools to help DBAs and developers perform efficiently common database tasks such as:

- Database SQL Application Development and Debugging
- Schema Management
- Configuration Auditing and Change Management
- Performance Tuning
- Data Storage Management and Reorganization
- Database Security Administration



Sentinel™ automates comprehensive proactive management of IBM Informix® DBMS environments by providing:

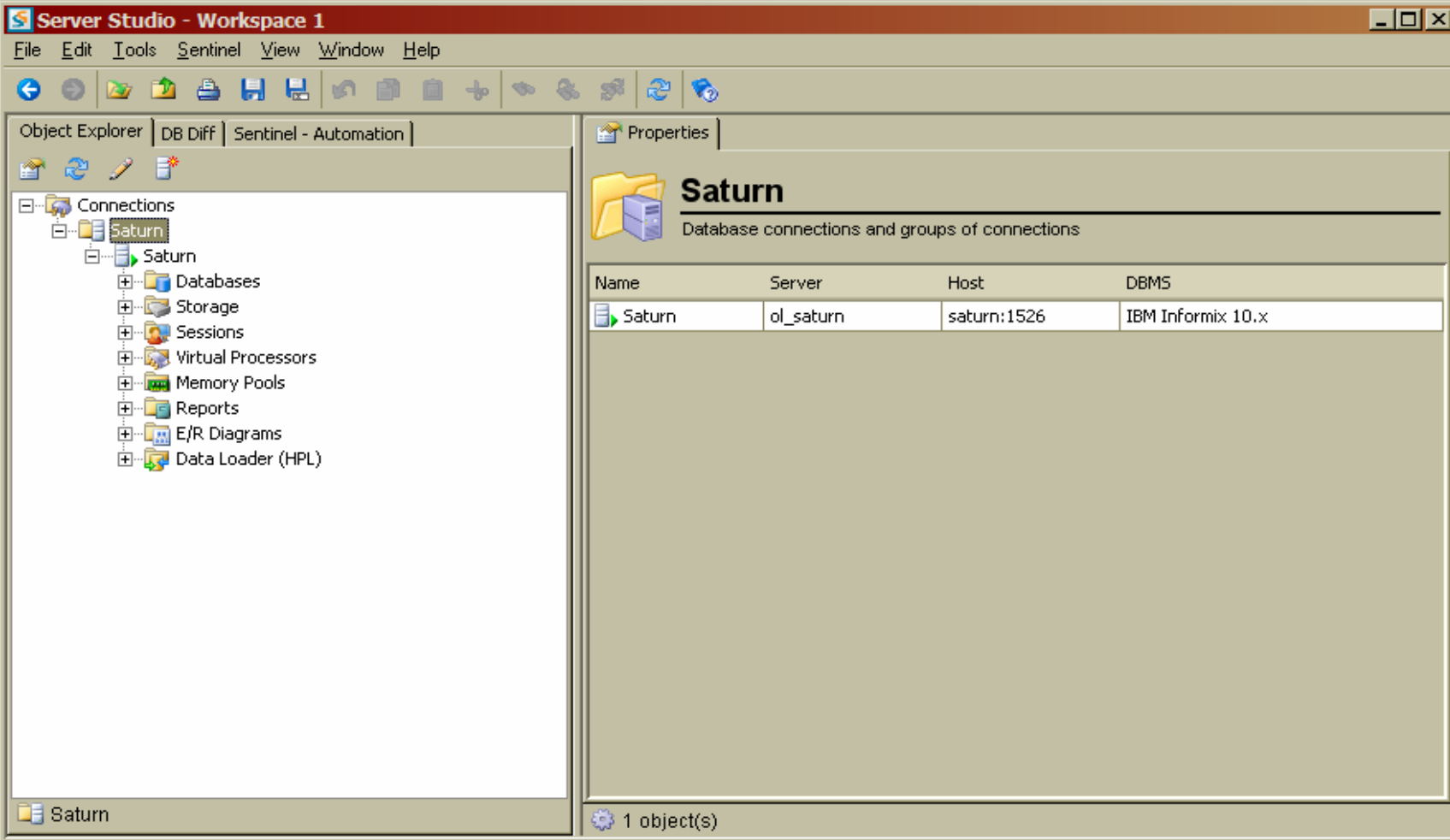
- 24 x 7 operational monitoring of IBM Informix® DBMS servers
- 24 x 7 operational monitoring of the IDS' host platform
- Continuous time-series measurement data of servers' performance
- Execution of regularly scheduled maintenance tasks
- Highly flexible multi-level performance degradation alerts
- Autonomic response management to server events in real time



Quick Start Guide to Setting up Sentinel

Instead of a live demo – here are some screen shots to setting up Sentinel

Server Studio - Workspace



Server Studio - Workspace 1

File Edit Tools Sentinel View Window Help

Object Explorer | DB Diff | Sentinel - Automation

Connections

- Saturn
 - Databases
 - Storage
 - Sessions
 - Virtual Processors
 - Memory Pools
 - Reports
 - E/R Diagrams
 - Data Loader (HPL)

Properties

Saturn
Database connections and groups of connections

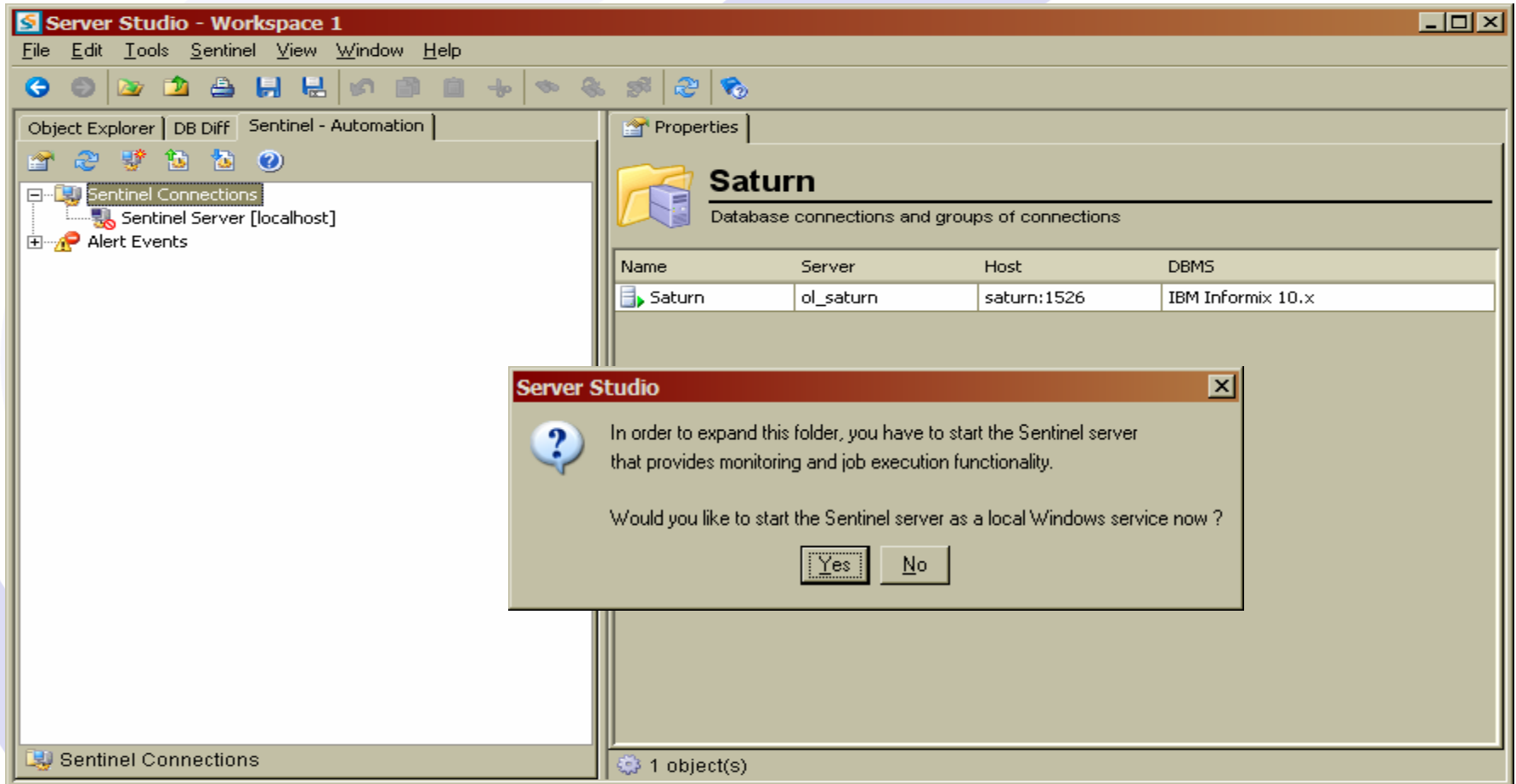
Name	Server	Host	DBMS
Saturn	ol_saturn	saturn:1526	IBM Informix 10.x

Saturn

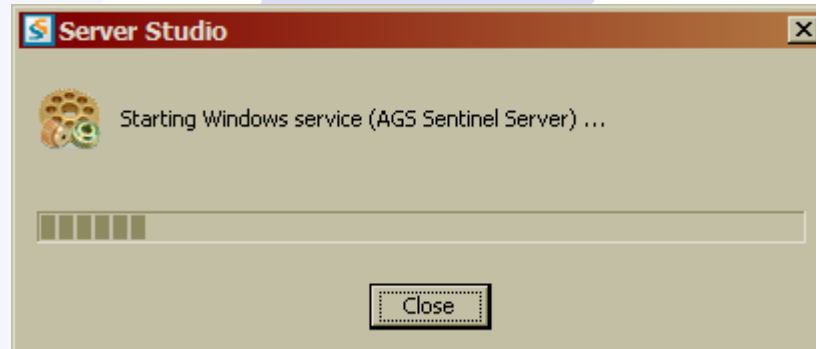
1 object(s)

Advanced DataTools

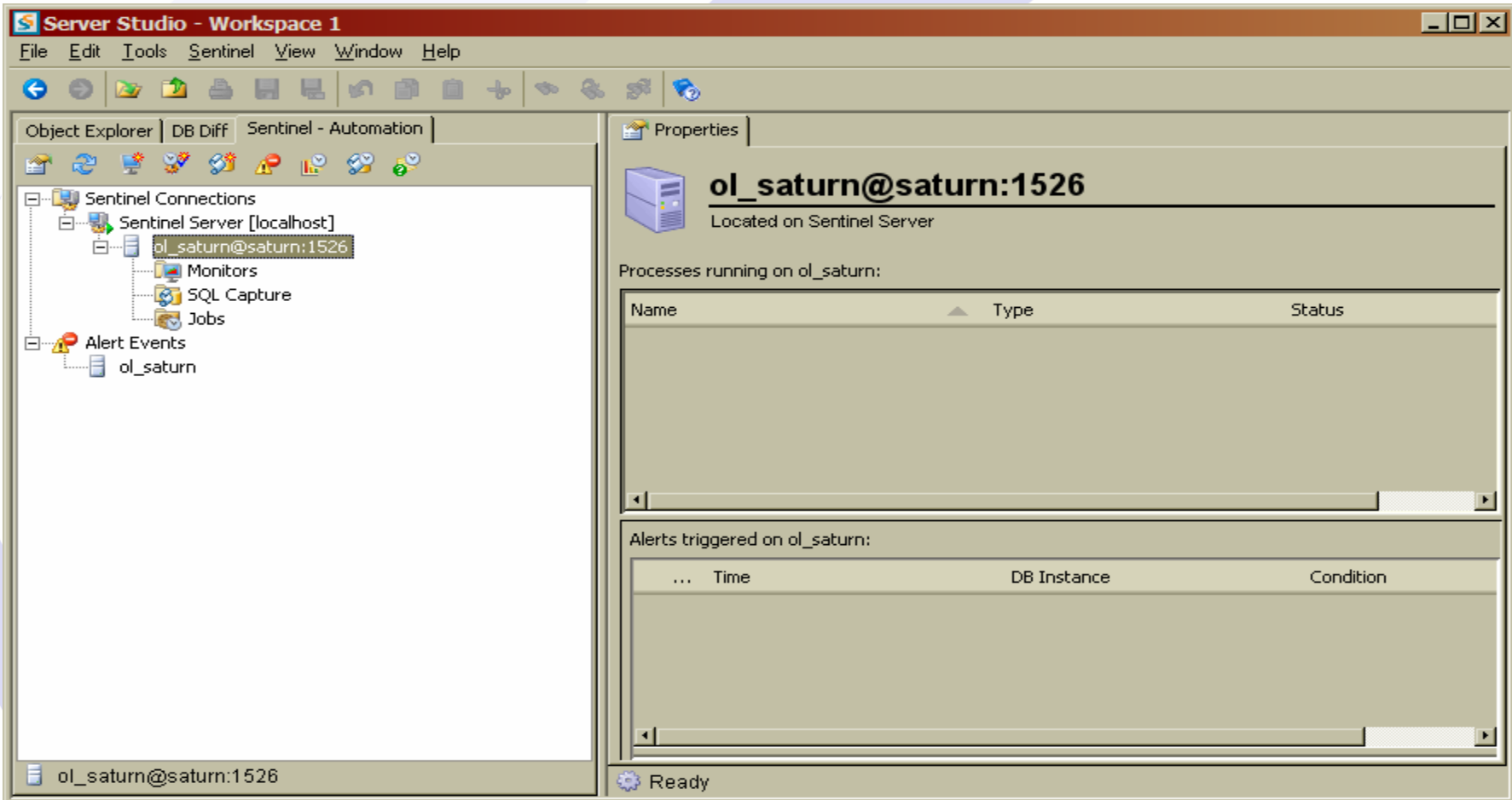
Start Sentinel Server



Starting the AGS Sentinel Server



Sentinel Workspace



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Step 1 - Create a New Monitor

New Monitor

Sentinel monitor is a user-defined object that tracks and optionally collects performance measurements of the IBM Informix DBMS operating conditions at the level of the individual data server instance and its host computer platform.

The Sentinel Performance Monitor is a named collection of: sensors at the server, table/index, physical storage, user session and host platform OS levels; definitions of multi-level event alert conditions to flag availability and performance degradation problems; lists of target DBMS objects; and related real-time graphs.

The performance measurements data collected by Sentinel monitors can be persistently stored in the repository for subsequent retrieval, historical performance review and analysis.

General

Monitor name: Owner:

Sentinel Server:

Description:

Start process after it is created
 Auto-start on the startup of Sentinel Server

Target DBMS Server

Connection: Server:

Step 2 – Select the Parameters to Monitor

Select parameters that you want to monitor. If you choose to monitor parameters from Table/Index, Session, DBspace or Chunk categories, you will be able to define objects within these categories, such as individual table, in the Filter page of this wizard. For each selected parameter specify a refresh rate and choose Yes in the Save Data column if you want to collect this parameter's data in the built-in Historical Data Repository for future analysis.

Parameters: Show Selected Parameters Only Show unsupported parameters

Parameter	Refresh	Save	Description
<input type="checkbox"/> IDS (Server) - isreads			Number of times an index position was changed
<input type="checkbox"/> IDS (Server) - isreads			Number of times the ISAM read function is called
<input type="checkbox"/> IDS (Server) - iswrites			Number of times the ISAM write function is called
<input type="checkbox"/> IDS (Server) - isrewrites			Number of times the ISAM update function is called
<input type="checkbox"/> IDS (Server) - isdeletes			Number of times the ISAM delete function is called
<input type="checkbox"/> IDS (Server) - iscommits			Number of times the ISAM iscommit() function was called
<input type="checkbox"/> IDS (Server) - isrollbacks			Number of times transactions rolled back
<input type="checkbox"/> IDS (Server) - ovlock			Number of times the database server attempted to exceed the maximum number of user threads
<input type="checkbox"/> IDS (Server) - ovuser			Number of times that a user attempted to exceed the maximum number of user threads
<input type="checkbox"/> IDS (Server) - ovtrans			Overflow transaction table
<input checked="" type="checkbox"/> IDS (Server) - latchwts	1 minutes	<input checked="" type="checkbox"/>	Increments when a thread waits to gain access to a shared-memory resource
<input type="checkbox"/> IDS (Server) - buffwts			Number of times user threads have to wait for a buffer
<input type="checkbox"/> IDS (Server) - lockreqs			Number of total requests for locks
<input checked="" type="checkbox"/> IDS (Server) - lockwts	1 minutes	<input checked="" type="checkbox"/>	Number of times user threads wait to acquire a lock
<input type="checkbox"/> IDS (Server) - lktouts			Number of deadlock timeouts
<input type="checkbox"/> IDS (Server) - deadlks			Number of times that deadlocks were detected and cured
<input checked="" type="checkbox"/> IDS (Server) - ckptwts	1 minutes	<input checked="" type="checkbox"/>	Number of times checkpoint waits
<input type="checkbox"/> IDS (Server) - chunkwrites			Writes during a checkpoint
<input type="checkbox"/> IDS (Server) - plgpagewrites			Physical-log pages written
<input type="checkbox"/> IDS (Server) - plgwrites			Physical-log writes
<input type="checkbox"/> IDS (Server) - llgrecs			Logical-log records
<input type="checkbox"/> IDS (Server) - llgpagewrites			Logical-log pages written
<input type="checkbox"/> IDS (Server) - llgwrites			Logical-log writes

Default Refresh Rate:

Step 3 – Define Alerts

New Monitor

To define an alert, select a required monitor parameter from the dropdown list in the Alerts section and specify threshold condition and severity level. For each defined alert condition choose notification options in the Alert Actions section, such as an email address of an administrator, who should be notified when the alert event is triggered. You can also choose to execute a user-defined job when the alert event is triggered. User-defined job can be OS script executed on the target host or SQL script executed against the target database server.

Alerts

Parameter	Operation	Value	Severity
1	>		Warning

Alert Actions

Popup a message

Notification Delay between recurring events:
1 hour

Notify after event occurs 1 time(s)

Notify via Email, Pager or Mobile Phone

Email Recipient

Add... Delete

User Defined Message

Execute Job Edit...

Job Arguments:

Add... Delete

<< Back Next >> Cancel Help

Step 3 – Define Alerts

New Monitor

To define an alert, select a required monitor parameter from the dropdown list in the Alerts section and specify threshold condition and severity level. For each defined alert condition choose notification options in the Alert Actions section, such as an email address of an administrator, who should be notified when the alert event is triggered. You can also choose to execute a user-defined job when the alert event is triggered. User-defined job can be OS script executed on the target host or SQL script executed against the target database server.

Alerts

	Parameter	Operation	Value	Severity
1	IDS (Server) - lockwts	>	100.0	Warning
2	IDS (Server) - ckptwts	>	10.0	Information

Alert Actions

lockwts>100.0

Popup a message

Notification Delay between recurring events:
1 hour

Notify after event occurs 1 time(s)

Notify via Email, Pager or Mobile Phone

Email Recipient

Add... Delete

User Defined Message

Execute Job Edit...

Job Arguments:

Add... Delete

<< Back Next >> Cancel Help

Step 3 – Define Alerts

New Monitor

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Alerts

	Parameter	Operation	Value	Severity
1	IDS (Server) - lockwts	>	100.0	Warning
2	IDS (Server) - ckptwts	>	10.0	Warning

Add... Delete

Alert Actions

ckptwts > 10.0

Popup a message

Notification Delay between recurring events:
1 hour

Notify after event occurs 1 time(s)

Notify via Email, Pager or Mobile Phone

Email Recipient

Add... Delete

User Defined Message

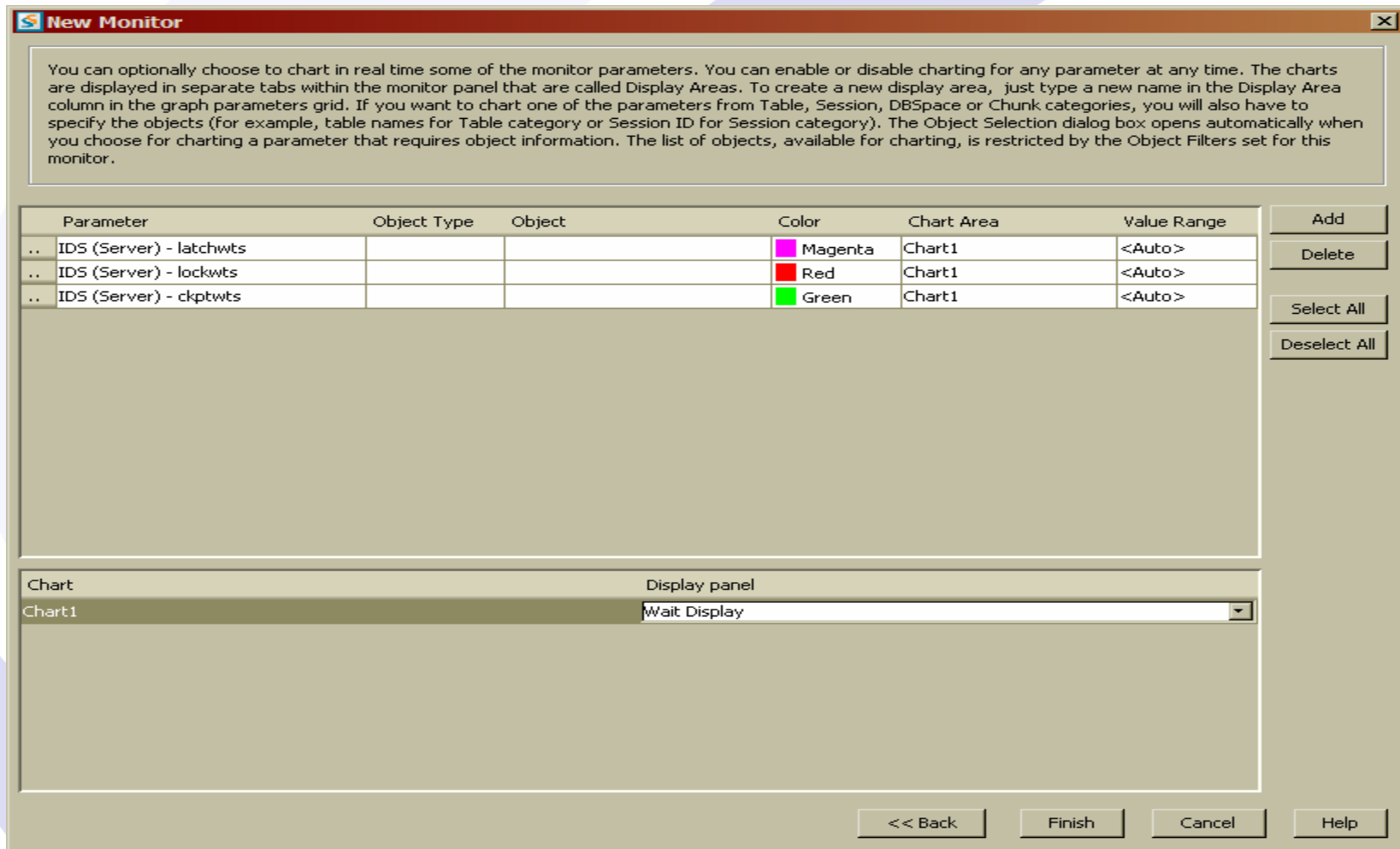
Too Many Checkpoint Waits

Execute Job Edit...

Job Arguments:

<< Back Next >> Cancel Help

Step 4 – Define the Chart Layout



Watch the Display

The screenshot displays the 'Server Studio - Workspace 1' interface. The left pane shows the 'Object Explorer' with a tree view of 'Sentinel Connections' and 'Alert Events'. The right pane shows a 'Real-time Monitor: Wait Status' window. The monitor displays a line chart titled 'Chart1' with three data series: 'latchwmts' (magenta), 'lockwmts' (red), and 'ckptwmts' (green). The chart shows a significant spike in 'ckptwmts' around 09:00. Below the chart is a table with columns: Parameter, Object, Cur..., Min, Max, Refresh, and Chart Area. The table lists three parameters: 'IDS (Server) - la...', 'IDS (Server) - lo...', and 'IDS (Server) - c...'. The 'Cur...' column shows values of 0.0, 0.0, and 0.0 respectively. The 'Max' column shows values of 0.0, 0.0, and 3.0. The 'Refresh' column shows '1 minute' for all. The 'Chart Area' column shows 'Chart1' for all. The bottom of the monitor shows 'General' and 'Wait Display' tabs, and a status bar indicating 'Initializing monitor ...'.

Parameter	Object	Cur...	Min	Max	Refresh	Chart Area
IDS (Server) - la...		0.0	0.0	0.0	1 minute	Chart1
IDS (Server) - lo...		0.0	0.0	0.0	1 minute	Chart1
IDS (Server) - c...		0.0	0.0	3.0	1 minute	Chart1

Step 1 – Create a New Monitor for Server IO

New Monitor

Sentinel monitor is a user-defined object that tracks and optionally collects performance measurements of the IBM Informix DBMS operating conditions at the level of the individual data server instance and its host computer platform.

The Sentinel Performance Monitor is a named collection of: sensors at the server, table/index, physical storage, user session and host platform OS levels; definitions of multi-level event alert conditions to flag availability and performance degradation problems; lists of target DBMS objects; and related real-time graphs.

The performance measurements data collected by Sentinel monitors can be persistently stored in the repository for subsequent retrieval, historical performance review and analysis.

General

Monitor name: Owner:

Sentinel Server:

Description:

Start process after it is created

Auto-start on the startup of Sentinel Server

Target DBMS Server

Connection: ... Server:

Next >> Cancel Help

Step 2 – Select the Parameters

New Monitor

Select parameters that you want to monitor. If you choose to monitor parameters from Table/Index, Session, DBspace or Chunk categories, you will be able to define objects within these categories, such as individual table, in the Filter page of this wizard. For each selected parameter specify a refresh rate and choose Yes in the Save Data column if you want to collect this parameter's data in the built-in Historical Data Repository for future analysis.

Parameters: Show Selected Parameters Only Show unsupported parameters

Parameter	Refresh	Save	Description
<input type="checkbox"/> IDS (Server) - isAlive			This flag is TRUE if the connection to the server instance can be established
<input type="checkbox"/> IDS (Server) - user_cpu			Total user CPU time used by all user threads expressed in seconds
<input type="checkbox"/> IDS (Server) - system_cpu			Total system CPU time used by all user threads expressed in seconds
<input type="checkbox"/> IDS (Server) - perc_phys_log_used			Percentage of used physical log
<input type="checkbox"/> IDS (Server) - perc_lgcl_log_used			Percentage of logical logs used
<input type="checkbox"/> IDS (Server) - user_session_count			Number of users connected to the server
<input type="checkbox"/> IDS (Server) - buffer_wait_ratio			Buffer wait ratio (bufwts/(pagreads+bufwrites))*100
<input type="checkbox"/> IDS (Server) - bufreads_writes_ratio			Buffered reads to buffered writes ratio (bufreads/bufwrites)
<input type="checkbox"/> IDS (Server) - rollback_commits_ratio			Rollback to commit ratio (isrollbacks/iscommits)
<input type="checkbox"/> IDS (Server) - isam_seqscan_ratio			ISAM total to sequential scan ration (seqscans/isamtot/)
<input type="checkbox"/> IDS (Server) - perc_cached_read			Read cache percentage (100*(bufreads-dskreads)/bufreads)
<input type="checkbox"/> IDS (Server) - perc_cached_write			Write cache percentage (100*(bufwrites-dskwrites)/dskwrites)
<input type="checkbox"/> IDS (Server) - chkpoint_duration			Checkpoint duration
<input type="checkbox"/> IDS (Server) - memory_pools			Total amount used by all memory pools in Kb
<input type="checkbox"/> IDS (Server) - memory_sessions			Amount of memory pools used by user sessions in Kb
<input type="checkbox"/> IDS (Server) - active_trans			Active transactions
<input type="checkbox"/> IDS (Server) - dskreads			Number of actual reads from disk
<input checked="" type="checkbox"/> IDS (Server) - pagreads	30 seconds	<input checked="" type="checkbox"/>	Number of pages read
<input checked="" type="checkbox"/> IDS (Server) - bufreads	30 seconds	<input checked="" type="checkbox"/>	Number of reads from shared memory
<input type="checkbox"/> IDS (Server) - dskwrites			Number of actual physical writes to disk. It includes the writes for the physical
<input checked="" type="checkbox"/> IDS (Server) - pagwrites	30 seconds	<input checked="" type="checkbox"/>	Number of pages written.
<input checked="" type="checkbox"/> IDS (Server) - bufwrites	30 seconds	<input checked="" type="checkbox"/>	Number of writes to the shared memory buffers
<input type="checkbox"/> IDS (Server) - isamtot			Total number of ISAM calls made

Default Refresh Rate: 10 minutes

<< Back Next >> Cancel Help

Step 3 – Define the Alerts

To define an alert, select a required monitor parameter from the dropdown list in the Alerts section and specify threshold condition and severity level. For each defined alert condition choose notification options in the Alert Actions section, such as an email address of an administrator, who should be notified when the alert event is triggered. You can also choose to execute a user-defined job when the alert event is triggered. User-defined job can be OS script executed on the target host or SQL script executed against the target database server.

Alerts

	Parameter	Operation	Value	Severity
1	IDS (Server) - bufreads	>	1000.0	Warning
2	IDS (Server) - bufwrites	>	1000.0	Warning

Alert Actions

bufwrites > 1000.0

Popup a message

Notification Delay between recurring events:
1 hour

Notify after event occurs 1 time(s)

Notify via Email, Pager or Mobile Phone

Email Recipient

Add... Delete

User Defined Message

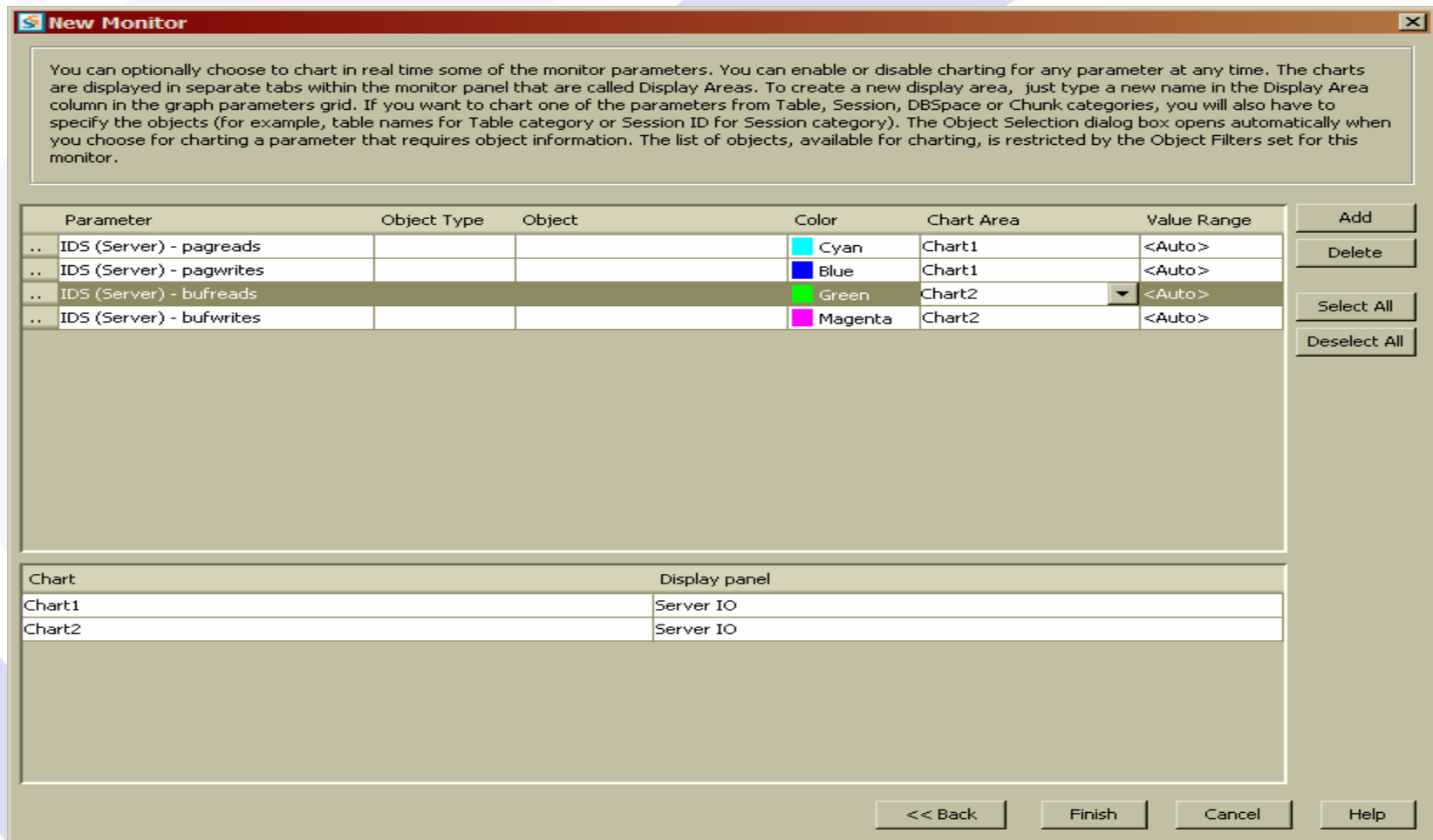
Too Many Buffer Writes

Execute Job Edit...

Job Arguments:

<< Back Next >> Cancel Help

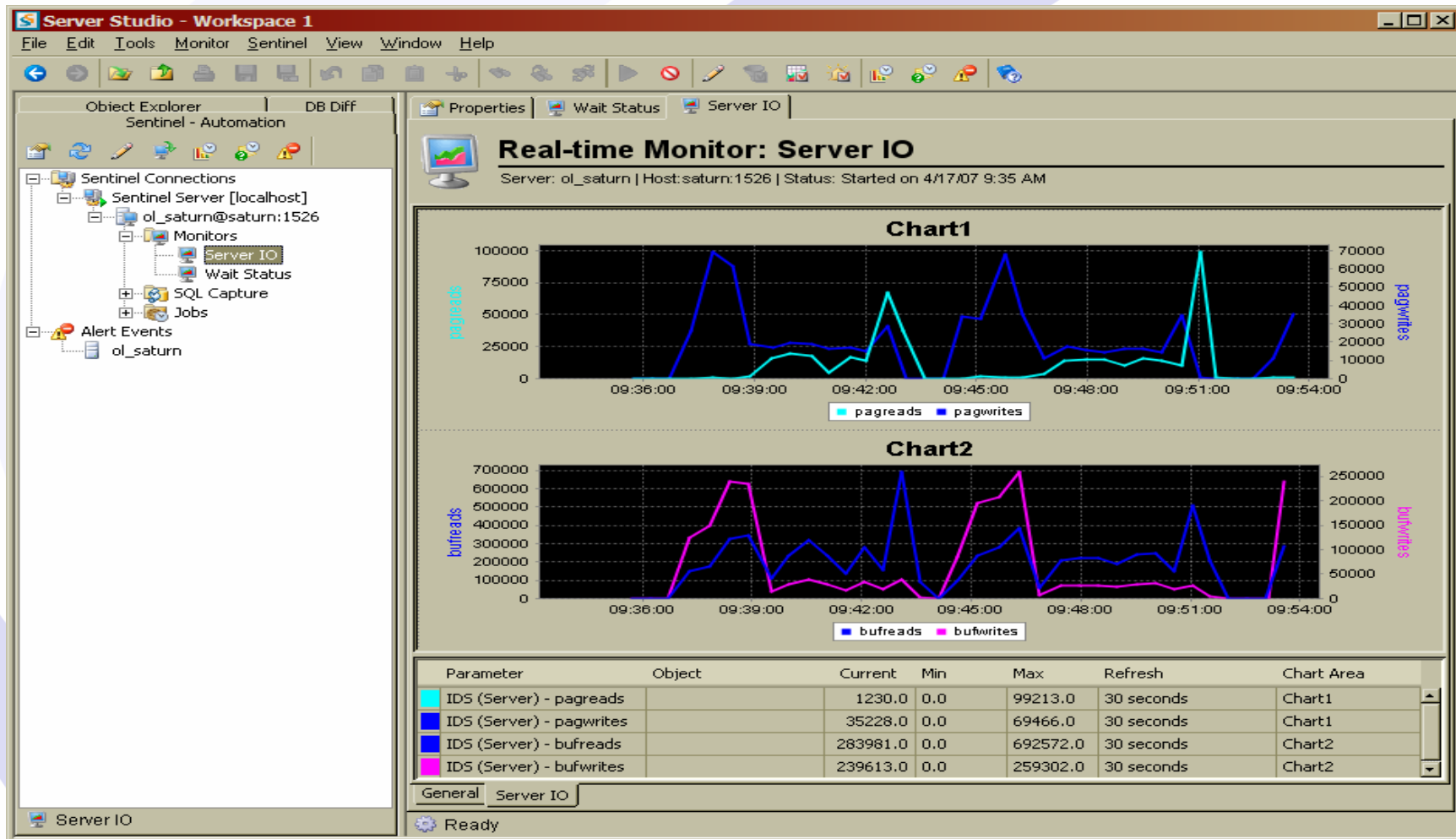
Step 4 – Layout the Charts



Alert Pop-Up



Watch the Display



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Step 1- Define SQL Capture

Define the process name, under which it will be displayed in the Object Explorer. Do not include DB server name or server host name as part of the process name - it will be added automatically. The name cannot contain special characters, such as slashes or commas. Optionally describe the purpose of this process. Check 'Start after creation' checkbox if you want to start the process immediately after it is created. Press Finish button to create the process.

General

Process Name: Owner:

Sentinel Server:

Description:

Start process after it is created

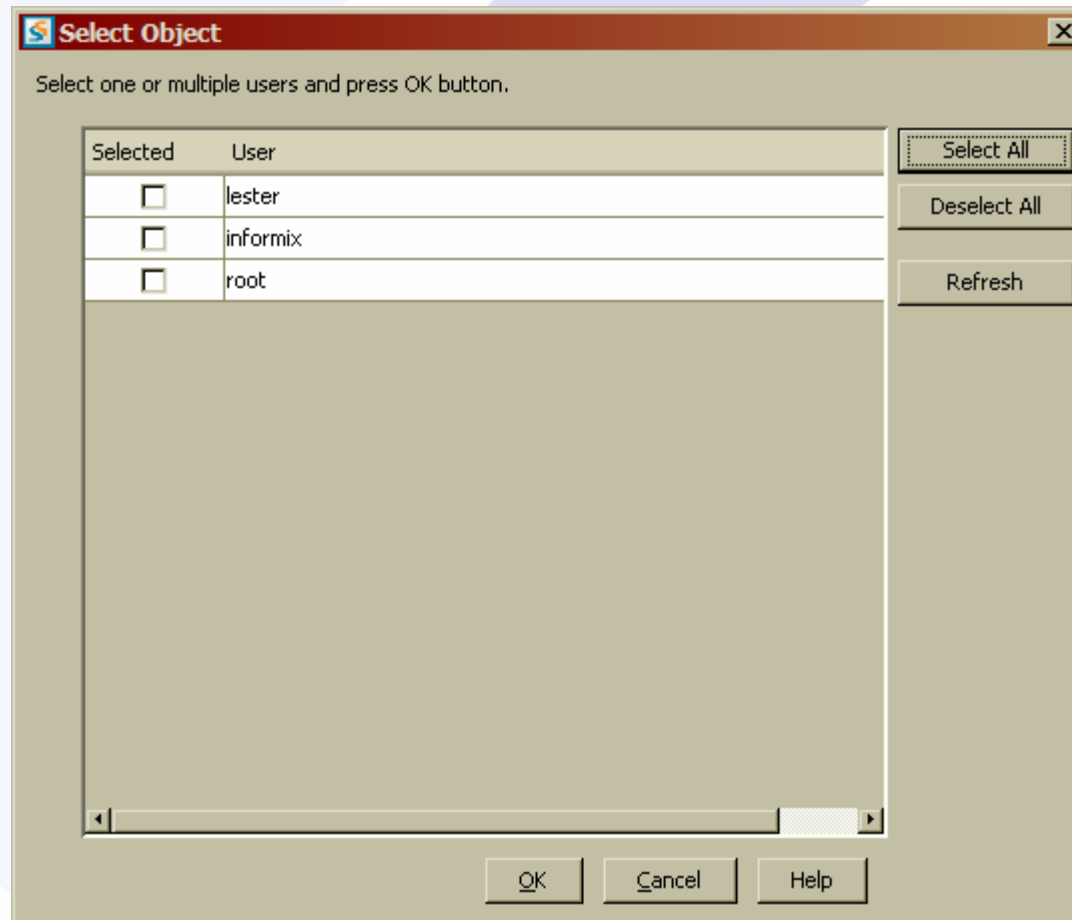
Auto-start on the startup of Sentinel Server

Target DBMS Server

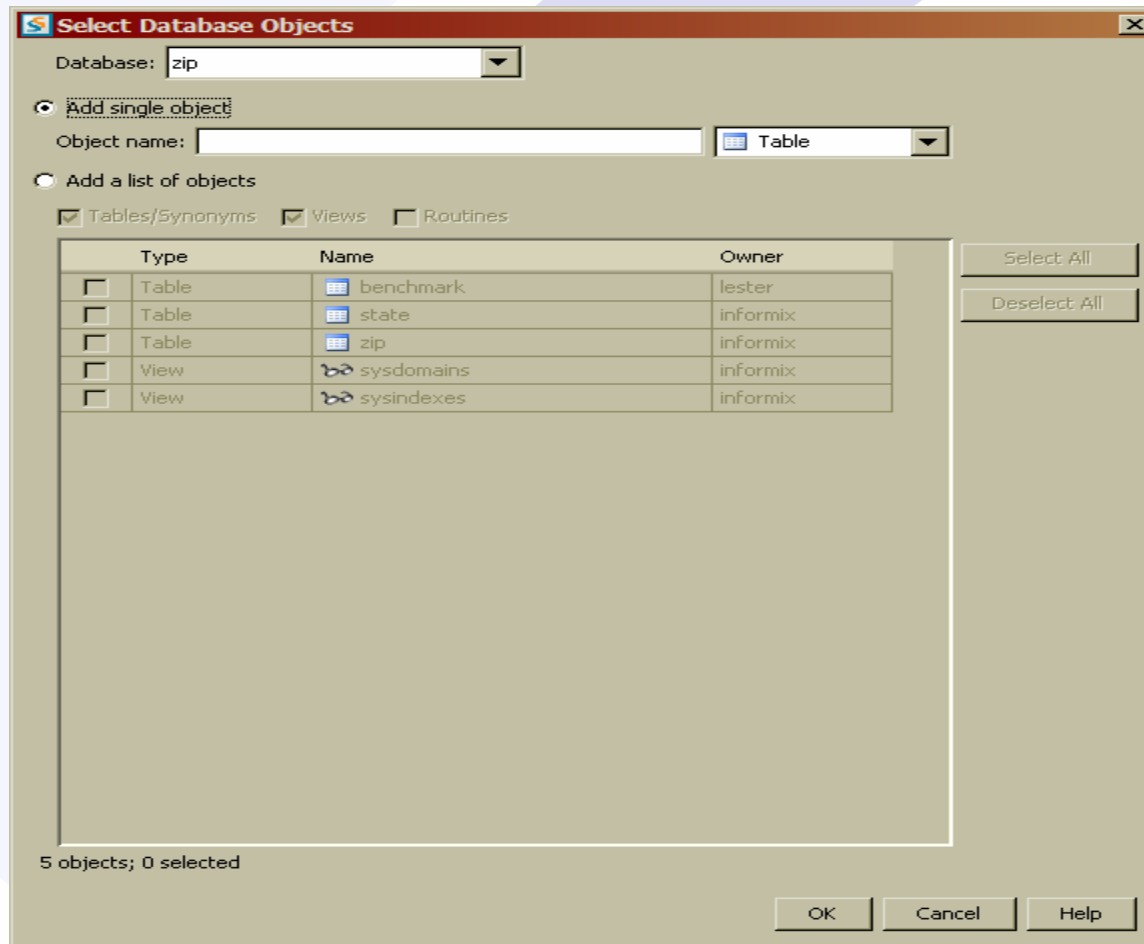
Connection: ... Server:

Next >> Cancel Help

Step 1 - Select the User



Or Select the Database Object



Watch the SQL

The screenshot shows the 'SQL Capture for DB Instance: Lester Query' window in SQL Server Enterprise Manager. The main pane displays a table of captured SQL statements for session #14: lester @ SATURN. The table has columns for Time, Session, SQL, DB, Est Cost, and Est. Two statements are listed: an insert statement and an update statement.

Time	Session	SQL	DB	Est Cost	Est
4/17/07 10:01:22 ...	#14: lester @ SATURN	insert into benchmark select 0, zip.*, "...	zip	1610	
4/17/07 9:58:27 AM	#14: lester @ SATURN	update benchmark set price = price + (select p...	zip	3	

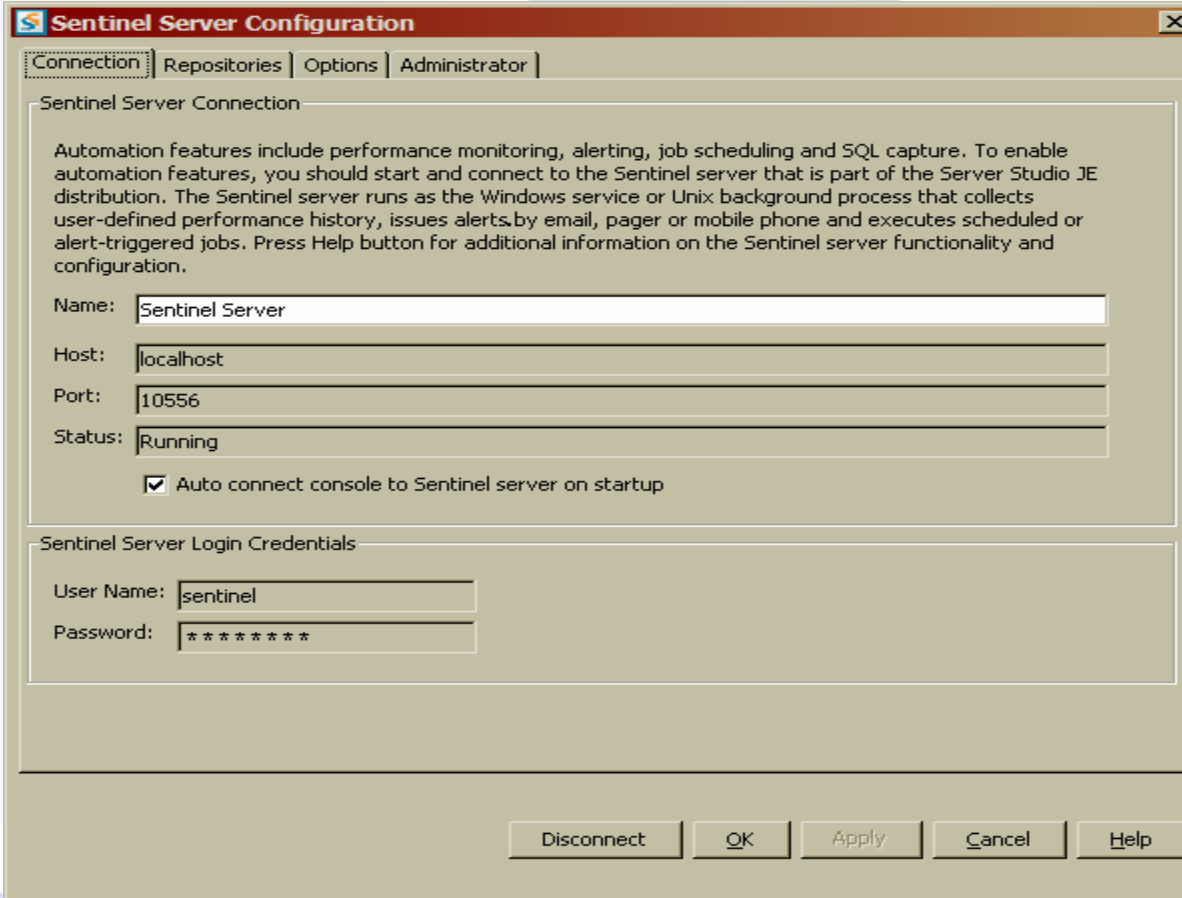
Create Jobs in Sentinel

The screenshot shows the 'Job' configuration dialog box with the following fields and options:

- General | Schedule | Alert Actions** (Tabs)
- Properties**
 - Job Name:
 - Job Type: **Remote OS Command (Telnet/SSH)** (Dropdown)
- Details**
 - Connection: **<Select Connection>** (Dropdown) with a browse button (...)
 - Server:
 - Host:
 - Protocol: **Telnet** (Dropdown)
 - Port: **23** (Spin box)
 - User Name:
 - Authentication: **Password** Private Key
 - Password:
 - Timeout: **0** (Spin box) seconds (zero means no timeout)
 -
 - Command:
(Use full path of script or executable program)
 - Success Pattern:
 - Failure Pattern:
- OK** **Cancel** **Help** (Buttons)

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Configure Sentinel - Connection



Sentinel Server Configuration

Connection | Repositories | Options | Administrator

Sentinel Server Connection

Automation features include performance monitoring, alerting, job scheduling and SQL capture. To enable automation features, you should start and connect to the Sentinel server that is part of the Server Studio JE distribution. The Sentinel server runs as the Windows service or Unix background process that collects user-defined performance history, issues alerts by email, pager or mobile phone and executes scheduled or alert-triggered jobs. Press Help button for additional information on the Sentinel server functionality and configuration.

Name: Sentinel Server

Host: localhost

Port: 10556

Status: Running

Auto connect console to Sentinel server on startup

Sentinel Server Login Credentials

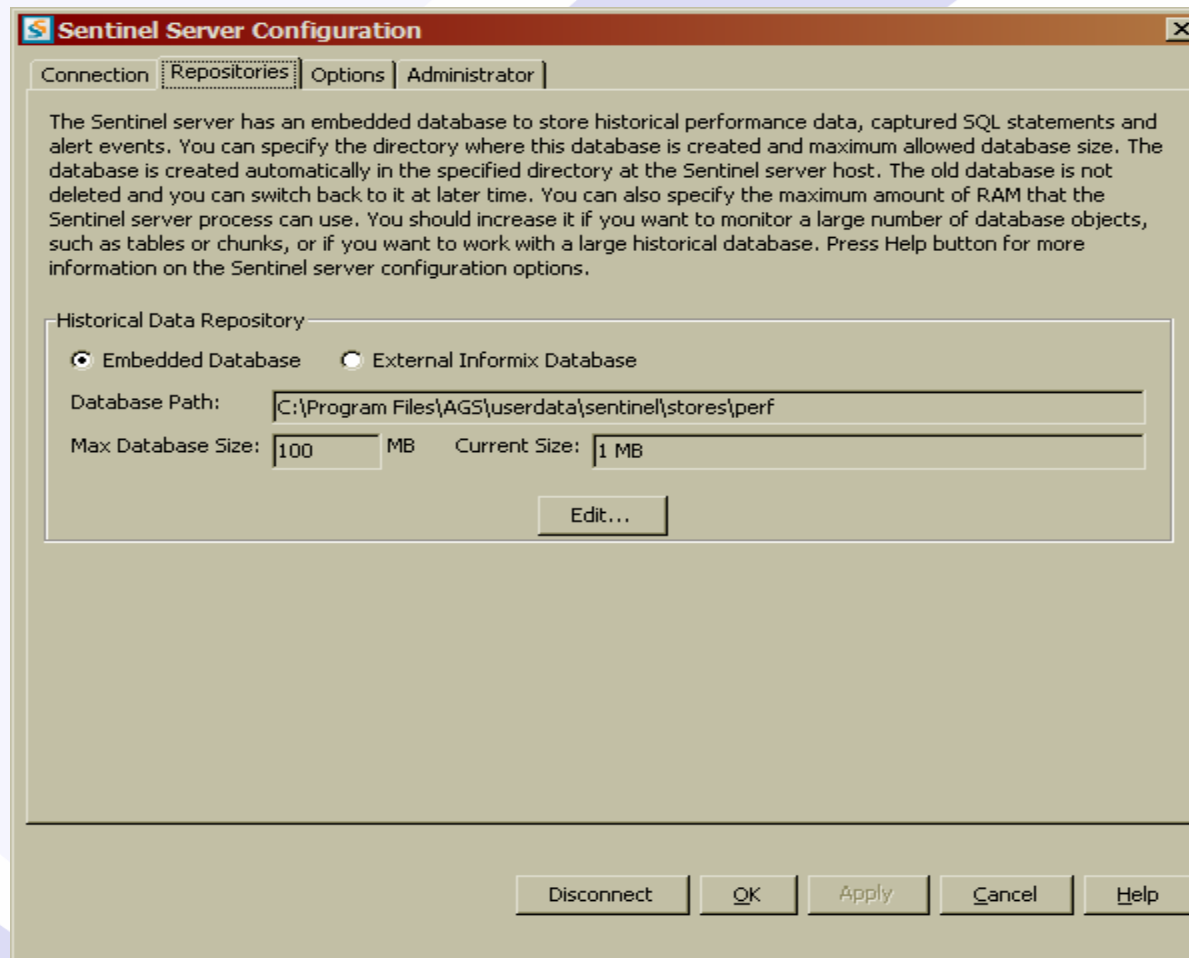
User Name: sentinel

Password: *****

Disconnect OK Apply Cancel Help

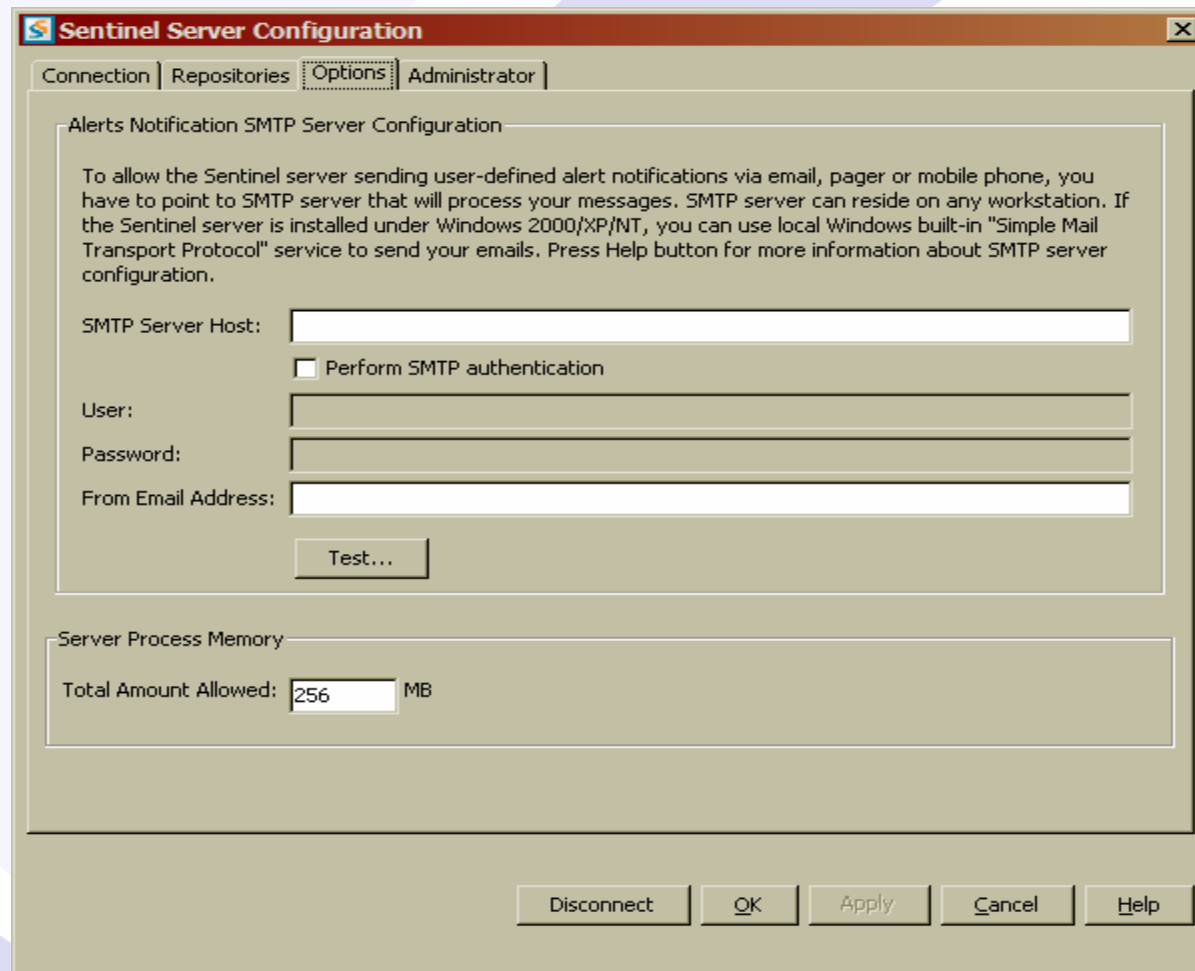
Advanced DataTools

Configure Sentinel - Repository



Advanced DataTools

Configure Sentinel - Options



The image shows a screenshot of the "Sentinel Server Configuration" dialog box, specifically the "Options" tab. The dialog box has a title bar with the text "Sentinel Server Configuration" and a close button (X). Below the title bar, there are four tabs: "Connection", "Repositories", "Options" (which is selected), and "Administrator".

The main content area is titled "Alerts Notification SMTP Server Configuration". It contains a paragraph of text: "To allow the Sentinel server sending user-defined alert notifications via email, pager or mobile phone, you have to point to SMTP server that will process your messages. SMTP server can reside on any workstation. If the Sentinel server is installed under Windows 2000/XP/NT, you can use local Windows built-in 'Simple Mail Transport Protocol' service to send your emails. Press Help button for more information about SMTP server configuration."

Below the text, there are several input fields and a checkbox:

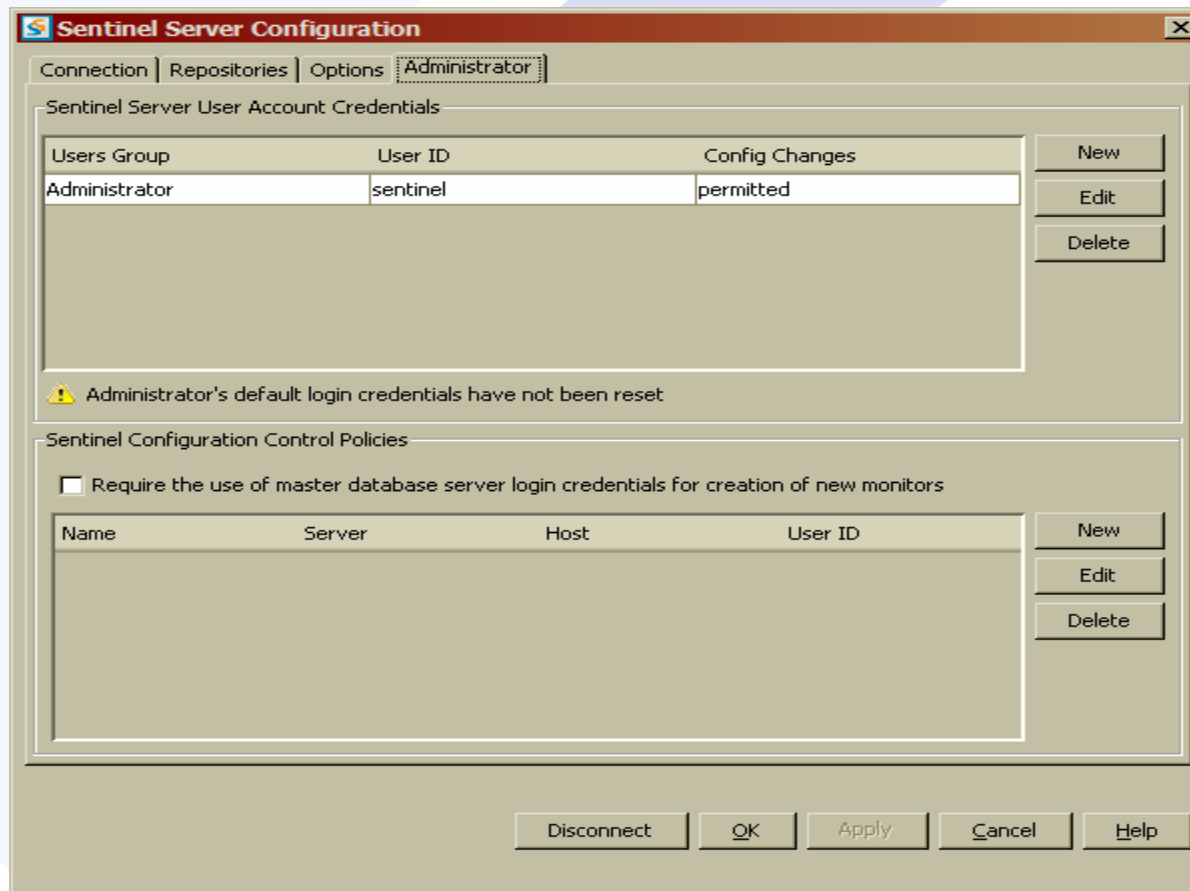
- "SMTP Server Host:" followed by a text input field.
- A checkbox labeled "Perform SMTP authentication" which is currently unchecked.
- "User:" followed by a text input field.
- "Password:" followed by a text input field.
- "From Email Address:" followed by a text input field.
- A "Test..." button.

Below these fields, there is a section titled "Server Process Memory" with a text input field for "Total Amount Allowed:" containing the value "256" and the unit "MB".

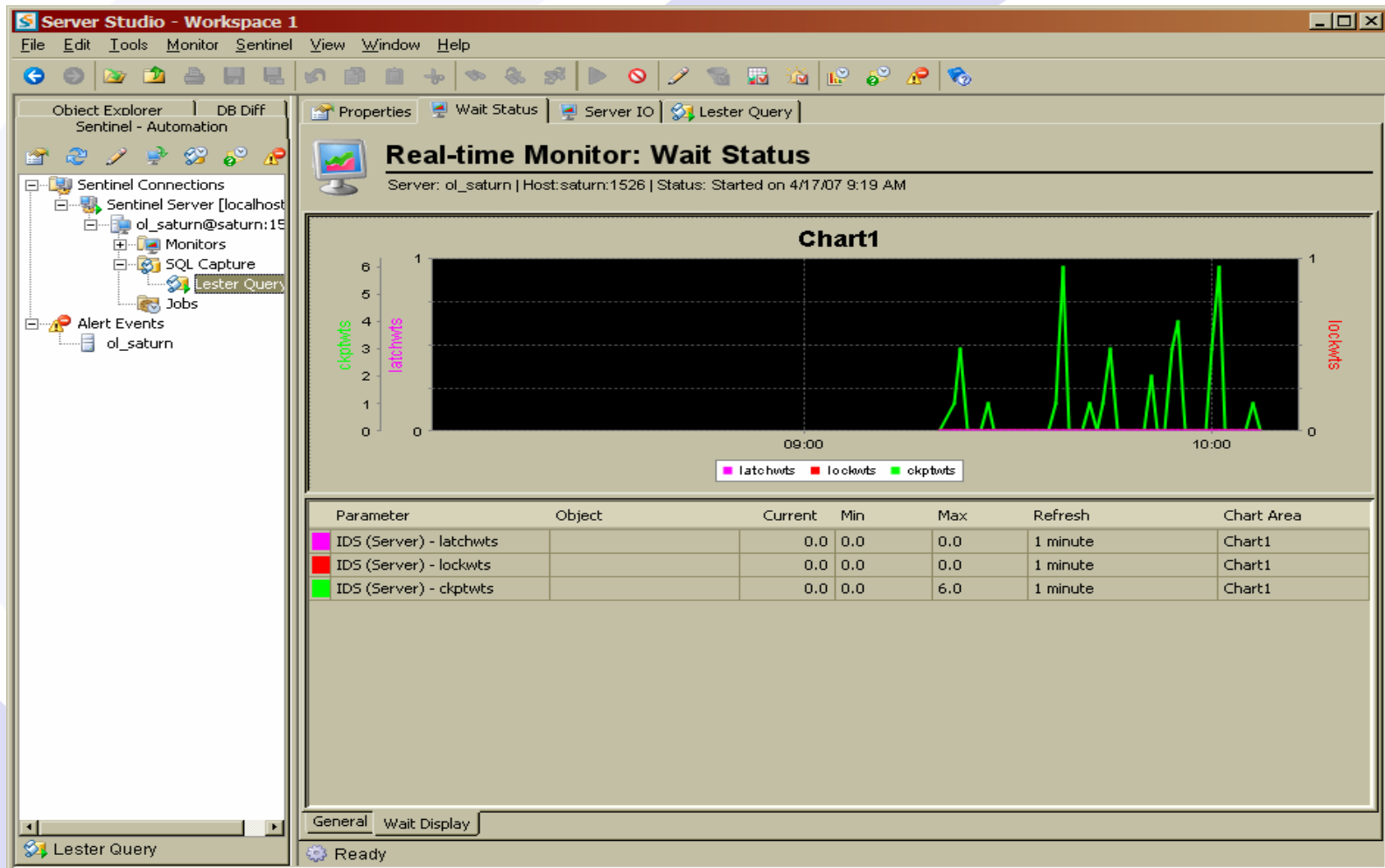
At the bottom of the dialog box, there are five buttons: "Disconnect", "OK", "Apply", "Cancel", and "Help".

Advanced DataTools

Configure Sentinel - Administration



Watch the Monitor

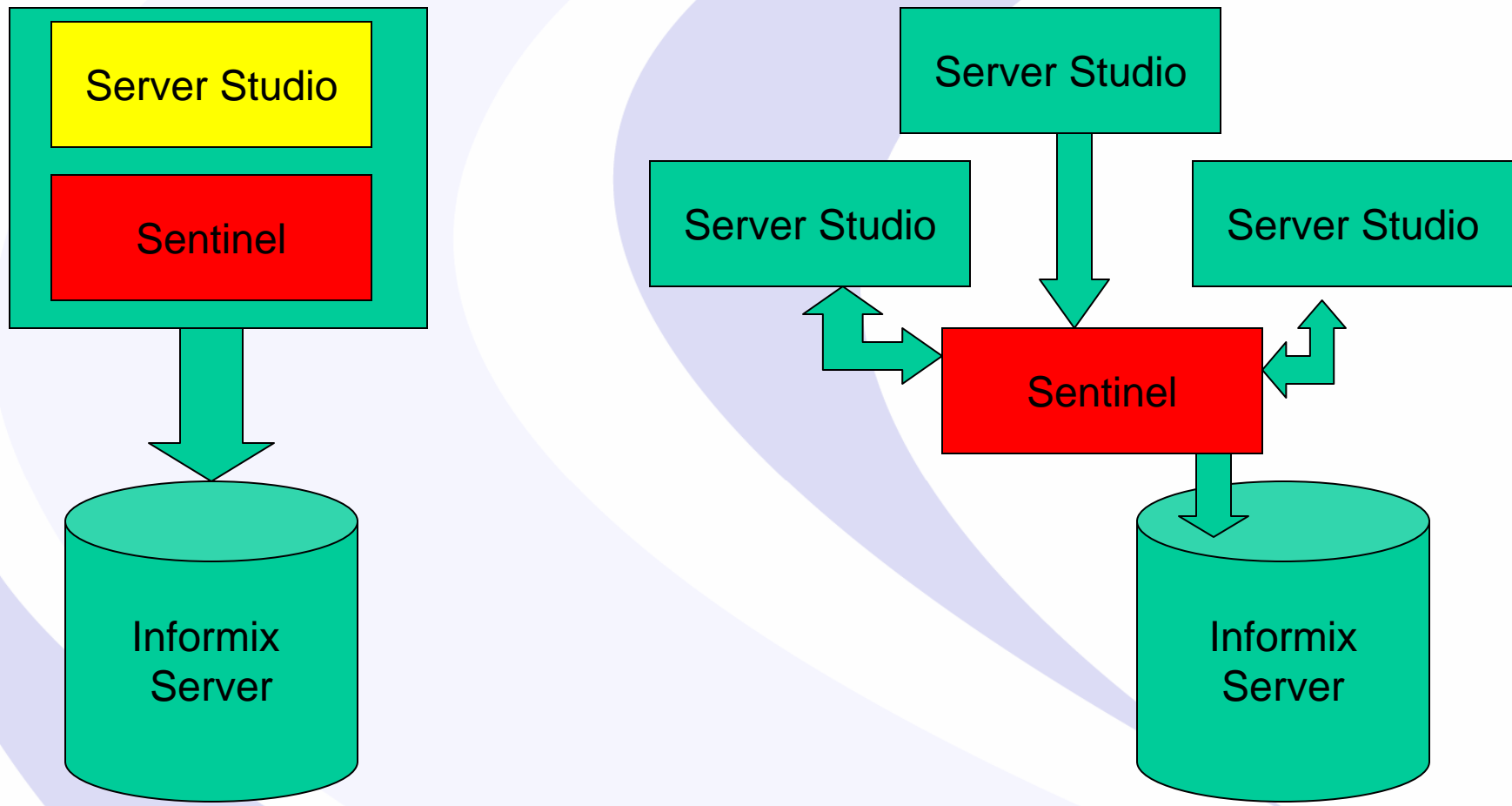


Watch the Monitor



Advanced DataTools

Sentinel Configuration Option





What Parameters Should I Monitor?

Advanced DataTools

Parameters - IDS Server

IDS (Server) - isAlive	This flag is TRUE if the connection to the server instance can be established
IDS (Server) - user_cpu	Total user CPU time used by all user threads expressed in seconds
IDS (Server) - system_cpu	Total system CPU time used by all user threads expressed in seconds
IDS (Server) - perc_phys_log_used	Percentage of used physical log
IDS (Server) - perc_lgcl_log_used	Percentage of logical logs used
IDS (Server) - user_session_count	Number of users connected to the server
IDS (Server) - buffer_wait_ratio	Buffer wait ratio $(\text{bufwfts}/(\text{pagreads}+\text{bufwrites})) * 100$
IDS (Server) - bufreads_writes_ratio	Buffered reads to buffered writes ratio $(\text{bufreads}/\text{bufwrites})$
IDS (Server) - rollback_commits_ratio	Rollback to commit ratio $(\text{isrollbacks}/\text{iscommits})$
IDS (Server) - isam_seqscan_ratio	ISAM total to sequential scan ration $(\text{seqscans}/\text{isamtot}/)$
IDS (Server) - perc_cached_read	Read cache percentage $(100 * (\text{bufreads}-\text{dskreads})/\text{bufreads})$
IDS (Server) - perc_cached_write	Write cache percentage $(100 * (\text{bufwrites}-\text{dskwrites})/\text{dskwrites})$
IDS (Server) - chkpoint_duration	Checkpoint duration
IDS (Server) - memory_pools	Total amount usedb by all memory pools in Kb
IDS (Server) - memory_sessions	Amount of memory pools used by user sessions in Kb
IDS (Server) - active_trans	Active transactions
IDS (Server) - dskreads	Number of actual reads from disk
IDS (Server) - pagreads	Number of pages read
IDS (Server) - bufreads	Number of reads from shared memory
IDS (Server) - dskwrites	Number of actual physical writes to disk. It includes the writes for the physical and logical logs.
IDS (Server) - pagwrites	Number of pages written.
IDS (Server) - bufwrites	Number of writes to the shared memory buffers
IDS (Server) - isamtot	Total number of ISAM calls made
IDS (Server) - isopens	Number of times a tablespace is opened
IDS (Server) - isstarts	Number of times an index position was changed
IDS (Server) - isreads	Number of times the ISAM read function is called
IDS (Server) - iswrites	Number of times the ISAM write function is called
IDS (Server) - isrewrites	Number of times the ISAM update function is called
IDS (Server) - isdeletes	Number of times the ISAM delete function is called
IDS (Server) - iscommits	Number of times the ISAM iscommit() function was called

Parameters - IDS Server

IDS (Server) - isrollbacks	Number of times transactions rolled back
IDS (Server) - ovlock	Number of times the database server attempted to exceed the maximum number of locks (specified as LOCKS in the ONCONFIG file)
IDS (Server) - ovuser	Number of times that a user attempted to exceed the maximum number of user threads
IDS (Server) - ovtrans	Overflow transaction table
IDS (Server) - latchwts	Increments when a thread waits to gain access to a shared-memory resource
IDS (Server) - buffwts	Number of times user threads have to wait for a buffer
IDS (Server) - lockreqs	Number of total requests for locks
IDS (Server) - lockwts	Number of times user threads wait to acquire a lock
IDS (Server) - lktouts	Number of deadlock timeouts
IDS (Server) - deadlks	Number of times that deadlocks were detected and cured
IDS (Server) - ckptwts	Number of times checkpoint waits
IDS (Server) - chunkwrites	Writes during a checkpoint
IDS (Server) - plgpagewrites	Physical-log pages written
IDS (Server) - plgwrites	Physical-log writes
IDS (Server) - llgreccs	Logical-log records
IDS (Server) - llgpagewrites	Logical-log pages written
IDS (Server) - llgwrites	Logical-log writes
IDS (Server) - flushes	Number of times that the buffer pool has been flushed to the disk
IDS (Server) - compress	Number of pages compressions
IDS (Server) - seqscans	Number of sequential scans executed
IDS (Server) - totalsorts	Total number of sorts
IDS (Server) - memsorts	Number of memory sorts (sorts that fit in memory)
IDS (Server) - disksorts	Number of disk sorts (sorts that did not fit in memory)
IDS (Server) - maxsortspace	Maximum disk space used by a sort
IDS (Server) - lruwrites	Least-recently used (LRU) writes
IDS (Server) - btradata	Data pages read ahead though leaf
IDS (Server) - btraidx	Leaf read ahead though leaf
IDS (Server) - dpra	Data-page read aheads
IDS (Server) - rapgs_used	Read-ahead pages used

Parameters – Table/Index/ Dbospace/Chunk

IDS (Table/Index) - tb_exts_count
IDS (Table/Index) - tb_pg_allocated
IDS (Table/Index) - tb_pg_used
IDS (Table/Index) - tb_reads
IDS (Table/Index) - tb_writes
IDS (Table/Index) - tb_bufreads
IDS (Table/Index) - tb_bufwrites
IDS (Table/Index) - tb_pgwrites
IDS (Table/Index) - tb_pgreads
IDS (Table/Index) - tb_wtlock
IDS (Table/Index) - tb_lockrq
IDS (Table/Index) - tb_deadlocks
IDS (Table/Index) - tb_seqscans
IDS (Table/Index) - tb_deletes
IDS (DBSpace) - sp_used_page_size
IDS (DBSpace) - sp_perc_used
IDS (Chunk) - ch_perc_free
IDS (Chunk) - ch_reads
IDS (Chunk) - ch_writes
IDS (Chunk) - ch_pageswritten
IDS (Chunk) - ch_pagesread
IDS (Chunk) - ch_free_pages

Number of table extents
Pages allocated
Pages used
Number of read function calls
Number of write function calls
Number of buffer reads
Number of buffer writes
Number of page writes
Number of page reads
Number of lock waits
Number of lock requests
Number of deadlocks
Number of sequential scans
Number of delete function calls
Number of used pages in the space
Percent of the space used
Percent of the chunk free
Number of physical reads
Number of physical writes
Number of page writes
Number of page reads
Number of free pages in the chunk

Parameters – Session and VP

IDS (Session) - sqs_reads	Number of the ISAM read function calls
IDS (Session) - sqs_writes	Number of ISAM write function calls
IDS (Session) - sqs_buffwrts	Number of buffer writes
IDS (Session) - sqs_buffrds	Number of buffer reads
IDS (Session) - sqs_pagerds	Number of page reads
IDS (Session) - sqs_pgwrts	Number of page writes
IDS (Session) - sqs_rewrts	Number of rewrites
IDS (Session) - sqs_scans	Number of sequential scans
IDS (Session) - sqs_longtran	Number of long transactions for the session
IDS (Session) - sqs_rollback	Number of rollbacks
IDS (Session) - sqs_sorts	Number of total sorts
IDS (Session) - sqs_disksorts	Number of disk sorts
IDS (Session) - sqs_max_sort_space	Maximum space used by a sort
IDS (Session) - sqs_max_log_space	Maximum number of bytes of logical-log space ever used by the session
IDS (Session) - sqs_crt_log_space	Number of bytes of logical-log space used by current transaction of the session
IDS (Session) - sqs_log_recs	Number of logical-log records written by the session
IDS (Session) - sqs_lckreq	Number of locks requested by the session
IDS (Session) - sqs_lock_held	Number of locks currently held by the session
IDS (Session) - sqs_dead_locks	Number of deadlocks detected at the session
IDS (Session) - sqs_dels	Number of deletes
IDS (Session) - sqs_lock_waits	Number of times waited for a lock
IDS (Session) - sqs_ovlock	Number of times a session ran out of locks
IDS (Session) - sqs_commits	Number of commits
IDS (VP) - vp_class_syscpu	System cpu used by a processor
IDS (VP) - vp_class_usercpu	User cpu used by a processor
IDS (VP) - vp_class_rdqueue	Number of ready queues

Parameters – Operating System

Unix (General) - os_cpu_busy	Percentage of time CPU was busy
Unix (General) - os_cpu_idle	Percentage of time CPU was idle
Unix (General) - os_cpu_runq	Average length of the CPU run queue
Unix (General) - os_cpu_scalls	Number of system calls of per second
Unix (General) - os_cpu_sys	Percentage of time CPU was running in system mode
Unix (General) - os_cpu_user	Percentage of time CPU was running in user mode
Unix (General) - os_cpu_wio	Percentage of time CPU was idle waiting for I/O
Unix (General) - os_forks	Number of forks per second
Unix (General) - os_load_avg_1	Load average for the past minute
Unix (General) - os_load_avg_5	Load average for the past 5 minutes
Unix (General) - os_load_avg_15	Load average for the past 15 minutes
Unix (General) - os_logins	Number of interactive logins
Unix (General) - os_mem_phys_free	Free physical memory in MB
Unix (General) - os_mem_phys_used	Used physical memory in MB
Unix (General) - os_mem_swap_free	Free swap space in MB
Unix (General) - os_mem_swap_used	Used swap space in MB
Unix (General) - os_mem_pgin	Paging activity (in per second)
Unix (General) - os_mem_pgout	Paging activity (out per second)
Unix (CPU) - os_mp_busy	Percentage of time CPU is busy (per-CPU)
Unix (CPU) - os_mp_idle	Percentage of time CPU is idle (per-CPU)
Unix (Disk) - os_disk_busy	Percentage of time disk was busy servicing a request
Unix (Disk) - os_disk_avque	Average number of requests outstanding for the disk
Unix (Disk) - os_disk_avserv	Average disk service time, milliseconds
Unix (Disk) - os_disk_wr_sec	Number of writes per second
Unix (Disk) - os_disk_rd_sec	Number of reads per second
Unix (Disk) - os_disk_rdw_sec	Number of read and write operations per second
Unix (Volume) - os_vol_free	Free space on disk volume, megabytes
Unix (Volume) - os_vol_used	Used space on disk volume, megabytes
Unix (Volume) - os_vol_free_pct	Free space on disk volume, percent of volume size
Unix (Volume) - os_vol_used_pct	Used space on disk volume, percent of volume size
Unix (Network) - os_net_err_in	Number of bad network packets received per second
Unix (Network) - os_net_err_out	Number of bad network packets sent per second
Unix (Network) - os_net_conns	Number of concurrent established TCP connections
Unix (Network) - os_net_pks_in	Number of network packets received (per second)
Unix (Network) - os_net_pks_out	Number of network packets sent (per second)

What Points of Time Should You Monitor?

- Near Real Time – 15 seconds
- Regular points of time in a day – 15 minutes to 1 x per hour
- Daily Summary Totals
- Weekly or Monthly – when things change

Near Real Time – 15 seconds

- Number of Transactions
- What are things waiting on?

Regular points of time in a day – 15 minutes to 1 x per hour

- Server Performance
- Session Performance

Daily Summary Totals

- Table performance
- Chunk performance

Weekly or Monthly – when things change

- Schema
- Server Configuration



More Information on Server Studio and Sentinel

Advanced DataTools



Server Studio™

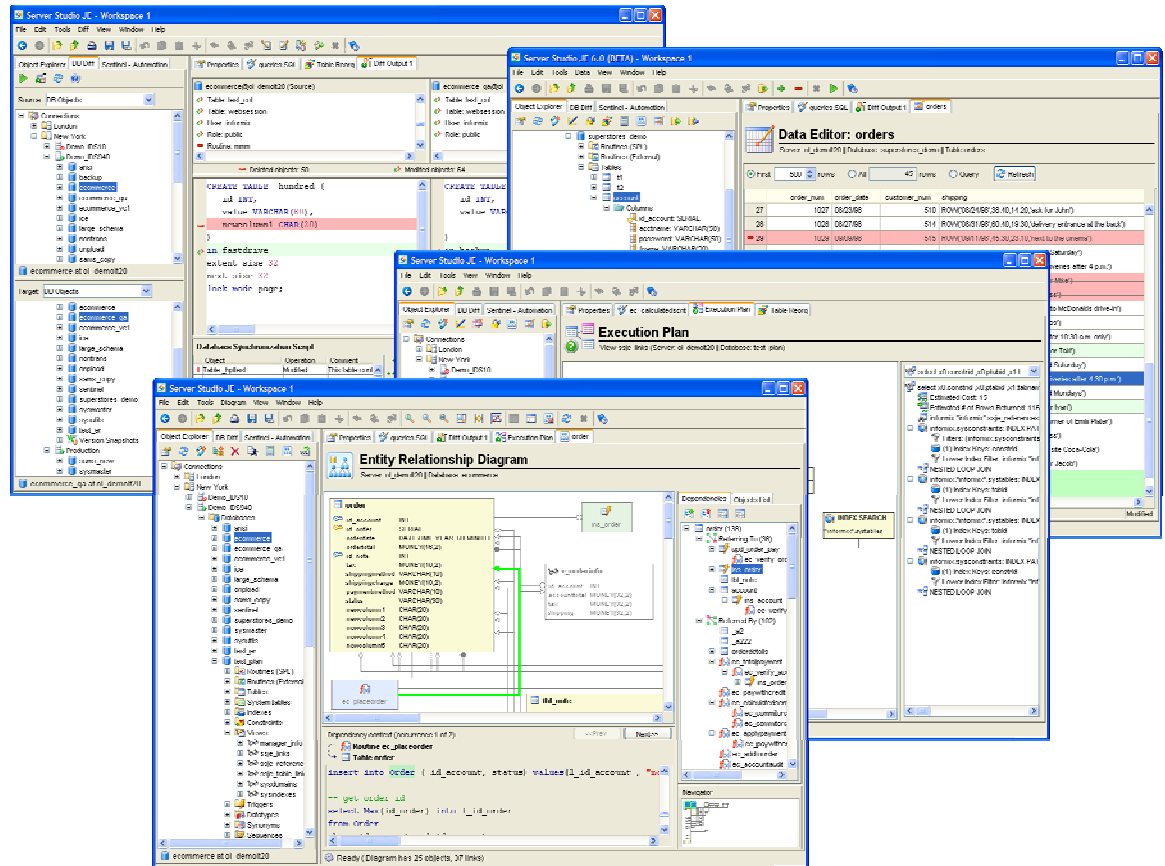
AGS TAKE BACK CONTROL



Server Studio™

The premier multi-platform suite of highly intuitive, integrated system management tools that provide database professionals with extensive functionality to:

- Consolidate, and manage with ease your entire IBM Informix database servers' infrastructure at a central point of control.
- Improve efficiency of database development, debugging and testing.
- Preserve database investment through automating database configuration auditing and change management.
- Proactively diagnose performance and availability problems with extensive analytic tools.
- Obtain maximum leverage from existing data storage investments.
- Resolve performance problems with comprehensive SQL tuning facilities.
- Effectively manage database configuration, security and regulatory compliance.

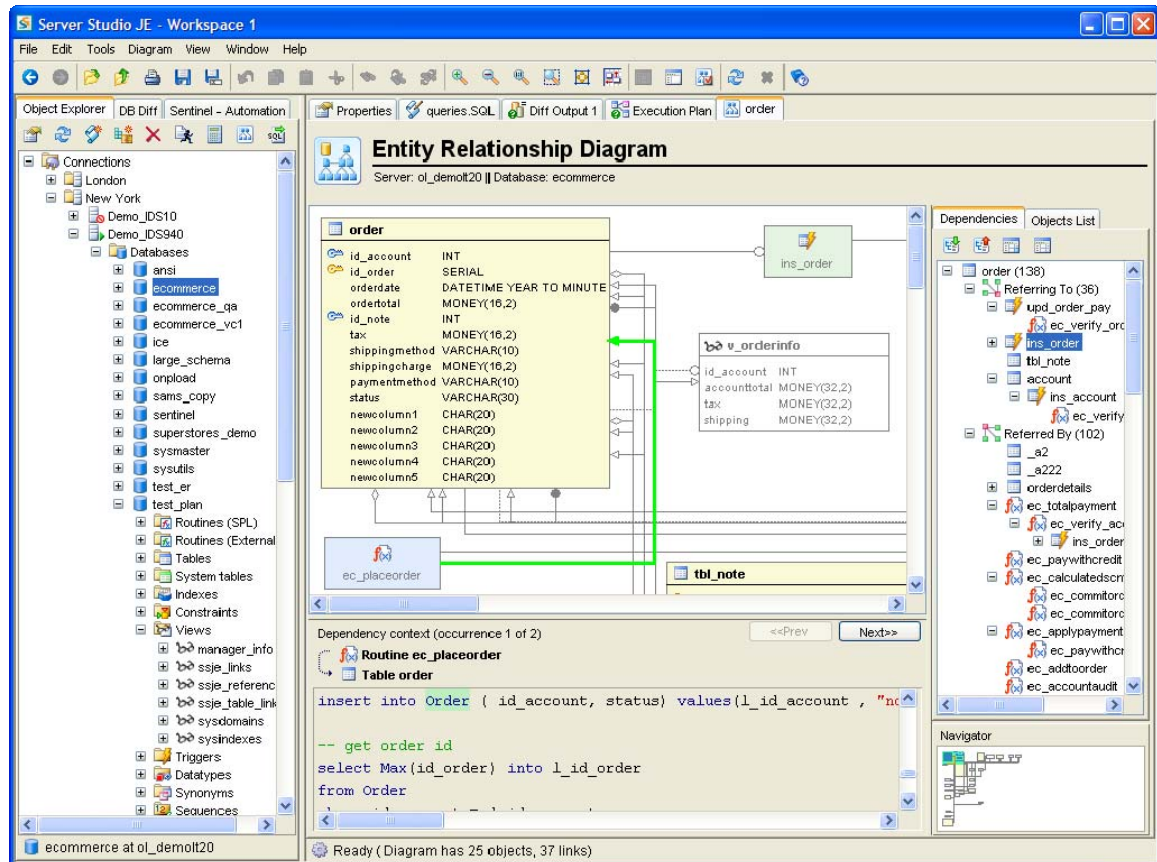


Server Studio™

Database Development & Administration – Entity Relationship Diagrams



- Entity Relationship Diagrams enable immediate graphical analysis of complex relationships and dependencies between database objects, such as: Tables, Views, Indexes, Stored Procedures and Triggers.
- E/R Diagrams provide vital help in visualizing and documenting databases' logical design and constraints.
- Built-in Dependencies Analyzer displays vital details about database objects' "up" and "down" dependencies, using the Tree view, and provides instant drill-down to the relevant source code that defines each object's relationships and constraints.



Server Studio™

Database Development & Administration – Table Manager

- Interactively create new, or edit existing tables and views.
- Highly granular access to all attributes including:
 - columns
 - datatypes
 - table and index fragmentation definitions
 - referential integrity constraints
 - Primary keys
 - Foreign keys
- Dynamically generate SQL CREATE and ALTER statements, as the modifications to the table or index structure is performed in a visual designer.

Server Studio JE - Workspace 1

Object Explorer: order

- Columns
 - id_account: INT
 - id_order: SERIAL
 - orderdate: DATETIME YEAR TO MINUTE
 - ordertotal: MONEY(16,2)
 - id_note: INT
 - tax: MONEY(16,2)
 - shippingmethod: VARCHAR(10)
 - shippingcharge: MONEY(16,2)
 - paymentmethod: VARCHAR(10)
 - status: VARCHAR(30)
 - newcolumn1: CHAR(20)
 - newcolumn2: CHAR(20)
 - newcolumn3: CHAR(20)
 - newcolumn4: CHAR(20)
 - newcolumn5: CHAR(20)
- Indexes
 - 562_272 (order)
 - ix_order1_mod (order)
 - 562_222 (order)
 - 562_223 (order)
 - 562_224 (order)
 - 562_226 (order)
- Triggers
 - ins_order (order)
 - upd_order_pay (order), Disabled
- Foreign Keys
 - fk_order2 references tbl_note
 - fk_order1 references account
- Constraints
 - pk_order1 (Primary Key) id_order
 - ct_order1 (Unique) id_account,id_order,ord
 - fk_order2 (Foreign Key) tbl_note
 - ct_order4 (Unique) id_account,id_order,ord
 - ct_order2 (Check) (ordertotal >= '0.00')
 - fk_order1 (Foreign Key) account

Properties: order

Server: ol_demoit20 | Database: ecommerce

Table Profile

Name: order Indexes: 6 Type: Standard Row Size: 199 Date Created: 2006-02-14

Owner: informix Columns: 15 Size: 224.00 KB No. Rows: 1006 Stats Updated:

Columns:

No.	Name	Data Type	Length	Scale	Nulls	Special
1	id_account	Int			✓	
2	id_order	Serial				
3	orderdate	Datetime			✓	year to minute
4	ordertotal	Money	16	2	✓	
5	id_note	Int			✓	
6	tax	Money	16	2	✓	

Indexes:

- 562_222 (Unique) id_order
- 562_223 (Unique) id_account id_order orderdate
- 562_224 (Unique)

Foreign Keys:

- fk_order2 references tbl_note
- order.id_note = tbl_note.id_note
- fk_order1 references account
- order.id_account = account.id_account

Constraints:

Name	Type	Constraint
ct_order1	Unique	id_account,id_order,ord
ct_order4	Unique	id_account,id_order,ord

Triggers:

- ins_order
- upd_order_pay

General Design Storage SQL Data Permissions Dependencies

Ready



Server Studio™

Database Development & Administration – SQL Manager

- A powerful, full-featured color-coded editor, customized specifically to support IBM Informix SPL and SQL languages.
- Fully multi-threaded, non-blocking execution of scripts.
- Multiple result sets in spreadsheet-style grids.
- Statistics for the executed SQL statements:
 - number of rows affected by the operation
 - execution and fetch times
- Fully supports LOAD and UNLOAD statements for data import and export.
- Integrated visual Execution Plan Analyzer help tune the performance of SQL queries.

The screenshot displays the IBM Server Studio JE interface. The main window shows a SQL query editor with the following code:

```
select * from tbl_sysevent t1, tbl_logevent t2
where t1.id_sysevent = t2.id_sysevent
and t1.datetimestamp > '2005-2-9 13:00:00.000'
order by t1.id_sysevent desc

-- All users visited the site from the given time
select distinct t1.id_user, firstname, lastname, cybercommetadata, organizationname
from users t1, tbl_sysevent t2, tbl_logevent t3
where t1.id_user=t3.id_user and t2.id_sysevent= t3.id_sysevent
and t2.datetimestamp >= '2006-4-26 0:00:00.000'
and t2.id_typeevent in (30,40,31,33,43,41,37,47,22,46,29,39,45,35,48,58)

select distinct firstname, lastname, organizationname, cybercommetadata
from users t1, tbl_logevent t2 where t1.id_user=t2.id_user and t2.id_sysevent in (
select id_sysevent from tbl_usehistory where id_release=173)
```

Below the query editor, a table of execution statistics is shown:

# Rows:	Execution Time:	Fetch Time:	Total Time:	Modified
99	0.831 sec	0.24 sec	1.071 sec	16.64

At the bottom, a table of system tables is displayed:

tablename	owner	partnum	tabid	rowsize	ncols	nindexes	nrows	created	version
sysables	informix	2097276	1	469	20	2	116	11/30/01	65545
syscolumns	informix	2097311	2	151	8	2	840	11/30/01	65545
sysindices	informix	2097319	3	3271	13	2	255	11/30/01	65545
sysatabauth	informix	2097327	4	77	4	2	118	11/30/01	65545
syscolauth	informix	2097332	5	73	5	2	23	11/30/01	65545
sysviews	informix	2097333	6	70	3	1	55	11/30/01	65545
sysusers	informix	2097341	7	51	4	1	3	11/30/01	65545
sysdepend	informix	2097348	8	10	4	2	20	11/30/01	65545
sysynony...	informix	2097354	9	169	4	2	0	11/30/01	65545

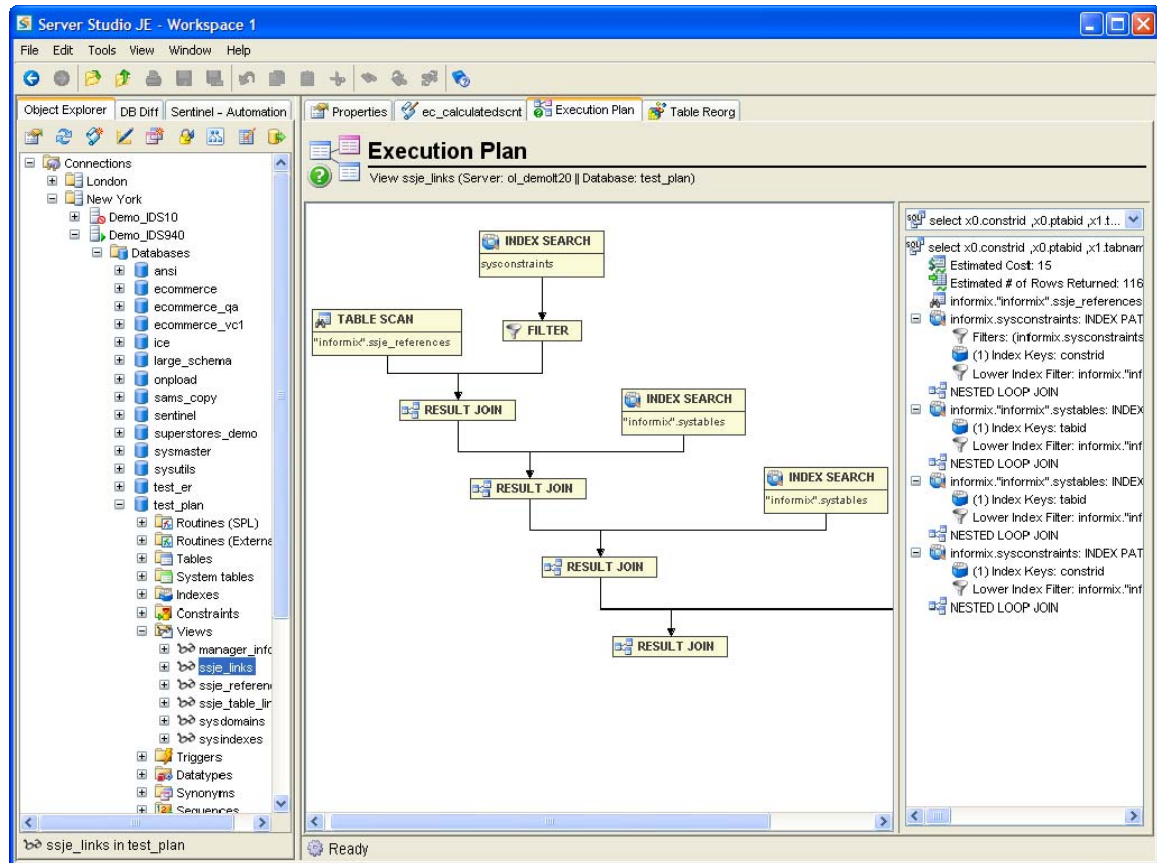


Server Studio™

Database Development & Administration – Execution Plan Analyzer



- Redesigned Execution Plan Analyzer provides comprehensive visualization facilities to examine and efficiently tune complex SQL statements.
- Graphical Diagrams views, in addition to Tree views, support detail examination of execution plans selected by the database engine for:
 - single or multiple SQL statements
 - Stored Procedures (*with relevant statistics presented for each distinct SQL statement contained within a stored procedure*)
 - Database Views
- Integration with Sentinel's SQL Capture facilities enables analysis of the SQL statements already executed by the database engine.

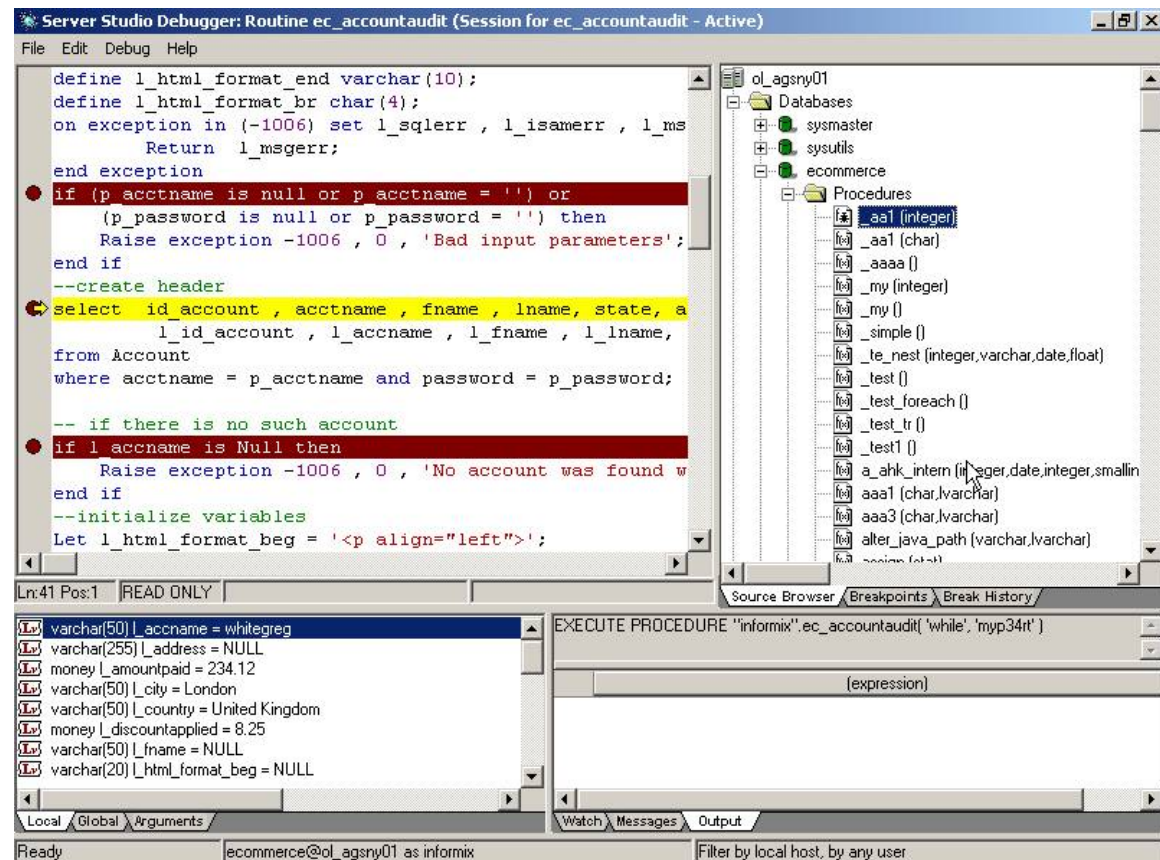


Server Studio™

Database Development & Administration – SPL Debugger

The only interactive debugger for IBM Informix® database servers' stored procedures and triggers available anywhere. SPL Debugger enables you to:

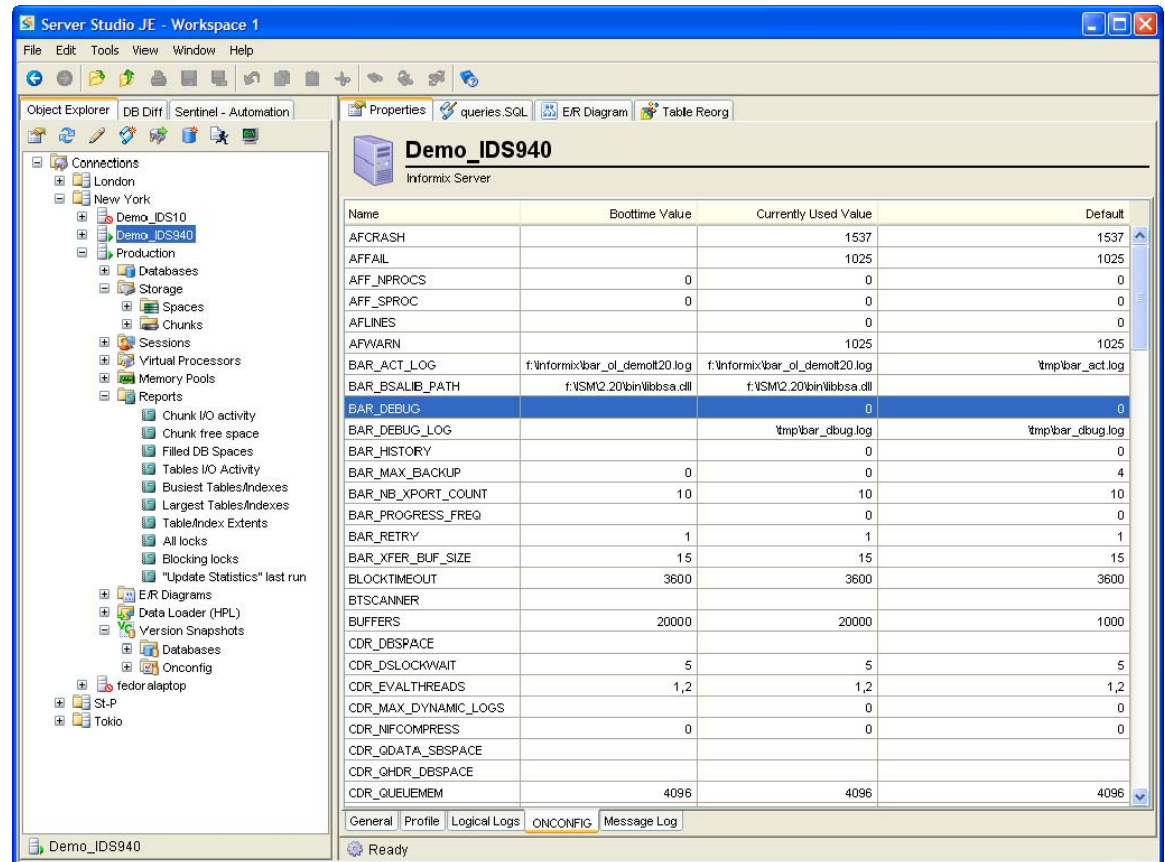
- Execute stored procedures and triggers line-by-line.
- Step into nested procedures or fired triggers.
- Set execution breakpoints.
- Watch and to modify values of procedures' variables and calling arguments.
- Break infinite loops.
- “Hook” into a stored procedure or trigger already executing on the server.



Server Studio™

Database Development & Administration - Server Administrator

- Server Administrator provides powerful views and many pre-configured performance information reports across multiple databases instances.
- It helps handle everyday tasks such as:
 - Server's operational modes management
 - Examination of server's profile, ONCONFIG parameters, I/O statistics and details of log files
 - Update statistics on a selected table, group of tables, or entire database.



The screenshot displays the Server Studio JE interface for workspace 1. The left pane shows the Object Explorer with a tree view of the server hierarchy, including connections, databases, and reports. The main pane shows the ONCONFIG parameters for the Demo_IDS940 server. The parameters are listed in a table with columns for Name, Boottime Value, Currently Used Value, and Default.

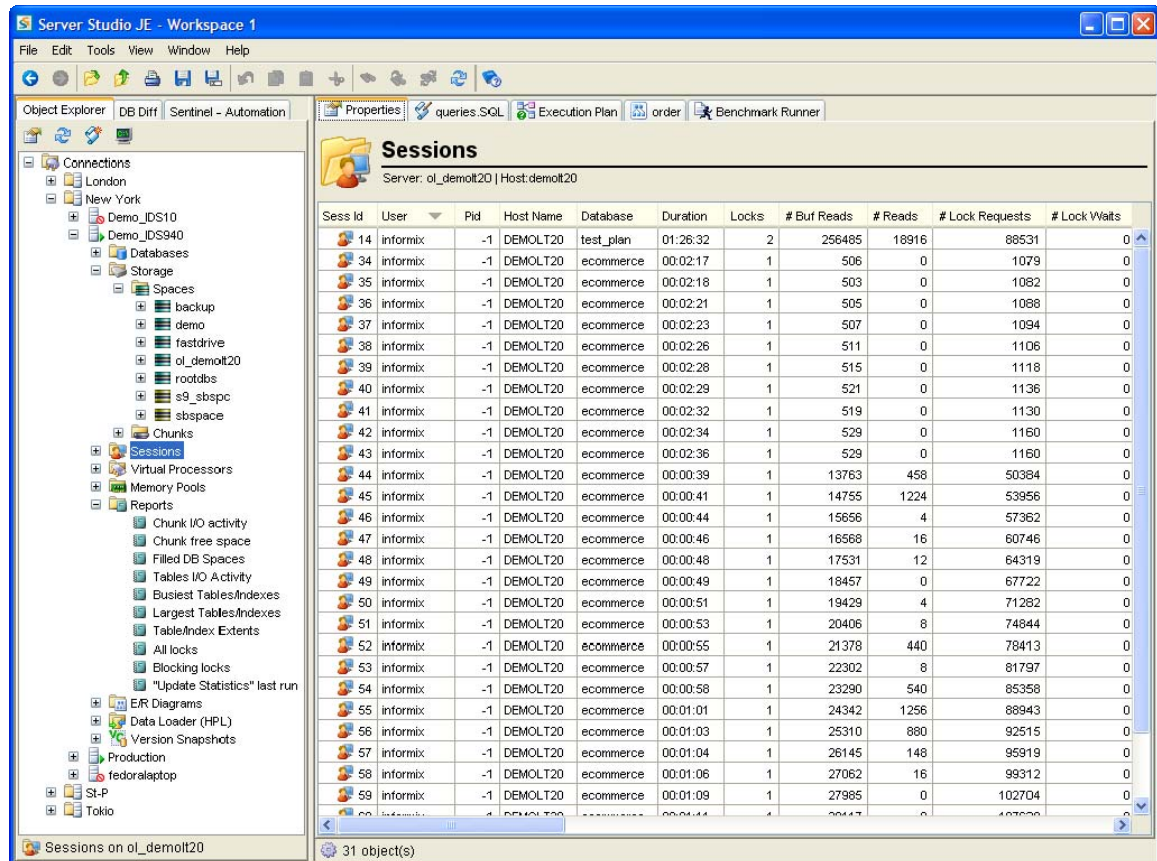
Name	Boottime Value	Currently Used Value	Default
AFCRASH		1537	
AFFAIL		1025	1025
AFF_NPROCS	0	0	0
AFF_SPROC	0	0	0
AFLINES		0	
APFWARN		1025	1025
BAR_ACT_LOG	f:\Informix\bar_of_demott20.log	f:\Informix\bar_of_demott20.log	%tmp%\bar_act.log
BAR_BSALIB_PATH	f:\VSM2.20\bin\libbsa.dll	f:\VSM2.20\bin\libbsa.dll	
BAR_DEBUG		0	0
BAR_DEBUG_LOG		%tmp%\bar_debug.log	%tmp%\bar_debug.log
BAR_HISTORY		0	0
BAR_MAX_BACKUP	0	0	4
BAR_NB_XPORT_COUNT	10	10	10
BAR_PROGRESS_FREQ		0	0
BAR_RETRY	1	1	1
BAR_XFER_BUF_SIZE	15	15	15
BLOCKTIMEOUT	3600	3600	3600
BTSCANNER			
BUFFERS	20000	20000	1000
CDR_DBSPACE			
CDR_DSLOCKWAIT	5	5	5
CDR_EVALTHREADS	1,2	1,2	1,2
CDR_MAX_DYNAMIC_LOGS		0	0
CDR_NIFCOMPRESS	0	0	0
CDR_QDATA_SBSPACE			
CDR_QHDR_DBSPACE			
CDR_QUEUEMEM	4096	4096	4096



Server Studio™

Database Development & Administration – Sessions Manager

- Sessions Manager facilities of the Server Administrator provide ability to analyze database sessions' activity by:
 - Host
 - Database
 - Duration
 - Locks Statistics
 - I/O activity
- Problematic sessions that create server bottlenecks can be easily terminated.
- SQL statements last executed by any session can be captured for subsequent performance tuning with the help of the Execution Plan Analyzer.



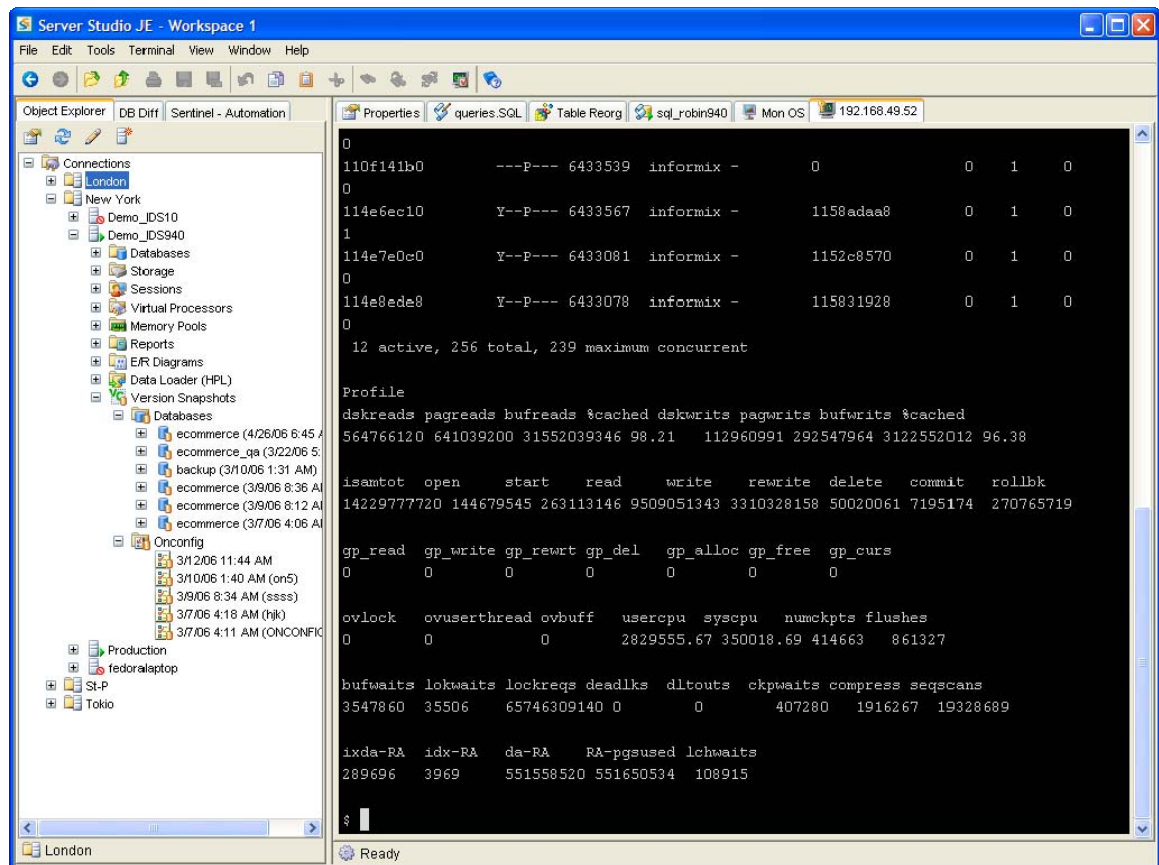
Sess Id	User	PId	Host Name	Database	Duration	Locks	# Buf Reads	# Reads	# Lock Requests	# Lock Waits
14	informix	-1	DEMOLT20	test_plan	01:26:32	2	256485	18916	88531	0
34	informix	-1	DEMOLT20	ecommerce	00:02:17	1	506	0	1079	0
35	informix	-1	DEMOLT20	ecommerce	00:02:18	1	503	0	1082	0
36	informix	-1	DEMOLT20	ecommerce	00:02:21	1	505	0	1088	0
37	informix	-1	DEMOLT20	ecommerce	00:02:23	1	507	0	1094	0
38	informix	-1	DEMOLT20	ecommerce	00:02:26	1	511	0	1106	0
39	informix	-1	DEMOLT20	ecommerce	00:02:28	1	515	0	1118	0
40	informix	-1	DEMOLT20	ecommerce	00:02:29	1	521	0	1136	0
41	informix	-1	DEMOLT20	ecommerce	00:02:32	1	519	0	1130	0
42	informix	-1	DEMOLT20	ecommerce	00:02:34	1	529	0	1160	0
43	informix	-1	DEMOLT20	ecommerce	00:02:36	1	529	0	1160	0
44	informix	-1	DEMOLT20	ecommerce	00:00:39	1	13763	458	50384	0
45	informix	-1	DEMOLT20	ecommerce	00:00:41	1	14755	1224	53956	0
46	informix	-1	DEMOLT20	ecommerce	00:00:44	1	15856	4	57362	0
47	informix	-1	DEMOLT20	ecommerce	00:00:46	1	16568	16	60746	0
48	informix	-1	DEMOLT20	ecommerce	00:00:48	1	17531	12	64319	0
49	informix	-1	DEMOLT20	ecommerce	00:00:49	1	18457	0	67722	0
50	informix	-1	DEMOLT20	ecommerce	00:00:51	1	19429	4	71262	0
51	informix	-1	DEMOLT20	ecommerce	00:00:53	1	20406	8	74844	0
52	informix	-1	DEMOLT20	ecommerce	00:00:55	1	21378	440	78413	0
53	informix	-1	DEMOLT20	ecommerce	00:00:57	1	22302	8	81797	0
54	informix	-1	DEMOLT20	ecommerce	00:00:58	1	23290	540	85358	0
55	informix	-1	DEMOLT20	ecommerce	00:01:01	1	24342	1256	88943	0
56	informix	-1	DEMOLT20	ecommerce	00:01:03	1	25310	880	92515	0
57	informix	-1	DEMOLT20	ecommerce	00:01:04	1	26145	148	95919	0
58	informix	-1	DEMOLT20	ecommerce	00:01:06	1	27062	16	99312	0
59	informix	-1	DEMOLT20	ecommerce	00:01:09	1	27985	0	102704	0



Server Studio™

Database Development & Administration - Server Administrator

- The Server Administrator's built-in secure terminal automatically connects to the desired server host and sets all required environment variables, enabling you to execute transparently any server-side script or shell command, as well as your favorite IBM Informix® native utilities, such as:
 - ONSTAT
 - ONMODE
 - ONTAPE
 - ONBAR



The screenshot shows the Server Studio JE interface. On the left is the Object Explorer showing a tree view of connections and databases. The main terminal window displays the output of the ONSTAT command, showing active sessions and various performance statistics.

```
0
110f141b0 ---P--- 6433539 informix - 0 0 1 0
0
114e6ec10 Y--P--- 6433567 informix - 1150adaa8 0 1 0
1
114e7e0c0 Y--P--- 6433081 informix - 1152c8570 0 1 0
0
114e8eda8 Y--P--- 6433078 informix - 115831928 0 1 0
0
12 active, 256 total, 239 maximum concurrent

Profile
dskreads pagreads bufreads %cached dskwrits pagwrits bufwrits %cached
564766120 641039200 31552039346 98.21 112960991 292547964 3122552012 96.38

isamtot open start read write rewrite delete commit rollbk
14229777720 144679545 263113146 9509051343 3310328158 50020061 7195174 270765719

gp_read gp_write gp_rewrt gp_del gp_alloc gp_free gp_curs
0 0 0 0 0 0 0

ovlock ovuserthread ovbuff usercpu syscpu numckpts flushes
0 0 0 2829555.67 350018.69 414663 861327

bufwaits lokwaits lockreqs deadlks dltouts ckpwaits compress seqscans
3547860 35506 65746309140 0 0 407280 1916267 19328689

ixda-RA idx-RA da-RA RA-pgsused lchwaits
289696 3969 551558520 551650534 108915

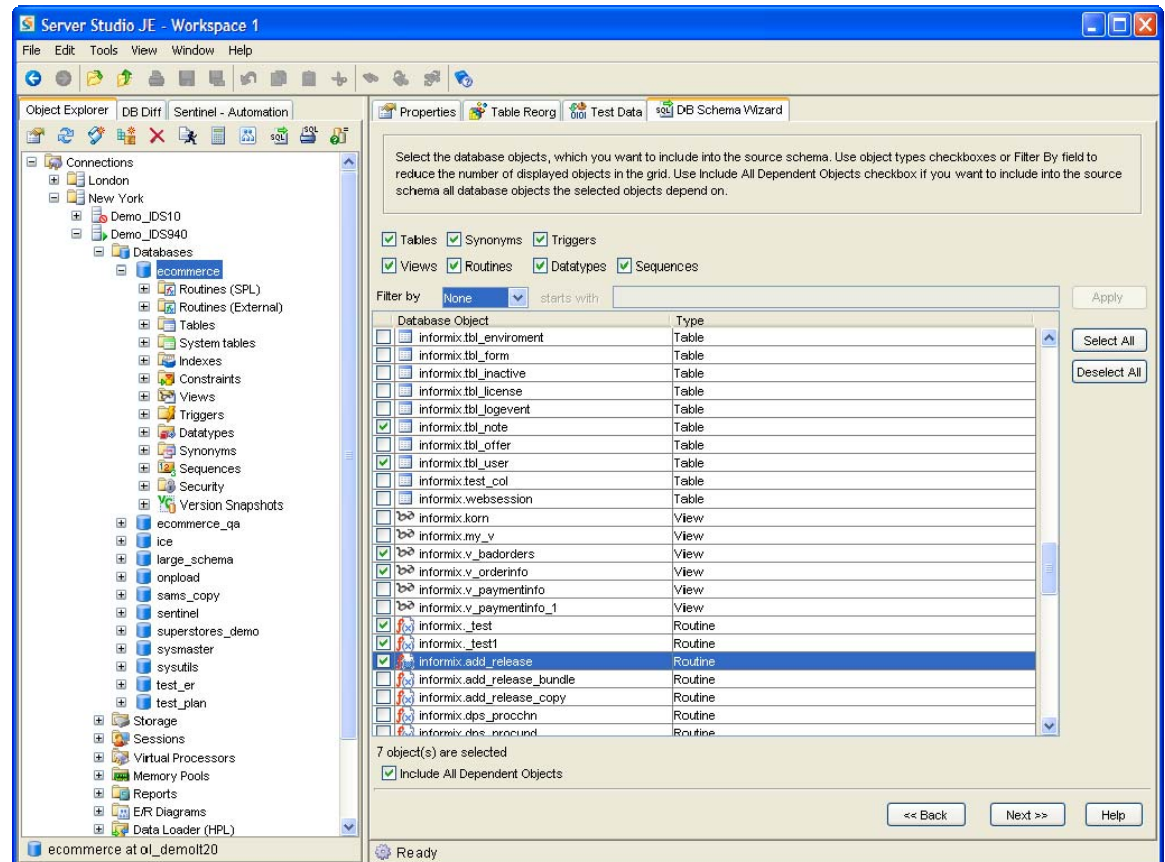
$
```



Server Studio™

Configuration & Change Management – Schema Manager

- Manage DDL scripts for either entire database schemas, or user-defined sub-schemas that may be comprised of either particular types or groups of database objects.
- Full support for managing all dependent database objects to maintain the integrity of the user-defined sub-schemas is built-in.
- Directly deploy database schemas or sub-schemas and specify how to map DB spaces and BLOB spaces from the source to the target server.

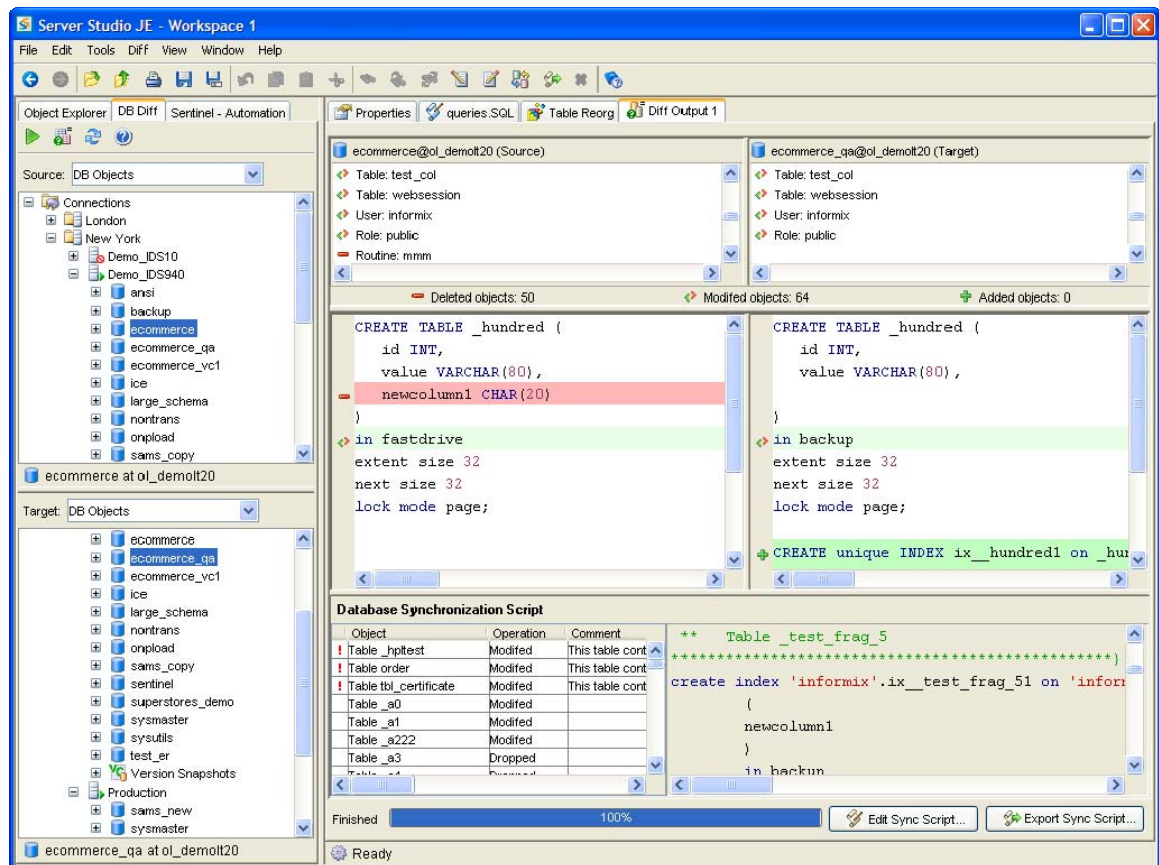


Server Studio™

Configuration & Change Management – DB Difference Analyzer



- A powerful change management tool that compares entire databases, located on the same or on different servers.
- Perform comparative analysis of all database objects' properties including:
 - table structures
 - referential integrity
 - Fragmentation
 - syntax of stored procedures, triggers and views
- Entire databases, individual database objects or groups of objects can be examined for changes.
- Generate synchronization scripts based on database comparison results.
- Full integration with Version Control Snapshots repository.



Server Studio™

Data Management – Data Manager

- Spreadsheet-style grid facilitates interactive examination and editing of the data in the tables, synonyms and views.
- Flexible rules, based on user-defined filters, sorts or rows retrieval limits, help in defining working data sets.
- Powerful Data Import and Export Wizards assist in mapping multiple external data files to database objects and defining complex data transformation rules.
- Support for simultaneous non-blocking execution of multiple data loading and unloading jobs against a single or multiple databases.

Server Studio JE 6.0 (BETA) - Workspace 1

Object Explorer: superstores_demo, Routines (SPL), Routines (External), Tables (_t1, _t2), account (Columns: id_account: SERIAL, acctname: VARCHAR(50), password: VARCHAR(50), fname: VARCHAR(20), lname: VARCHAR(30), address: VARCHAR(255), city: VARCHAR(30), state: CHAR(2), zip: VARCHAR(30), email: VARCHAR(50), country: VARCHAR(50)), Indexes (126_73 (account)), Triggers, Foreign Keys, Constraints (pk_account1 (Primary Key)), Version Snapshots (4/26/06 7:02 AM), call_type, cat_hits_log, catalog, cust_calls, customer, customer_2, customer_log, datadiff1, datadiff2, discount.

Data Editor: orders

Server: ol_demolt20 || Database: superstores_demo || Table orders

First 500 rows | All 45 rows | Query | Refresh

	order_num	order_date	customer_num	shipping
27	1027	08/23/98	510	ROW("08/24/98",38.40,14.20,'ask for John')
28	1028	08/27/98	514	ROW("08/31/98",60.40,19.30,'delivery entrance at the back')
29	1029	08/09/98	515	ROW("09/11/98",45.30,23.10,'next-to-the-cinema')
30	1030	09/12/98	515	ROW("09/17/98",78.40,9.00,'closed Saturday')
31	1031	09/15/98	516	ROW("09/17/98",84.30,11.10,'no deliveries after 4 p.m.')
32	1032	09/19/98	517	ROW("09/23/98",65.60,12.20,'ask for Mike')
33	1033	10/03/98	518	ROW("10/06/98",13.20,13.40,'express')
34	1034	10/05/98	519	ROW("10/08/98",110.00,17.00,'next to McDonalds drive-in')
35	1035	10/07/98	520	ROW("10/12/98",92.30,21.00,'express')
36	1036	10/11/98	521	ROW("10/13/98",54.70,16.00,'call after 10:30 a.m. only')
37	1037	10/16/98	600	ROW("10/19/98",112.30,26.30,'ask for Taki')
38	1038	10/21/98	525	ROW("10/23/98",33.50,22.00,'closed Saturday')
39	1039	10/23/98	526	ROW("10/27/98",42.30,11.00,'no deliveries after 4:30 p.m.')
40	1040	10/29/98	527	ROW("10/31/98",35.60,17.00,'closed Mondays')
41	1041	11/05/99	615	ROW("11/09/98",27.50,12.00,'ask for Ivan')
42	1042	11/12/98	529	ROW("11/14/98",66.70,24.00,'NW corner of Emili Plater')
43	1043	11/19/98	530	ROW("11/24/98",20.30,13.10,'express')
44	1044	11/25/98	532	ROW("11/29/98",113.00,35.10,'opposite Coca-Cola')
45	1045	12/04/98	533	ROW("12/08/98",52.50,19.20,'ask for Jacob')
46	10000	12/2/2006	1000	NULL
47	10001	12/4/2006	1002	NULL

Double click on the cell to open Cell Editor. Retrieved 45 rows Modified



Server Studio™

Data Management – Data Difference Analyzer



- Compare data in tables with compatible structures.
- Compared tables can be located within the same database, on the same server or on different servers.
- Highly efficient comparison algorithm - millions of records can be compared within minutes.
- Detail graphical analysis of data changes that covers added, deleted and modified data records.
- Ability to store lists of compared tables, such as list of tables with meta-data, for repetitive analysis.

The screenshot shows the 'Data Diff Analyzer' window in Server Studio JE. The window title is 'Server Studio JE - Workspace 1'. The interface includes a menu bar (File, Edit, Tools, Data Diff, View, Window, Help) and a toolbar. The 'Object Explorer' on the left shows a tree view of databases, including 'ecommerce' and 'ecommerce_ga'. The main area displays the 'Data Diff Analyzer' results for a comparison between 'ssje_demo_datacompare (...)' and 'ssje_demo_datacompare_1 (...)'. The summary analysis shows a source with 130,000 rows and a target with 129,992 rows, with 10 deleted, 2 modified, and 2 added rows. A table of differences is shown below, with columns for row number, emp_id, fullname, and social_security. The table shows rows 5 through 14, with rows 5-10 marked as deleted (red), row 11 as modified (green), and rows 12-14 as added (blue). A 'Show Different Columns Only' section is also visible, showing columns 3 (social_security) and 4 (salary) with their source values.

Source	Target	Status	Time
ssje_demo_datacompare (...)	ssje_demo_datacompare_1 (...)	Total Differences: 14	Total Runtime: 23 seconds

Summary Analysis

Source: ssje_demo_datacompare (superstores_demo@ol_demolt20 Owner: informix Host: Total Rows: 130000
Target: ssje_demo_datacompare_1 (superstores_demo@ol_demolt20 Owner: informix Host: Total Rows: 129992

Rows: Deleted: 10 Modified: 2 Added: 2

	emp_id	fullname	social_security
- 5	4	Vlad-Vishnevskii	436-42-6878
- 6	5	Lee-Chan	024-79-0473
- 7	6	Ben-Chandrahan	010-59-1371
- 8	7	John-Brown	156-83-1382
- 9	8	Gary-Cooper	637-74-4520
- 10	9	Max-Smith	211-21-8085
+ 11	487	John Brown	786-78-7550
+ 12	495	Max Smith	947-83-8161
+ 13	50000	Gary Cooper	582-93-6580
+ 14	50001	Ben Chandrahan	471-25-2818

Row: 11

Show Different Columns Only

Column	Source Value
3 social_security	786-78-7550
4 salary	72222.63



Server Studio™

Data Management – High Performance Loader



- Provides highly intuitive multi-platform user interface for IDS High Performance Loader
- Streamlines creation of new HPL data load and unload jobs
- Simplifies maintenance of existing HPL jobs
- Allows to group multiple HPL jobs into logical containers

The screenshot displays the Server Studio JE 6.0 (BETA) - Workspace 1 interface. The main window is titled "High Performance Loader" and shows a configuration screen for a data load job. The "HPL Project Name" is set to "<Temporary>". A table lists the job's components:

Run	Source	Target	Rows	Saved	Status
<input checked="" type="checkbox"/>	discount (DB: ecommerce Owner: informi...	Device Array	696315		
<input checked="" type="checkbox"/>	account (DB: ecommerce Owner: informi...)	Device Array	1000		

Below the table are buttons for "Check All", "Uncheck All", "Move Up", and "Move Down". The "JOB 2 - [HPL Job name: <Generate Name>]" section includes fields for "Map Name", "Format Name", and "Format Type" (set to "Delimited"). The "Field Separator" is "pipe" and "Record End" is "newline". A table lists the field mappings:

Field Name	Field Type	Column Name	Column Type	Mapping Options
id_account	char	id_account	serial	
acctname	char	acctname	varchar(50)	Left Justify, Upper Case;
password	char	password	varchar(50)	
fname	char	fname	varchar(20)	Left Justify, Proper Noun C..
lname	char	lname	varchar(30)	
address	char	address	varchar(255)	
city	char	city	varchar(30)	
state	char	state	char(2)	
zip	char	zip	varchar(30)	
email	char	email	varchar(50)	

The "Number Of Fields" is set to 11. The interface also shows a tree view on the left with "MyProject" selected, and a status bar at the bottom indicating "MyProject in onpload" and "Ready".



Server Studio™

Storage Space Management – Table Fragmentation (Partitioning)

- Create, modify and manage with ease data partitioning strategies to improve:
 - Single-user response time
 - Concurrency
 - Availability
 - Backup-and-restore strategy
 - Loading of data
- Full support for:
 - Expression-based fragmentation
 - Round-robin fragmentation
 - Detached Indexes
- Instantaneously analyze:
 - Number of table extents
 - Data size distribution by:
 - Table extent
 - Dbspace
 - chunk

The screenshot displays the Server Studio JE interface for a table named 'order'. The left pane shows the Object Explorer with the table's structure, including columns, indexes, triggers, foreign keys, and constraints. The right pane shows the 'order' table profile and storage information.

Table Profile:
Name: order | Indexes: 6 | Type: Standard | Row Size: 199 | Date Created: 2006-02-14
Owner: informix | Columns: 15 | Size: 224.00 KB | No. Rows: 1006 | Stats Updated: [blank]

Storage Summary:
View Storage Information for: Table Detached Index

DBSpace:	Allocated:	Size:	%
ol_demott20	56 pg - 224.00 KB	56 pg - 224.00 KB	100.00

First:	Next:	Total:	Used:	%
32 KB	64 KB	4	52 pg - 208.00 KB	92.86

Extents:	Free:	%
4	4 pg - 16.00 KB	7.14

Storage Distribution by Space:
Total DBSpaces: 1

DBSpace	Extents	Allocated	Used	Data Size	DB Space Free
ol_demott20	4	56 pg - 224 KB	52 pg - 208.00 KB	51 pg - 204.00 KB	659.98 MB

Extent Details:

Ext. #	Size	DB Space	Chunk ID
1	16 pg - 64.00 KB	ol_demott20	2
2	16 pg - 64.00 KB	ol_demott20	2
3	16 pg - 64.00 KB	ol_demott20	2
0	8 pg - 32.00 KB	ol_demott20	5

Storage Distribution by Device:

Chunk ID	Size	Extents	Device Name
2	48 pg - 192.00 KB	3	F:\FMXDATA\ol_dem...
5	8 pg - 32.00 KB	1	f:\fmxdata\ol_demott...



Server Studio™

Storage Space Management – Table Reorg



- Improve utilization efficiency of scarce data storage resources and optimize database performance by:
 - reorganizing tables' structure and data allocation to reduce the number of table extents and reclaiming wasted space
 - moving data to a different DB Spaces or fragmenting it across multiple DB Spaces.
- Now supports simultaneous reorganization of multiple tables.
- Full integration with Informix High Performance Loader to minimize application downtime.

The screenshot shows the 'Table Reorg' dialog box in Server Studio JE. The main table lists the following data:

Table	Reorg Method	Extents	Rows	Status
beta_licenses (DB: ecommerce Owner: inf...)	Export/Re-Create/Import (HPL Deluxe)	1	4092	Not Executed
discount1 (DB: ecommerce Owner: informix)	Export/Re-Create/Import (HPL Deluxe)	3	696315	Not Executed
order (DB: ecommerce Owner: informix)	In-Place	4	1006	Not Executed

The 'discount1' table is selected, and its configuration is shown in the panels below:

- Storage Options:** First Extent Size: 62000 KB, Next Extent Size: 1024 KB, Lock Mode: Page. Includes a 'Calculate Optimum Extent Size' button.
- Table Location:** Fragmented, With ROWIDs. Includes an 'Apply Location to Other Tables...' button.
- Distribution Scheme:** Expression. Includes a table with columns 'DBSpace' and 'Expression', and buttons for 'Add', 'Remove', 'Move Up', and 'Move Down'.
- Remainder DBSpace:** <none>
- Data Unload Options:** Temporary file directory path on the server: f:\tmp\tmp. Includes an 'Apply to Other Tables' button.
- Perform commit every:** 1000 rows. Includes a checkbox for 'Leave data file and scripts on server' and radio buttons for 'Unload data into 1 file(s) (RECOMMENDED)' and 'Specify number of unload files'.



Server Studio™

Storage Space Management

- Identify easily which storage spaces are getting filled and may require additional chunks. Examine in detail:
 - DbSpaces
 - BLOBSpaces
 - Chunks
 - Percentage of used and free space.
 - List of database objects residing in a given Dbspace and chunk.
 - Other vital storage spaces related information.

Spaces:

Space	Space No.	Type	Size Total	Size Free	% Used
demo	7	DB Space	5120 pg - 20 MB	0 pg - 0 KB	100
fastdrive	4	DB Space	332800 pg - 1.27 GB	57223 pg - 223.53 MB	82
ol_demo20	2	DB Space	391500 pg - 1.49 GB	169034 pg - 660.29 MB	56
rootdbs	1	DB Space	115200 pg - 450 MB	58303 pg - 227.75 MB	49
backup	5	DB Space	276480 pg - 1.05 GB	154867 pg - 604.95 MB	43
s9_sbspc	6	Smart BLOB Space	3060 pg - 11.95 MB	2379 pg - 9.29 MB	22

Chunks:

Chunk Device	...	DBSpace	Type	Total Page I/O	Size Total	Size Free	% Used
f:\fmx\data\ol_demo20\ol...	18	demo	Chunk	52	2560 pg - 10 MB	0 pg - 0 KB	100
f:\fmx\data\ol_demo20\ol...	19	demo	Chunk	1	2560 pg - 10 MB	0 pg - 0 KB	100
f:\fmx\data\ol_demo20\fa...	9	fastdrive	Chunk	1	128000 pg - 500 MB	3 pg - 12 KB	100
f:\fmx\data\ol_demo20\fa...	10	fastdrive	Chunk	651	76800 pg - 300 MB	27 pg - 106 KB	99.96
f:\fmx\data\ol_demo20\fa...	8	fastdrive	Chunk	307	25600 pg - 100 MB	35 pg - 140 KB	99.86
f:\fmx\data\ol_demo20\ro...	13	rootdbs	Chunk	1684	25600 pg - 100 MB	37 pg - 148 KB	99.86
F:\VFMXDATA\ol_demo20...	2	ol_demo20...	Chunk	101	25600 pg - 100 MB	115 pg - 460 KB	99.55
f:\fmx\data\ol_demo20\ol...	4	ol_demo20...	Chunk	1	25600 pg - 100 MB	273 pg - 1.07 MB	98.93
f:\fmx\data\ol_demo20\b...	14	backup	Chunk	1	97280 pg - 380 MB	4277 pg - 16.71 MB	95.4
F:\VFMXDATA\ol_demo20...	16	s9_sbspc	Smart Blob	16	500 pg - 1.95 MB	24 pg - 96 KB	95.2
F:\VFMXDATA\ol_demo20...	1	rootdbs	Chunk	2042	12800 pg - 50 MB	1552 pg - 6.06 MB	87.98
F:\VFMXDATA\ol_demo20...	17	rootdbs	Chunk	522	25600 pg - 100 MB	5517 pg - 21.55 MB	78.45
f:\fmx\data\ol_demo20\ol...	5	ol_demo20...	Chunk	2	25600 pg - 100 MB	6385 pg - 24.94 MB	75.06
f:\fmx\data\ol_demo20\ol...	7	ol_demo20...	Chunk	13043	256000 pg - 1000 ...	106067 pg - 414.3...	58.57
f:\fmx\data\ol_demo20\fa...	24	fastdrive	Chunk	33	25600 pg - 100 MB	11365 pg - 44.47 ...	55.53
f:\fmx\data\ol_demo20\fa...	27	fastdrive	Chunk	1	64000 pg - 250 MB	32976 pg - 128.81 ...	48.48
f:\fmx\data\ol_demo20\b...	12	backup	Chunk	1062	51200 pg - 200 MB	29890 pg - 116.76 ...	41.62



Server Studio™

Storage Space Management

- Identify easily which storage spaces are getting filled and may require additional chunks.
- Examine in detail:
 - DbSpaces
 - BLOBSpaces
 - Chunks
 - Percentage of used and free space.
 - List of database objects residing in a given DbSpace and chunk.
 - Other vital storage spaces related information.

The screenshot displays the Server Studio JE interface. On the left, the Object Explorer shows a tree view of the database structure, including connections, databases, and storage spaces. The right pane shows the 'Chunk #5' properties for server_ol_demoit20. A pie chart indicates that 75% of the chunk is used (red) and 25% is free (green). The properties table below the chart provides detailed information about the chunk's configuration and status.

Property	Value
Device:	f:\fmx\data\ol_demoit20\ol_demoit20.002
Chunk Number:	5
DbSpace:	Chunks
Offset:	0
Size:	25600 pages - 100 MB
Free Size:	6385 pages - 24.94 MB
Offline:	No
Recovering:	No
Inconsistent:	No
Blob Chunk:	No
Mirror	
Device:	
Offline:	
Recovering:	



Server Studio™

Pre-Deployment Testing

Extensive pre-deployment testing facilities of Server Studio™ help DBAs and application developers pinpoint DBMS system bottlenecks and set operational benchmarks to help achieve required levels of database performance and availability.

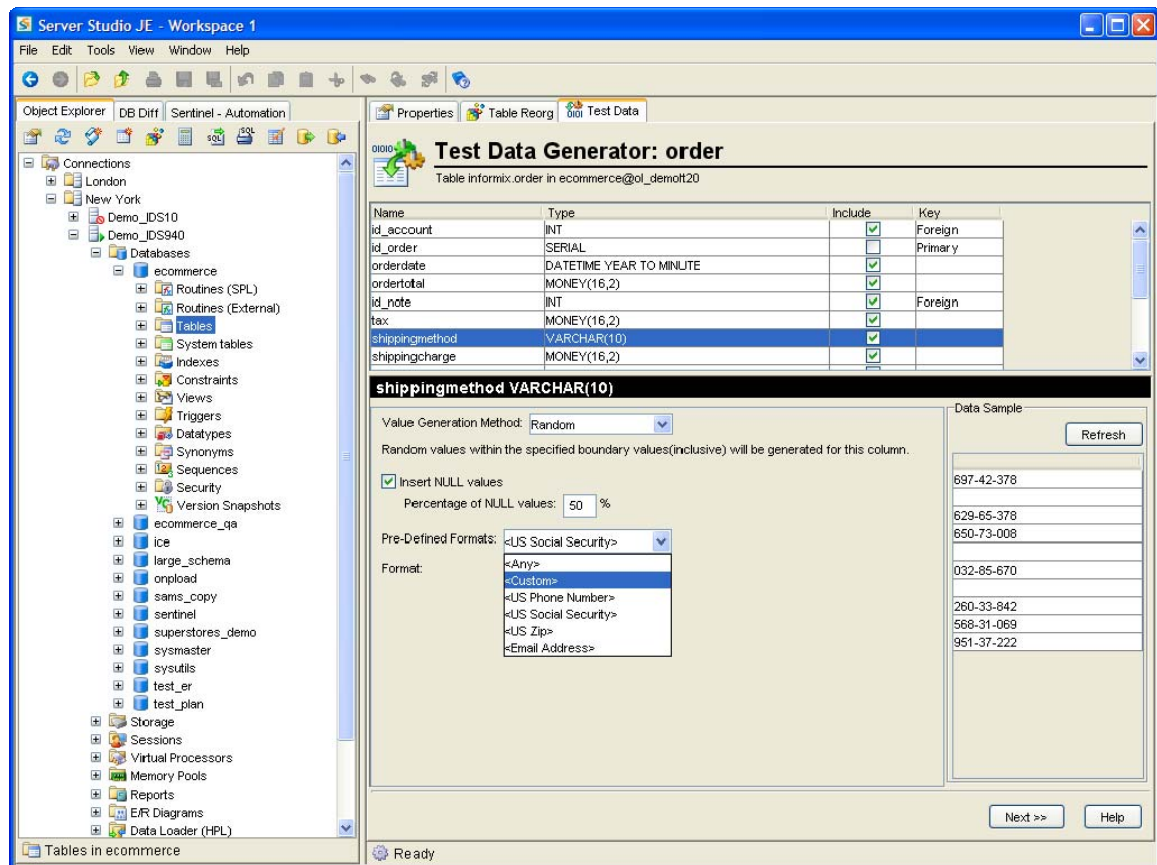
Transparent integration with Sentinel enables real-time monitoring and gathering of the server's operational performance parameters matrix under real-life load scenarios needed to identify and correct point-of-system failures.



Server Studio™

Pre-Deployment Testing – Test Data Generator

- Populate test databases with millions of rows of meaningful, syntactically correct test data, unique indexes and other dependencies, while fully maintaining referential integrity constraints.
- Supports a broad range of data value generation options:
 - text file-based
 - text data patterns
 - values obtained from a database
 - ability to specify data ranges
 - sequential, BLOB and CLOB data generation methods



Server Studio™

Pre-Deployment Testing – Benchmark Runner

- A comprehensive testing solution that effectively simulates real-life load scenarios of hundreds or thousands of users accessing the database simultaneously.
- Measures application's client-side response times automatically.
- Enable creation of consistent performance benchmark tests with fully parametric queries for variety of transactions types (i.e. OLTP, decision support, etc.) to test database applications throughout the expected range of operational conditions.

The screenshot shows the Server Studio JE - Workspace 1 interface. The left pane displays a tree view of the database structure, including connections, databases, and reports. The main pane shows the Benchmark Runner configuration for a task named 'Accounting Queries'. The settings include a connection to 'Demo_IDS940' and a database of 'ecommerce'. The task is configured with 3 sessions, a 70-second interval, and a random execution order. The SQL script is as follows:

```
select * from order
where id_order in (100,200,256)
and order_date between '12/1/2005' and TODAY
and totalamount > 1000
```

Name	Sessions	Interval	Executions	Avg (s)	Min (s)	Max (s)	Errors
Insert Order	20	2 sec random	0				0
Accounting Queries	3	70 sec random	0				0
Sales Queries	50	7 sec random	0				0
ATM Transactions	10	7 sec random	0				0
Export for Data Warehouse	1	300 sec random	0				0





Sentinel™

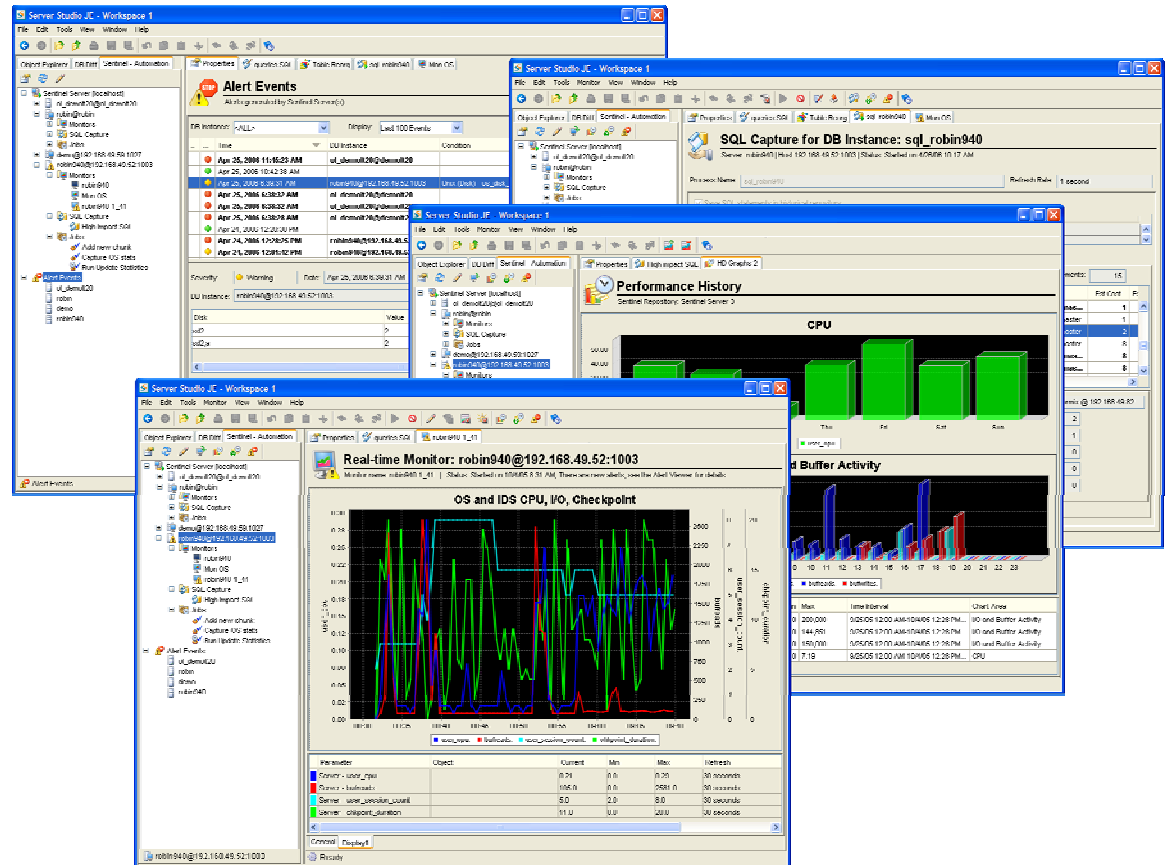
AGS TAKE BACK **CONTROL**



Sentinel™

Performance, Availability and Regulatory Compliance Management of Informix DBMS

- Automate real-time 24x7 monitoring of vital Informix DBMS operational parameters.
- Capture continuous time-series measurement data of the server's performance in an integrated SQL-compliant repository.
- Retrieve dynamically SQL statements running on the server with robust SQL Capture facilities.
- Exploit extensive assortment of analytical tools to help diagnose and quickly respond to performance degradation problems.
- Use highly flexible multi-level alerts to flag availability degradation problems.
- Execute regular database systems maintenance tasks with a flexible Job Scheduler.
- Maximize availability of vital databases with fully autonomic responses to critical server events.
- Conduct performance stress testing under real-life server loads.

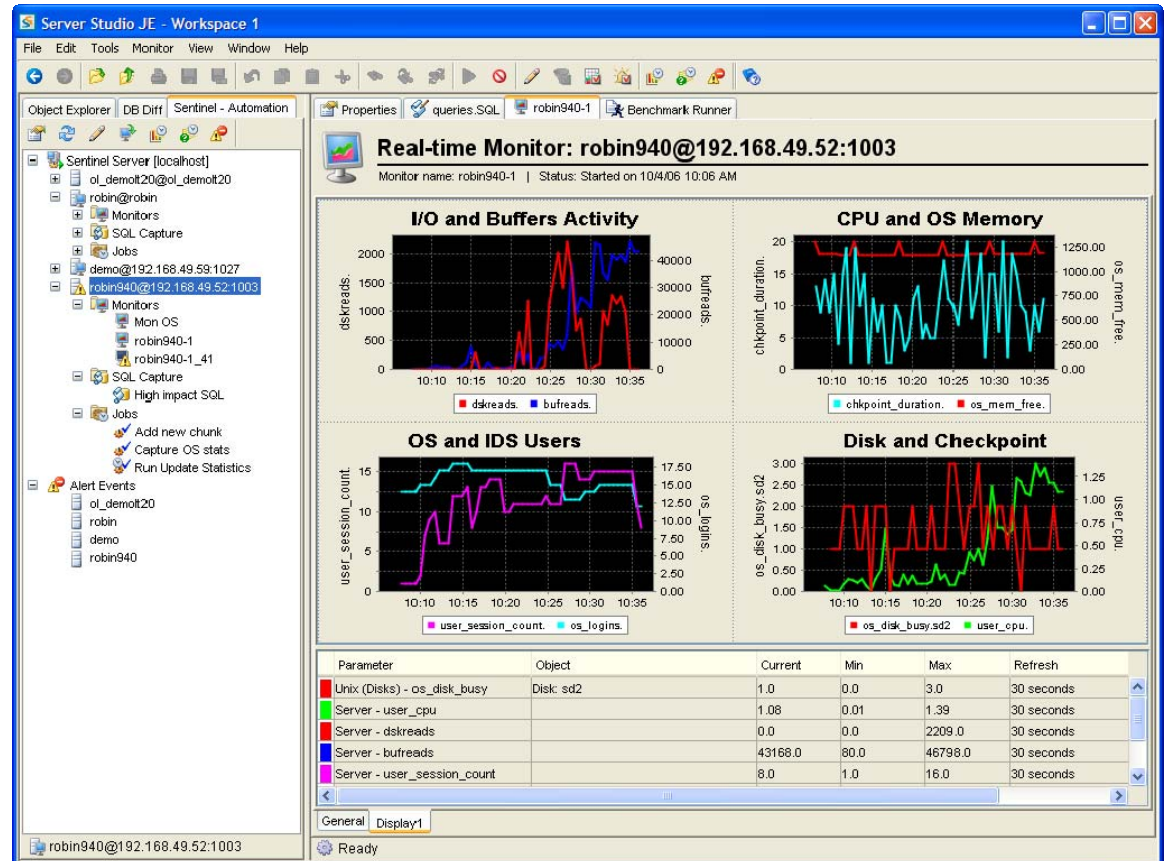


Sentinel™

Real-Time Performance and Event Monitoring



- New fully integrated support for monitoring host's operating parameters.
- Create customized performance tracking monitors from nearly 200 IDS-specific and host's operating system parameters.
- For each IDS instance, real-time monitors can be defined at the level of:
 - Server
 - Chunk
 - DbSPACE
 - Table
 - Index
 - Session
 - CPU
 - Physical and Virtual Memory
 - Storage Devices
 - Network I/O
- Multi-parametric performance graphs for correlation analysis



Sentinel™

Event Alerts and Autonomic Response

- Assign multi-level threshold Alerts to each performance parameter being monitored.
- Centralized console for managing all alert events.
- Notification via email, pager, cell phone, etc.
- Autonomic response to system events by:
 - User-defined administration scripts
 - OS commands
 - SQL scripts
 - Stored procedures
 - IDS native utilities

Server Studio JE - Workspace 1

Alert Events

Alerts generated by Sentinel Server(s)

DB Instance: <ALL> Display: Last 100 Events

Time	DB Instance	Condition	Source
Apr 25, 2006 11:45:23 AM	ol_demoit20@demoit20		System
Apr 25, 2006 10:42:38 AM			System
Apr 25, 2006 6:39:31 AM	robin940@192.168.49.52:1003	Unix (Disk) - os_disk_busy > 0	Mon OS
Apr 25, 2006 6:38:32 AM	ol_demoit20@demoit20		mon2
Apr 25, 2006 6:38:32 AM	ol_demoit20@demoit20		active_trans
Apr 25, 2006 6:38:28 AM	ol_demoit20@demoit20		System
Apr 24, 2006 12:28:38 PM			System
Apr 24, 2006 12:28:25 PM	robin940@192.168.49.52:1003		System
Apr 24, 2006 12:01:42 PM	robin940@192.168.49.52:1003	Unix (Disk) - os_disk_busy > 0	Mon OS

Severity: Warning Date: Apr 25, 2006 6:39:31 AM Source: Mon OS Sentinel: Sentinel Server

DB Instance: robin940@192.168.49.52:1003 Condition: Unix (Disk) - os_disk_busy > 0

Disk	Value
sd2	2
sd2,a	2

Job Status: Job: Details...

User Defined Message:



Sentinel™

SQL Capture

- Capture SQL statements for:
 - selected user sessions
 - specified user
 - statements originating from a specified host
- Review captured SQL in real-time
- Store captured SQL in the built-in data repository for future analysis.
- Use captured SQL for performing query analysis and optimization.

The screenshot shows the 'SQL Capture for DB Instance: sql_robin940' window. The main area displays a table of captured SQL statements with columns for Time, Session, SQL, DB, and Est Cost. Below the table, a details pane shows the selected SQL statement and its execution statistics.

Time	Session	SQL	DB	Est Cost	Est Rows
4/26/06 10:18:09 AM	#6433078: informix @ 192.168...	set lock mode to wait 5	sysmas...	1	1
4/26/06 10:18:09 AM	#6433081: informix @ 192.168...	set lock mode to wait 5	sysmaster	1	1
4/26/06 10:18:09 AM	#6433078: informix @ 192.168...	select round((select sum(used) from syslogs ...	sysmaster	2	1
4/26/06 10:18:09 AM	#6433078: informix @ 192.168...	select round(sum(po_usedam)/1042,0) memory...	sysmaster	8	1
4/26/06 10:18:09 AM	#6433078: informix @ 192.168...	select name, value from sysmaster:infor...	sysmas...	8	1
4/26/06 10:18:09 AM	#6433081: informix @ 192.168...	select t2.cbl_sessionid session_id, cbl_st...	sysmas...	8	1

Details for selected statement:

```
select round((select sum(used) from syslogs where
number <=(select number from syslogs where is_current
= 1))/sum(size),2)*100 perc_lgcl_log_used from sysl
ogs
```

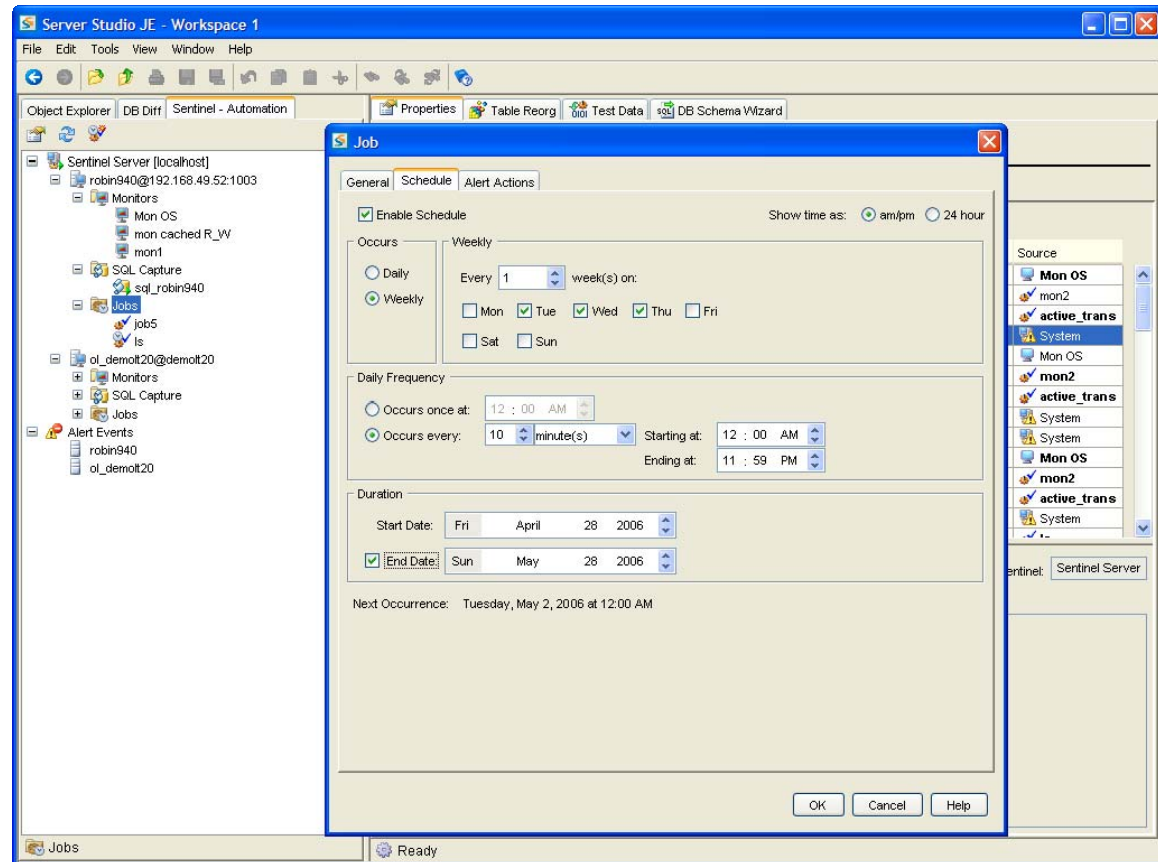
Session: #6433078: informix @ 192.168.49.82
 Estimated Cost: 2
 Estimated Rows: 1
 Sequential Scans: 0
 Auto Index: 0
 Number of Temp Files: 0



Sentinel™

Task Automation

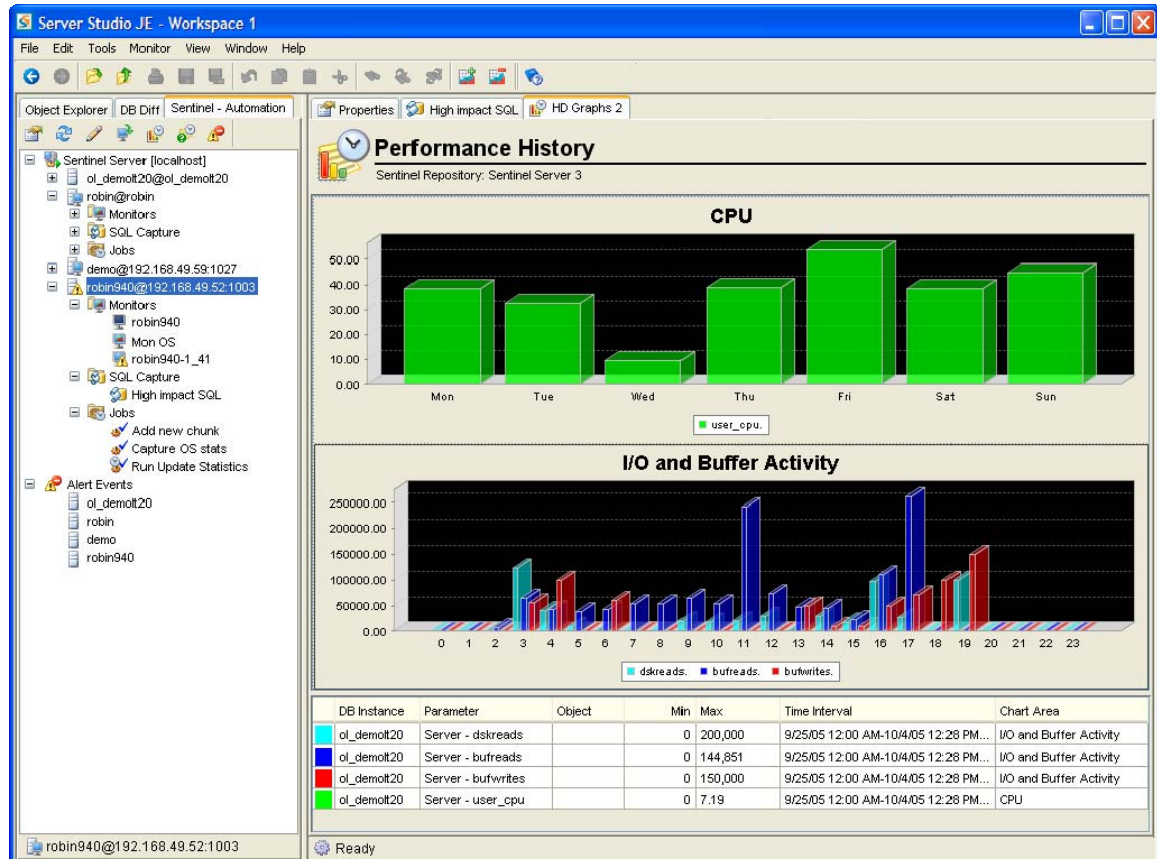
- Automation of regular maintenance tasks via scheduled custom-defined jobs.
- Define OS commands and SQL scripts as jobs.
- Highly flexible job scheduler.
- Map existing administration scripts and Informix utilities as jobs.
- Execute jobs as responses to user-defined alert events.
- Output produced by jobs is logged into built-in data repository for future analysis.



Sentinel™

Performance Data Time-Series Analysis

- For all IDS instances under monitoring, the time-series repository stores in its own built-in SQL-compliant database:
 - performance parameters data
 - Event Alerts history
 - SQL scripts captured from user sessions
 - Result sets captured from autonomic execution of administration scripts or IDS native utilities
- Correlation analysis can be easily performed over any available time interval to spot performance bottlenecks and anomalies.
- Run SQL queries against the time-series repository to export complex performance parameters data sets for further external analysis.



Sentinel™

Configuration & Regulatory Compliance Auditing – Version Control



- Create snapshots of database schema for versioning of database changes in a built-in Version Control Snapshots repository.
- Create versions of individual objects such as stored procedures, tables, views, etc.
- Maintain versions of database security states, such as user's and role's permissions and track security changes for audit purposes.
- Preview versions of database schema objects using graphical tools and recover selected objects' schema
- Compare database versions with a current database state as well as between the schema snapshots stored in the Version Control Repository .
- Share the Version Control Repository among groups of DBAs and developers to support team work.
- Auto-detect any changes in the server or specified databases configuration.

Name	Owner	Type
aaa55	informix	Table
aaa_korn	informix	Table
account	informix	Table
add_release	informix	Routine
add_release_bundle	informix	Routine
add_release_copy	informix	Routine
asdf	informix	Sequence
beta_licenses	informix	Table
brivdiena	informix	Table
brivdiena_up (brivdiena)	informix	Trigger
customer_t	informix	Datatype
discount	informix	Table
discount1	informix	Table
discount2	informix	Table
dps_procchn	informix	Routine
dps_procupd	informix	Routine



Server Studio™ *with* Sentinel™ Release 6



The most feature-rich, productive and capable release ever!

Server Studio™ together with Sentinel™ provide a powerful solutions infrastructure that helps both seasoned database professionals and novices alike manage IBM Informix® DBMS servers environment complexities with unprecedented ease and ensure that critical databases remain up and perform at peak levels, manage change and assure availability of vital business information. To learn more about this multi-platform suite of integrated, highly intuitive DBMS management tools, please visit:

▪ IBM

– www.ibm.com/software/data/informix/ssje/

▪ AGS

– www.serverstudio.com



Some of the Companies using Server Studio™ and Sentinel™



What Do IBM Informix Customers Have to Say?

“Server Studio brings Informix Database Administration into the 21st Century, replacing ancient command line tools with modern graphical tools. I really can't image how Informix DBAs survived without it!”

Kevin Godzman

Musto Ltd, UK

“I like Server Studio a lot. It is one of the best database tools I've used. The fact that I can view data in several instances at the same time, helps tremendously when testing software or comparing objects in development vs. production. The fact that I can change data in tables, given proper permissions, is of great importance when we have a data problem in production. I highly recommend Server Studio.”

Clifford Jardine

Computer Sciences Corporation (CSC)

“We are operating parts of our billing systems in distributed Informix databases (largest productive instance consists of four machines with eight processors and 16GB RAM each, database volume about 40..60TB). Several thousand tables in active use, several ten thousand tables kept for statistics etc. ... I'm using Server Studio to create new databases, copy structure and data from other instances to them, managing extents, moving tables into other dbspaces when space gets tight, eying locks and lock conflicts and playing with SQL. Server Studio keeps being the best front-end for Informix Systems I've ever tried and has raised my productivity a lot since I started using it.”

Norbert Karls

ePlus

“I'm new to Informix. I come exclusively from a SQL Server background. However, after using Server Studio for a while, I found that it has many features that are more powerful than MS Enterprise Manager and MS SQL Query Analyzer.”

Jim Kodet

Talk America





Thank You

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Advanced DataTools