

**Advanced DataTools Webcast**

**Installing and Upgrading to  
the New Informix 14.10 and  
an introduction InformixHQ  
by Lester Knutsen**

***Webcast April 30, 2019 at  
2:00pm EDT***

***Advanced DataTools***

# Lester Knutsen

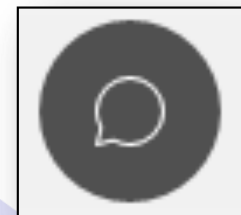


Lester Knutsen is President of Advanced DataTools Corporation, and has been building large data warehouse and business systems using Informix Database software since 1983. Lester focuses on large database performance tuning, training, and consulting. Lester is a member of the IBM Gold Consultant program and was presented with one of the Inaugural IBM Information Champion awards by IBM. Lester was one of the founders of the International Informix Users Group and the Washington Area Informix User Group.

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# Webcast Guidelines

- The Webcast is being recorded. The Webcast replay and slides may be available in a few days.
- Please mute your line - background sounds will distract everyone.
- Use the Chat Button in the bottom right to ask questions.



# Agenda

- What is New in Informix 14.10.FC1
- Installing Informix 14.10.FC1
- Steps for Upgrading to Informix 14
- Informix Upgrade Project Plan
- Setting up InformixHQ Server
- Setting up InformixHQ Client



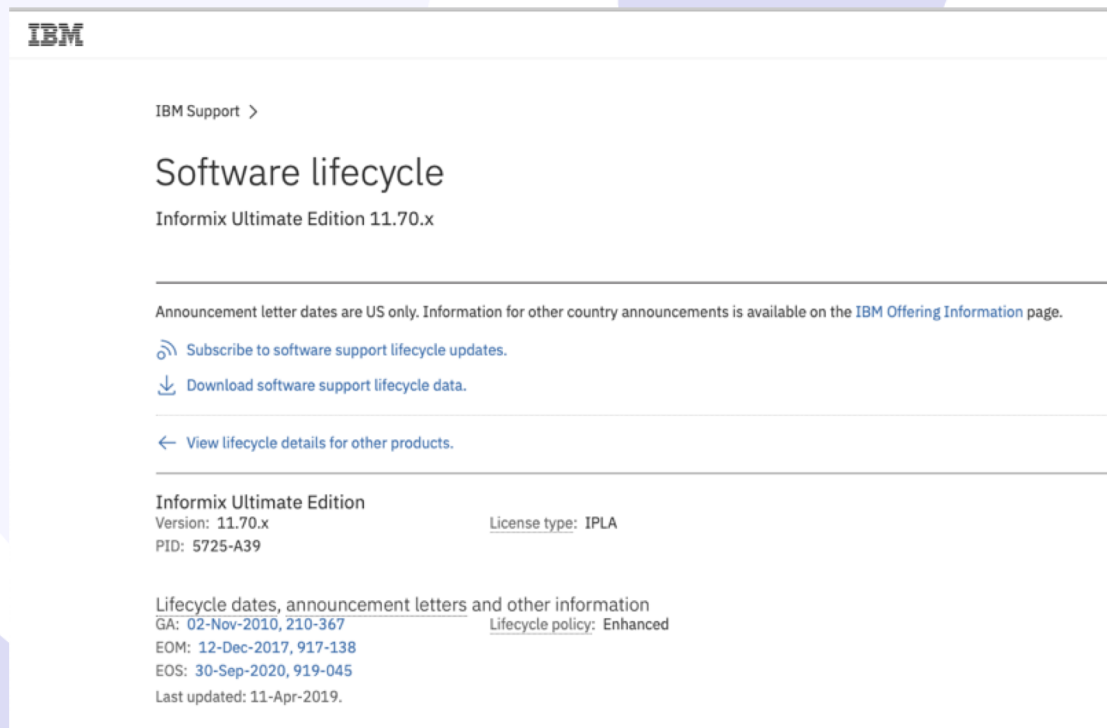
# Informix 14 Feature Summary

(from IBM Informix 14 Announcement)

- Informix 14.10 is Faster
- More Secure
- Enhancements for Usability, Administration and Increased Uptime
- InformixHQ
- Cloud and Containerization
- Extensibility and IoT

# Why Upgrade

- IBM End of Support for Informix 11.70 Next Year on 9/30/2020



The screenshot shows the IBM Support page for Informix Ultimate Edition 11.70.x. The page includes the IBM logo, a breadcrumb trail 'IBM Support >', and the title 'Software lifecycle' for 'Informix Ultimate Edition 11.70.x'. It provides links to subscribe to updates, download lifecycle data, and view details for other products. A table lists key dates: GA (02-Nov-2010), EOM (12-Dec-2017), and EOS (30-Sep-2020). The license type is IPLA and the lifecycle policy is Enhanced.

Informix Ultimate Edition	License type: IPLA
Version: 11.70.x	
PID: 5725-A39	
Lifecycle dates, announcement letters and other information	
GA: 02-Nov-2010, 210-367	Lifecycle policy: Enhanced
EOM: 12-Dec-2017, 917-138	
EOS: 30-Sep-2020, 919-045	
Last updated: 11-Apr-2019.	

# New Installer

- One binary - multiple edition installers
  - Advanced Enterprise Edition (aee)
  - Advanced Developer Edition (ade)
  - Advanced Enterprise Time Limited Edition (aetl)
  - Enterprise Edition (ee)
  - Time Limited Edition (tl)
  - Workgroup Edition (we)
  - Express Edition (e)
  - Innovator-C Edition (ie)
  - Developer Edition (de)

# Informix Edition Installer

- Run the Informix edition installer to switch the 14.10 Informix installation from one edition to another
- Requires Java 1.8.0 to install
- `java -jar ee_edition.jar -i <console|gui>`
- The `ids_install` or `iwa_install` installer will invoke the edition installer for you in the same directory as `ids_install`

# Informix 14.10.FC1 Install

- Demo using ids\_install

# Install Changes

- New InformixHQ software included
  - \$INFORMIXDIR/hq
- No JBDC directory
- ClientSDK not included
- ESQL not included
- Connection Manager not included
- Download and install the Informix SDK separately

# Upgrade Preparation

1. Create a new directory for the Informix 14 software
2. Install the Informix Software
3. Create new ONCONFIG and sqlhosts files
4. Re-compile any UDRs
5. Check and fix “in-place alters”

# In-Place Alters

- Informix uses in-place alters to speed up database schema changes whenever possible
- New rows adopt the new schema definition, old rows do not change, therefore conversion is faster
- Recommend resolving in-place alters before an upgrade



# In-Place Alter Example

## Alter char(15) to char(30)

```
SQL: [ ] New Run Modify Use-editor Output Choose Save Info Drop Exit
Run the current SQL statements.

----- benchmark1@train1 ----- Press CTRL-W for Help -----

-- Alter zip table to create an inplace alter
info columns for zip;
alter table zip modify city      char(30);
info columns for zip;
```

# In-Place Alter Example

## 711 pages at oldest version of table

BLspace Usage Report for benchmark1:informix.zip

Type	Pages	Empty	Semi-Full	Full	Very-Full
Free	84				
Bit-Map	1				
Index	0				
Data (Home)	711				
Total Pages	796				

### Unused Space Summary

Unused data slots	51
-------------------	----

### Home Data Page Version Summary

Version	Count
0 (oldest)	711
1 (current)	0

# In-Place Alter Example

## Insert 1 row

```
SQL: [ ] New Run Modify Use-editor Output Choose Save Info Drop Exit
Run the current SQL statements.

----- benchmark1@train1 ----- Press CTRL-W for Help -----

insert into zip ( zip, city, state, price )
values ( 99999, "NEW CITY WITH LONG NAME", "NS", 0 );

select * from zip where zip = 99999;
```

# In-Place Alter Example

711 pages old version  
1 page new version

BLspace Usage Report for benchmark1:informix.zip

Type	Pages	Empty	Semi-Full	Full	Very-Full
Free	83				
Bit-Map	1				
Index	0				
Data (Home)	712				
<hr/>					
Total Pages	796				

## Unused Space Summary

Unused data slots	91
-------------------	----

## Home Data Page Version Summary

Version	Count
0 (oldest)	711
1 (current)	1



# In-Place Alter Example

## Fix with dummy update

```
SQL: [ ] New Run Modify Use-editor Output Choose Save Info Drop Exit
Run the current SQL statements.

----- benchmark1@train1 ----- Press CTRL-W for Help -----

update zip set city = city where 1=1;
```

# In-Place Alter Example

## All rows at current version

TBLspace Usage Report for benchmark1:informix.zip

Type	Pages	Empty	Semi-Full	Full	Very-Full
Free	225				
Bit-Map	1				
Index	0				
Data (Home)	1058				
Total Pages	1284				

### Unused Space Summary

Unused data slots 1479

### Home Data Page Version Summary

Version	Count
0 (oldest)	0
1 (current)	1058

# Upgrade Preparation

## 6. Verify integrity of Data Pages

- Check Reserved Pages
  - oncheck –pr or oncheck -cc
- Check Extents
  - oncheck –ce
- Check System Catalog Tables
  - oncheck –cc <database name>
- Check Data and Indexes
  - oncheck –cDI <Database name>
- Check Smart Large Objects
  - oncheck –cs <Sbpace name>
  - oncheck –cS <Sbpace name>

# Upgrade Preparation

7. Perform Level 0 Backup
8. Validate the Backup
9. Create a Rollback Contingency Plan



# Perform Upgrade

1. Ensure No User Access and Stop All Daily Processing
2. Bring Server to Single User Mode
3. Completely Shutdown the Informix Server
4. Create Symbolic Link to New Software
5. Check the ONCONFIG and sqlhosts File

# Perform Upgrade

6. Start the Informix Server (new version) and allow it to perform the internal upgrade
7. Finish the Upgrade and Monitor Progress – bring the Server online to multi-user mode
8. Test the Installation

# Perform Upgrade

- 9. Update Statistics Low on All Databases
- 10. Update Statistics for Procedures and Functions
- 11. Update Statistics High on All Databases
- 12. Enable User Access

# Post Upgrade Processing

1. Test the Upgrade
2. Update Statistics High on All Databases (if this was not done earlier)
3. Enable Daily Processing and Ensure Users Can Connect
4. Perform Level 0 Backup

# Post Upgrade Processing

## 5. Verify Integrity of Data Pages

- Check Reserved Pages
  - oncheck –pr or oncheck -cc
- Check Extents
  - oncheck –ce
- Check System Catalog Tables
  - oncheck –cc <database name>
- Check Data and Indexes
  - oncheck –cDI <Database name>
- Check Smart large objects
  - oncheck –cs <Sbpace name>
  - oncheck –cS <Sbpace name>

# InformixHQ

## InformixHQ

Login

@ Copyright IBM Corp. 2015, 2017. @ Copyright HCL Technologies Ltd. 2017, 2019.

# InformixHQ

- Modern web console for visualizing, monitoring, and managing your Informix server instances
- InformixHQ Guide:
  - [https://www.ibm.com/support/knowledgecenter/en/SSGU8G\\_14.1.0/com.ibm.ifxhq.doc/informixhq.htm](https://www.ibm.com/support/knowledgecenter/en/SSGU8G_14.1.0/com.ibm.ifxhq.doc/informixhq.htm)

# Setting up InformixHQ Server

- Setup InformixHQ Server Properties File
  - Example:
    - `informixhq-server-example.properties`
- Start the Server
  - Example:
    - `java -jar informixhq-server.jar informixhq-server.properties`



# Adding an Informix Server to HQ

The screenshot displays the InformixHQ web interface. The top navigation bar includes the InformixHQ logo and a user profile for 'admin'. The breadcrumb trail indicates the current location: 'All Servers > Training Tigers > tiger2tcp > Setup'. The left sidebar contains a search bar and a list of navigation items: 'tiger2tcp', 'Setup' (highlighted), 'Monitoring', 'Alerting', 'Permissions', 'Incidents', 'Configuration', 'Performance', 'Storage', 'System Info', 'SQL', 'SQL Tracing', 'Logs', and 'Privileges'. The main content area is titled 'Setup' and has two tabs: 'Server' (active) and 'Agent'. Under the 'Server' tab, the 'Server Information' section contains fields for 'Server ID' (12), 'Server Name' (tiger2tcp), 'Hostname' (tiger2), and 'Port' (9088). Below this, the 'Monitoring Credentials' section has a pencil icon and fields for 'Username' (informix) and 'Password' (masked). The 'Admin Credentials' section also has a pencil icon and fields for 'Username' (informix) and 'Password' (masked). At the bottom, the 'Connection Properties' section includes a '+ Add Connection Property' button. A 'Save' button is located at the very bottom of the form.

InformixHQ

All Servers > Training Tigers > tiger2tcp > Setup

Setup

Server Agent

Server Information

Server ID 12

Server Name tiger2tcp

Hostname tiger2

Port 9088

Monitoring Credentials

Username informix

Password

Admin Credentials

Username informix

Password

Connection Properties

+ Add Connection Property

Save

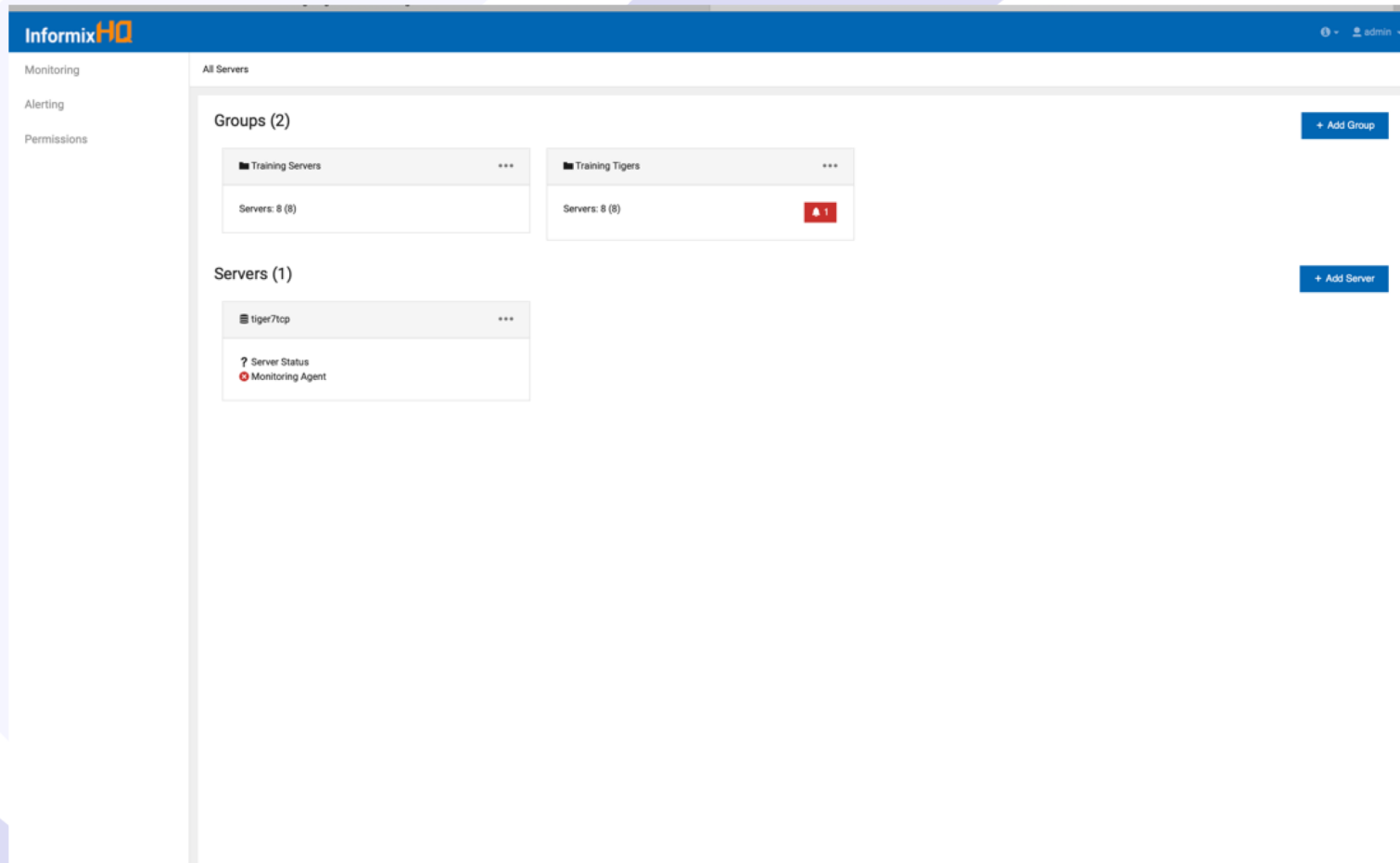
# InformixHQ – Deploy Agent

The screenshot displays the InformixHQ web interface. The top navigation bar shows the InformixHQ logo and a user profile for 'admin'. The breadcrumb trail indicates the current location: 'All Servers > Training Tigers > tiger2tcp > Setup'. The left sidebar contains a search bar and a list of navigation items: 'tiger2tcp', 'Setup' (highlighted), 'Monitoring', 'Alerting', 'Permissions', 'Incidents', 'Configuration', 'Performance', 'Storage', 'System Info', 'SQL', 'SQL Tracing', 'Logs', and 'Privileges'. The main content area is titled 'Setup' and has two tabs: 'Server' and 'Agent' (selected). Under the 'Agent' tab, the 'Agent Information' section shows a 'Repository' field with the text 'No repository selected.' and a 'Select...' button. Below this is a 'Save' button. The 'Agent Status' section shows a red-bordered box with the text 'The agent is offline.' and an unchecked checkbox for 'Overwrite existing agent'. Below this are input fields for 'Username', 'Password' (with a dropdown arrow), and 'Remote directory' (with an example path '/opt/informixhq-agent'). A 'Deploy agent' button is located at the bottom of the form.

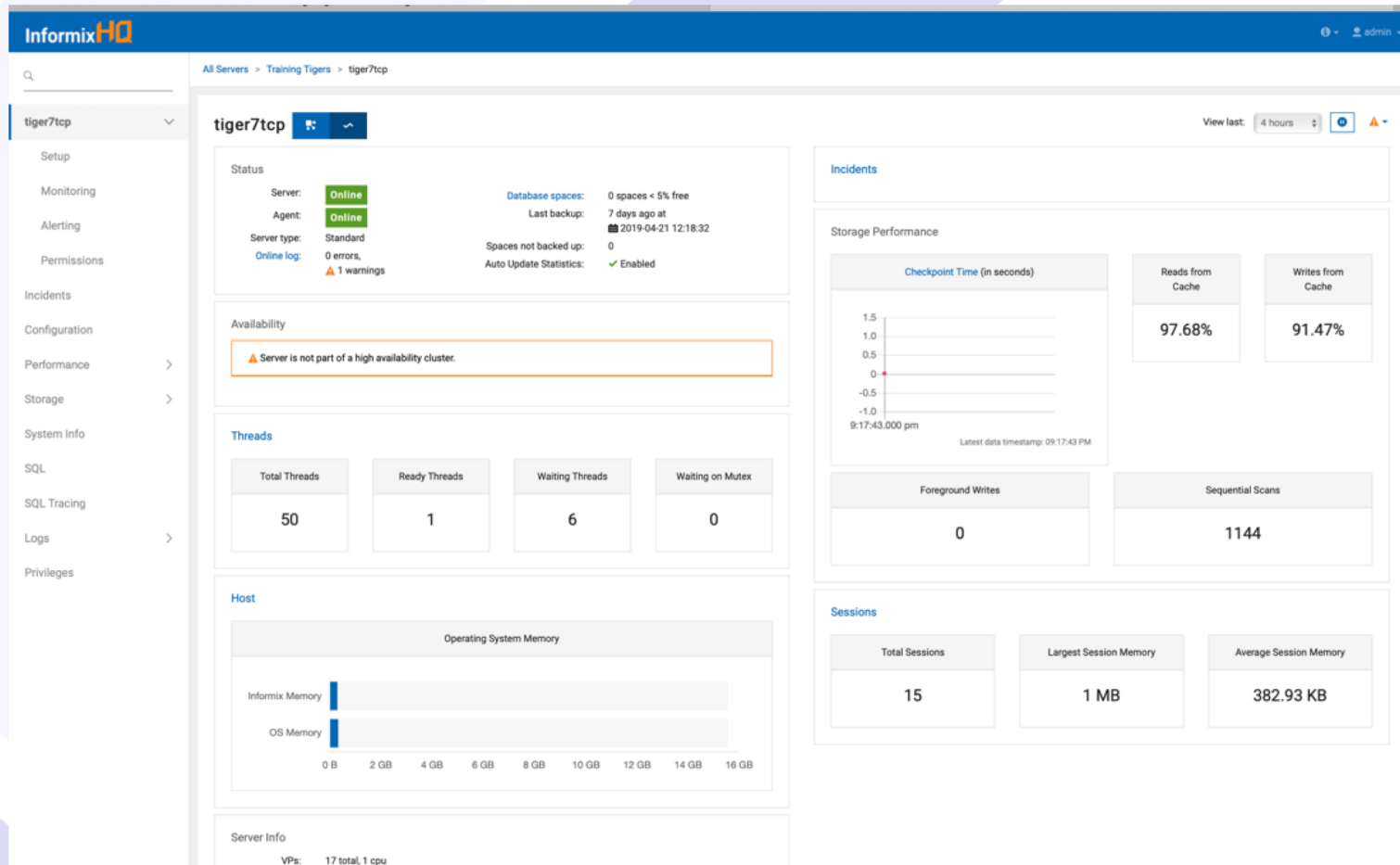
# Setting up InformixHQ Client

- Setup InformixHQ Agent Properties
  - Example:
    - `informixhq-agent-example.properties`
- Start the Agent
  - Example:
    - `java -jar informixhq-agent.jar agent.properties`

# InformixHQ - Servers



# InformixHQ - Server



# InformixHQ – Monitor DBspaces

InformixHQ

tiger7tcp > Storage > Spaces

View as Create Space

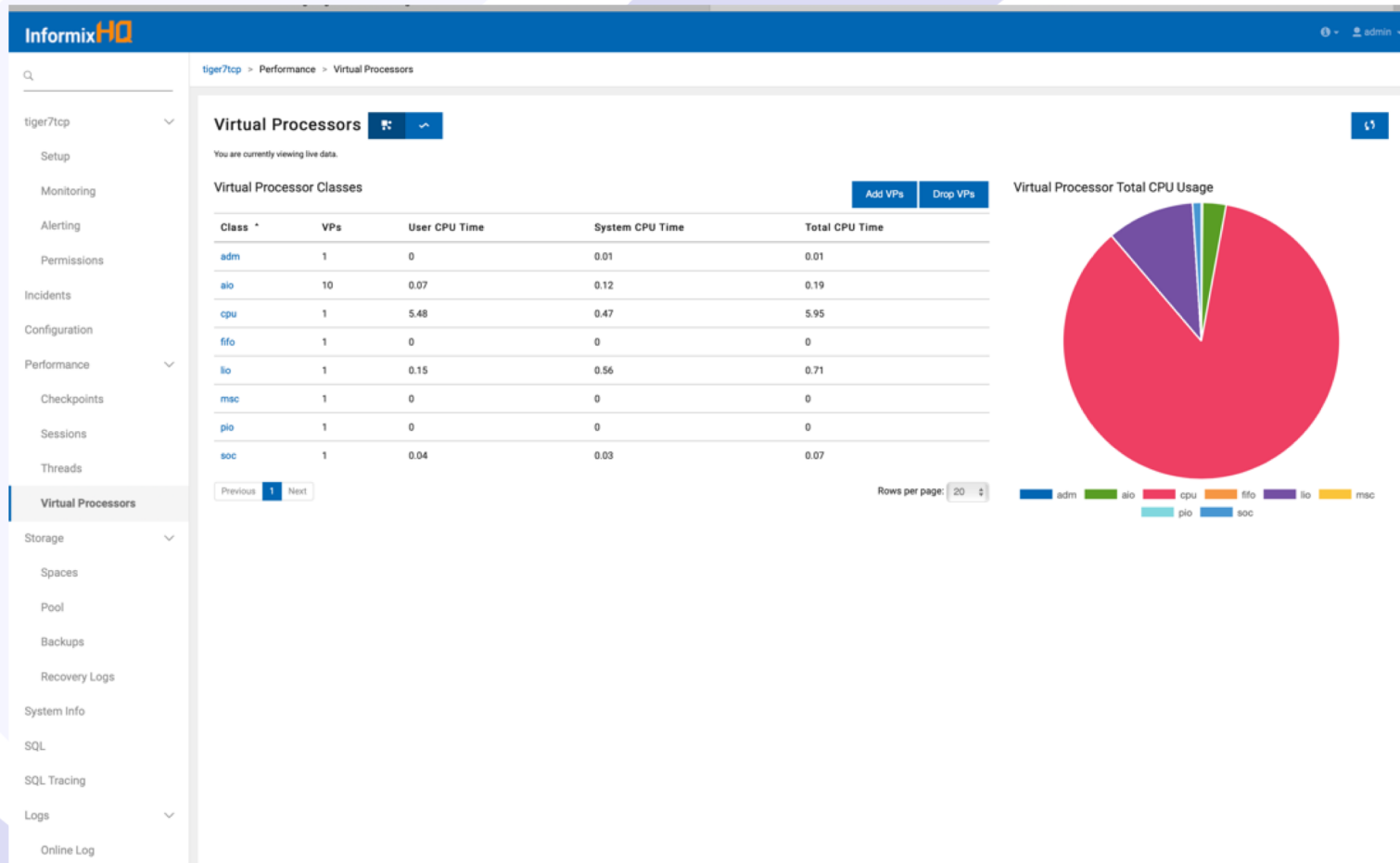
Search name or type...

Number	Name	Status	Type	% Used	Size	Page Size	Expandable	Create Size	Extend Size	Last Backup	Actions
2	plogdbs	●	dbspace	<div></div>	1.91 GB	2 KB	✓	10%	9.77 MB	2019-04-21 12:18:32	Action
3	logdbs	●	dbspace	<div></div>	1.91 GB	2 KB	✓	10%	9.77 MB	2019-04-21 12:18:32	Action
1	rootdbs	●	dbspace	<div></div>	390.63 MB	2 KB	✓	10%	9.77 MB	2019-04-21 12:18:32	Action
4	datadbs	●	dbspace	<div></div>	3.81 GB	2 KB	✓	10%	9.77 MB	2019-04-21 12:18:32	Action
8	blobdbs	●	blobdbspace	<div></div>	19.53 MB	4 KB	✓	10%	0%	2019-04-21 12:18:32	Action
9	idxdbs	●	dbspace	<div></div>	1.91 GB	16 KB	✓	10%	9.77 MB	2019-04-21 12:18:32	Action
7	tmp3dbs	●	temporary dbspace	<div></div>	488.28 MB	2 KB	✓	10%	9.77 MB	2019-04-21 11:43:23	Action
6	tmp2dbs	●	temporary dbspace	<div></div>	488.28 MB	2 KB	✓	10%	9.77 MB	2019-04-21 11:43:23	Action
5	tmp1dbs	●	temporary dbspace	<div></div>	488.28 MB	2 KB	✓	10%	9.77 MB	2019-04-21 11:43:23	Action

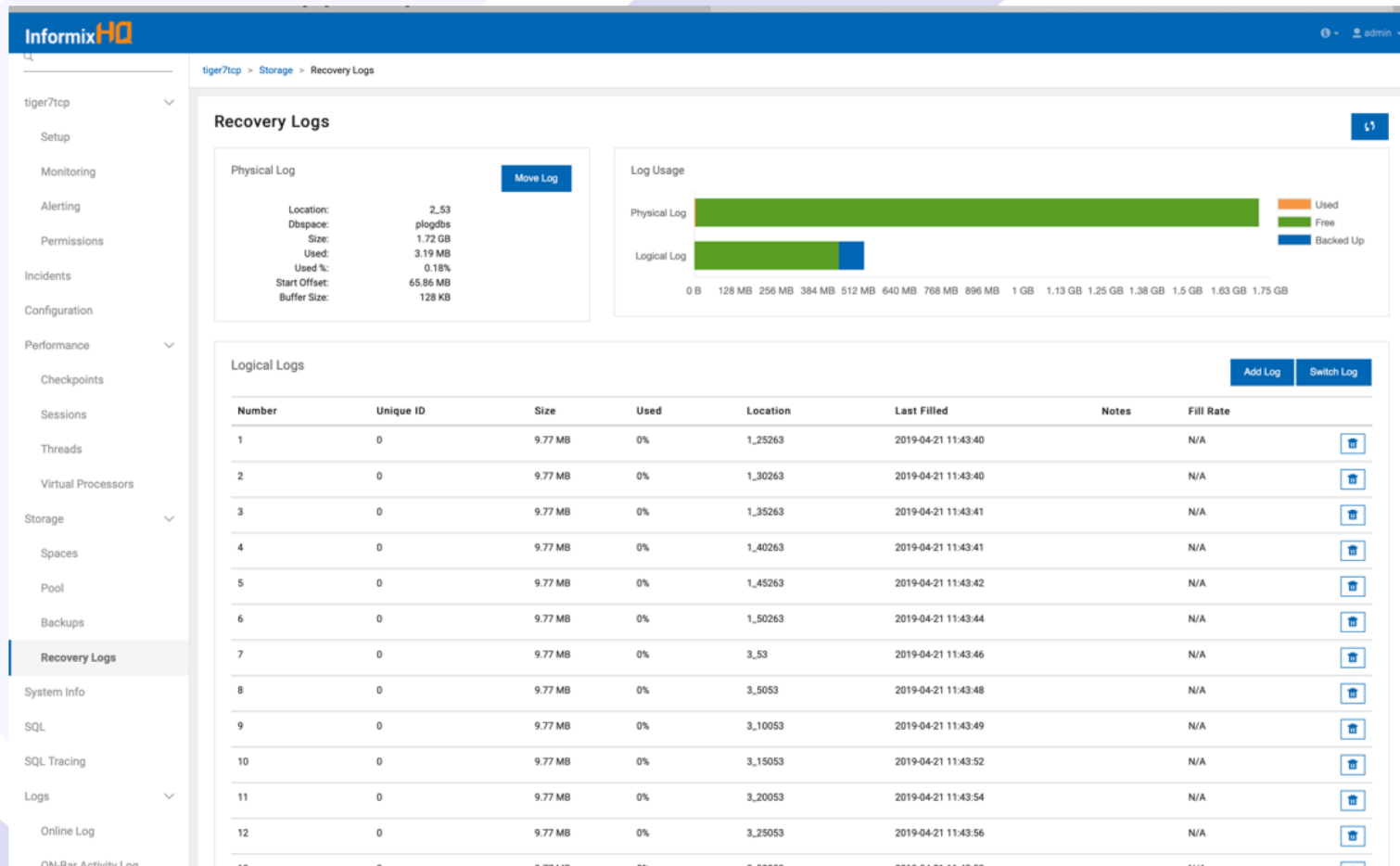
Previous 1 Next

Rows per page: 10

# InformixHQ – Monitor oninits



# InformixHQ – Monitor Logs





# InformixHQ – Setup Alerts

The screenshot displays the InformixHQ web interface. On the left, a sidebar menu shows navigation options like Setup, Monitoring, Alerting, Permissions, Incidents, Configuration, Performance, Checkpoints, Sessions, Threads, Virtual Processors, Storage, Spaces, Pool, Backups, Recovery Logs, System Info, SQL, SQL Tracing, and Logs. The main content area shows the 'Sensors' section for a specific server, with a message 'No sensors defined.' and an 'Add Sensors' button. A modal dialog titled 'Add Sensors' is open, displaying a list of available sensors with their names and descriptions.

Name	Description
AF files	Monitors for the presence of AF (assert fail) files in the Informix database server's DUMPDIR.
Backups per dbspace	Monitors the time of the last backups run for each dbspace on the Informix database server
Buffer and Disk I/O	Monitors buffer and disk I/O activity on the Informix database server
Checkpoint	Monitors checkpoint statistics for the Informix database server
Chunk Writes	Monitors chunk writes by the Informix database server
DBSpace Usage	Monitors the space usage for dbspaces on the Informix database server
Foreground Writes	Monitors foreground writes by the Informix database server
Informix Server Status	Monitors the status of the Informix database server (online, offline, etc.)
LRU Writes	Monitors LRU writes by the Informix database server
Memory	Monitors memory usage by the Informix database server
Memory Segments	Monitors the memory segments used by the Informix database server
Online Log	Monitors the Informix database server's log file.
Operating System CPU	Monitors CPU usage on the operating system
Operating System CPU per Core	Monitors CPU usage per core on the operating system
Operating System Disk I/O	Monitors Disk I/O activity on the operating system
Operating System Disk Utilization	Monitors operating system disk usage for the storage devices used by the Informix database server.
Operating System Memory	Monitors memory usage on the operating system

# InformixHQ – SQL Commands

The screenshot displays the InformixHQ web interface. On the left is a navigation menu with categories like Setup, Monitoring, Alerting, Permissions, Incidents, Configuration, Performance, Sessions, Threads, Virtual Processors, Storage, Spaces, Pool, Backups, Recovery Logs, System Info, SQL, SQL Tracing, Logs, and Online Log. The 'SQL' option is selected. The main area is titled 'SQL Console' and shows the user 'sysadmin' logged in. A query input field contains 'onstat -p'. Below the input, the command is executed, showing the output of the 'onstat -p' command. The output includes server version, profile statistics, and various system metrics.

**SQL Console**

sysadmin | Logged in as: informix | [Change User](#)

Query: `onstat -p`

**onstat**

IBM Informix Dynamic Server Version 14.10.FC1 -- On-Line -- Up 00:04:34 -- 335668 Kbytes

Profile								
dskreads	pagreads	bufreads	%cached	dskwrts	pagwrts	bufwrts	%cached	
7111	13239	307699	97.70	4873	7195	57220	91.48	
lsamtot	open	start	read	write	rewrite	delete	commit	rollbk
454598	53366	49336	104587	9199	6390	1041	7002	0
gp_read	gp_write	gp_rewrt	gp_del	gp_alloc	gp_free	gp_curs		
0	0	0	0	0	0	0		
ovlock	ovuserthrd	ovbuff	usercpu	syscpu	numckpts	flushes		
0	0	0	5.82	1.27	1	2		
bufwaits	lokwaits	lockreqs	deadlks	dltouts	ckpwaits	compress	seqscans	
71	0	176732	0	0	0	1848	1162	
ixda-RA	idx-RA	da-RA	logrec-RA	RA-pgsused	lchwaits			
857	271	348	2	529	123			

# Questions?



Send follow-up questions to  
[Lester@advanceddatatools.com](mailto:Lester@advanceddatatools.com)

***Advanced DataTools***

# North America IBM Informix Roadshow by Carlton Doe

- This series of free, one day, deep dive events is focused on the features of the recent IBM Informix v.14.10 release. A partial list of topics includes:
  - The new installation mechanism
  - New security enhancements including integrated backup encryption and changes to on-disk encryption!
  - High Availability enhancements
  - New SQL features and functions and application development enhancements
  - New replication functionality including asynchronous post commit triggers
  - Heterogeneous instance migration with codeset conversions
  - The Informix HQ graphical monitoring tool and more
- Please visit: <http://tinyurl.com/mjmntfo>

# IIUG World 2019



**More Information Coming at  
<http://www.iiug.org>**

# **Informix Webcasts from the IBM Champions at Advanced DataTools**

- **Informix Databases Migrations, Exports & Imports (Part 1) by Mike Walker** - Thursday, May 2, 2019 at 2:00pm EDT
- **Informix Databases Migrations, Exports & Imports (Part 2) by Mike Walker** - Wednesday, June 5, 2019 at 2:00pm EDT

Registration and more information:  
<https://advanceddatatools.com/Informix/NextWebcast.html>

***Advanced DataTools***

# Informix Training

## Updated for Informix 14.10

Attend classes online on the web, or in person at our training center in Virginia. All you need is a web browser to connect to our WebEx training system and an SSH client (like Putty) to connect to our training lab for hands-on exercises. Each student uses an 8-core Linux server, with 16GB RAM, SSD drives with Informix 12, and several large databases for benchmark exercises.

- **March 11-14, 2019 - Advanced Informix Performance Tuning** Completed
- **April 22-25, 2019 - Informix for Database Administrators** Completed
  - This course is for new database administrators, programmers, and technical support personnel who will be setting up, managing, and tuning IBM Informix databases.
- **October 7-10, 2019 - Informix for Database Administrators**
  - This course is for new database administrators, programmers, and technical support personnel who will be setting up, managing, and tuning IBM Informix databases.

**More Information and Registration at:**

<http://www.advanceddatatools.com/Training/InformixTraining.html>



# Informix Training Servers



Each student in class will have a server running Informix 14.10 with:

- 8 CPU Cores
- 16 GB RAM
- 1 SSD Disk
- 1- 4 Disks

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## ***Informix Support and Training from the Informix Champions!***

Advanced DataTools is an Advanced Level IBM Informix Data Management Partner, and has been an authorized Informix partner since 1993. We have a long-term relationship with IBM, we have priority access to high-level support staff, technical information, and Beta programs. Our team has been working with Informix since its inception, and includes 8 Senior Informix Database Consultants, 4 IBM Champions, 2 IIUG Director's Award winners, and an IBM Gold Consultant. We have Informix specialists Lester Knutsen and Art Kagel available to support your Informix performance tuning and monitoring requirements!

- ***Informix Remote DBA Support Monitoring***
- ***Informix Performance Tuning***
- ***Informix Training***
- ***Informix Consulting***
- ***Informix Development***

**Free Informix Performance Tuning Webcast replays at:**

<http://advanceddatatools.com/Informix/Webcasts.html>

Email: [info@advanceddatatools.com](mailto:info@advanceddatatools.com)

Web: <http://www.advanceddatatools.com>



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# Thank You

## ***Advanced DataTools Corporation***



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