IBM Informix 14.10 - Upgrade to higher performance, lower admin, and more robust analytics

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IBM

IBM Informix V14.10 enhances all editions, bringing improvements to performance, security, administration, and core database capabilities

IBM United States Software Announcement 219-062
March 12, 2019

ENUS219-062.PDF

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Overview

IBM® Informix® V14.10 provides a powerful, reliable, and low-cost data platform for mission-critical business environments. Informix V14.10 builds on its powerful feature set with new capabilities and improvements in various areas, including support for online transaction processing (OLTP) and replication workloads, time series and spatial data, and enhancements to data security. Informix continues to provide optimized performance and reliability in a cost-effective and simple-to-administer database platform that is designed for continuous availability of critical data resources.

IBM Informix V14.10:

- Enhances performance of secondary backups and OLTP transactions
- Provides higher security for encryption keys and Transport Layer Security (TLS)
- Enhances usability, streamlines administration, and increases uptime
- Provides new graphical administration tool called InformixHQ
- Enhances Unicode support to current V11 specifications
- Enhances time series granularity and spatial projection systems
- Updates platform support to current 64-bit OS levels
- Increases hardware limits at the Workgroup Edition level
- Includes storage optimization at the Enterprise Edition level

Agenda:

Major themes in IBM Informix 14.10

Editions & Licensing

Installation simplified

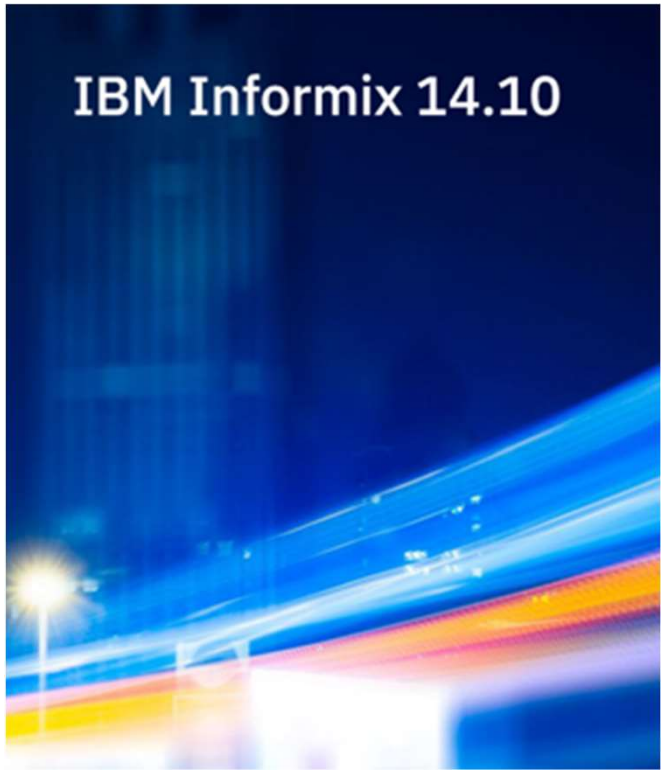
Key technical enhancements

Security

InformixHQ

Informix On Cloud

Roadmap



IBM & HCL

In April 2017, IBM announced the **15-year** IP partnership for the Informix product family with HCL.

- It is not a sale of the source code, nor the product, nor existing software or support contracts.
- **IBM owns Informix.** HCL has access to the Informix source code and is responsible for the development and support of Informix products.
- IBM continues to market and sell Informix as well as handle customer commercial interactions.
- The partnership is active with healthy collaboration across all product functions.
- IBM Offering Management, sales and tech sales continue to maintain client relationships critical for new license sales and S&S revenue retention.

Now, why is this good for you?

Focus: New as well as existing Informix clients will enjoy a stronger market presence of Informix, and a commitment by IBM and HCL as expressed in a roadmap and joint go to market campaigns.
Time to market: The Informix product will enjoy accelerated delivery of new product capabilities to help Informix to win in the market. It will mean an expansion of Informix core capabilities as well as cloud-based offerings to help Informix clients in their journey to cloud.
Confidence: For new clients to invest in a mature, battle-tested, yet future-proof technology. And reassurance for existing Informix clients who might have worried about the future of Informix and their investments to date.

30+ years enduring differentiators in database market

Optimized Database for Time Series and Geospatial data	Accelerated development of time and location aware application for consumer, traffic, IoT and other domains that drive bottom line improvements
Small Footprint, Low Administration and Distributed instances	Minimize the cost of hardware and DBAdmin resources (TCO) for solution providers and enterprises serving highly distributed locations (retail, hotels, transport,…)
Multi-Model Integration in one database	Combine NoSQL data and access methods with SQL relational data, including the unique TimeSeries and spatial data types for all-in-one app development
Proven Enterprise class Reliability and Security	High uptime and proven replication technology for HA. Built-in encryption at rest and in backups.
Integrated In-memory Warehouse Accelerator	Very high performance analytic queries with low tuning on operational data stored in Informix database
Multiple editions, pricing metrics and embedded solutions model for partners	Wide adoption from business partners building high value domain and geo specific custom solutions via customized pricing models

What are the major themes in IBM Informix 14.10?

Faster

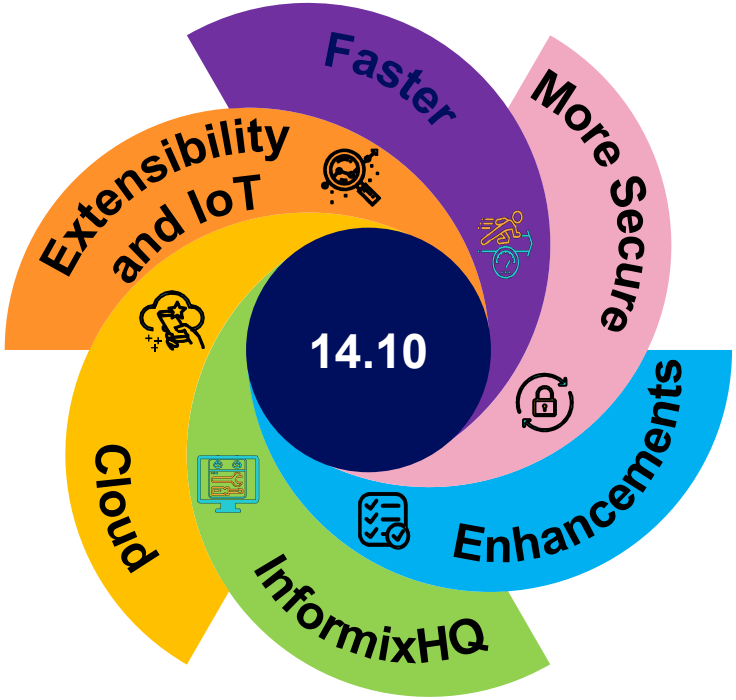
Significant performance improvements for replication workloads and OLTP

More Secure

Provides higher security for encryption keys and Transport Layer Security

Enhancements for Usability, Administration, and Increased Uptime

Customer RFEs implemented to include in-place alter improvements, renaming of indexes and constraints online, and Common Table Expressions



InformixHQ

New, fully supported, graphical administration tool

Cloud & Containerization

New VPC pricing metric for easier license monitoring.
Docker Hub images

Extensibility and IoT

ARMv8 support
Enhanced timeseries granularity and spatial projection systems

Some changes with Informix 14.10

- Informix v.14.10 is only available as a 64-bit product on the supported OS.
  - Earlier Informix versions were selectively available in both 32 and 64-bit versions on some OSs.
  - Some OSs are no longer supported by Informix v.14.10 such as MacOS, Linux system Z, Solaris Intel, and the Big Endian port for IBM Power systems.

- The Advanced Workgroup Edition was been retired.

- The **Storage Optimization feature** (commonly called data compression) is now included in Enterprise Edition as part of the basic license.

- Workgroup Edition received a significant increase in supported memory and CPU resources allowing customers using it to do even more work with this cost-efficient edition.

- Informix v.14.10 can now be purchased using the IBM Virtual Processor Core (**VPC**) licensing metric.
  - This metric simplifies licensing particularly for virtual or cloud environments since it uses the lessor of two values — the number of actual hardware cores or the number of virtual cores.

Compression now included in Enterprise Edition

The **Storage Optimization feature** (commonly called data compression) is now included in Enterprise Edition as part of the basic license, no add-on.

Data compression reduces disk usage for **databases**, **backups** (and **restores**!) and **log storage** while simultaneously enhancing performance by **reducing I/O operations**. It also reduces memory usage because more data fits in the same size buffer pool.

Customers have reported average 4x reductions in database size while experiencing faster I/O operations and faster backups.

A dictionary-based algorithm that performs operations on the patterns of the data that were found to be the most frequent, weighted by length, in the data that was sampled at the time the dictionary was built. The **maximum compression (90%)** of any sequence of bytes occurs by replacing each group of 15 bytes with a single 12-bit symbol number, yielding a compressed image that is ten percent of the size of the original image.

Informix Workgroup Edition

	9.21 / 2002	10.0 / 2005	11.5 / 2008	11.5 / 2009	12.1 / 2013	14.1 / 2019
Processors	2	4				
CPU VPs			4	16	16	24
Memory		8 GB	8 GB	16 GB	16 GB	32 GB
PVU			480	480		
Socket				4 / 16 cores		

Informix 14.10
The total amount of resources allocated to a given Informix Install, including all databases managed by the Install, cannot exceed:
Processor Limit a maximum of twenty four (24) Informix CPU Virtual Processors (as reflected in the NUMCPUVPS tunable parameter of the Program) per Install.
Memory Allocation Limit thirty two (32) Gigabytes of memory allocated (as reflected in the SHMTOTAL tunable parameters of the Program) to support use of the Program on a single Install, regardless of the amount of physical memory in the physical server.

IBM Informix 14.10 Editions – licensing, limits

	Informix Developer Edition	Informix Innovator-C Edition	Informix Express Edition	Informix Workgroup Edition	Informix Enterprise Edition	Informix Advanced Enterprise Edition / Informix Advanced Developer Edition
Free or for-purchase edition	Free	Free	For-purchase	For-purchase	For-purchase	For-purchase
Platform support.	Linux, UNIX, Windows, ARM	Linux, Windows	Linux, UNIX, Windows	Linux, UNIX, Windows, ARM	Linux, UNIX, Windows, ARM	Source instances must be: 64-bit AIX , HP IA, Solaris SPARC, Solaris Intel, Linux 64-bit (IWA: 64-bit Linux on Intel or PPC LE)
Licensing metrics	None. (Free for development and test use only. Community support only.)	None (Free for development, test, and small production use.)	Authorized User Single Install, LUVS, VPC or PVU	Authorized User Single Install, VPC or PVU	Authorized User Single Install, VPC or PVU	PVU for Advanced Enterprise Edition, AU For Informix Advanced Developer Edition
sub-capacity licensing	N/A	N/A	Yes	Yes	Yes	Yes
Processor limits	One-core maximum per install	One-core maximum per install	Four-core maximum per install	Four-socket, 24-core maximum per install	Unlimited	Unlimited
CPU VP limits	1	1	4	***Now 24 (from 16)***	Unlimited	Unlimited
SHMTOTAL allocations across all Informix instances operating from the same install	1GB per instance	2GB	8GB	***Now 32GB (from 16)***	Unlimited	Unlimited
Data storage space limitations	8GB	8GB	Unlimited	Unlimited	Unlimited	Unlimited

IBM Informix 14.10 Editions - functionality

	Informix Developer Edition	Informix Innovator-C Edition	Informix Express Edition	Informix Workgroup Edition	Informix Enterprise Edition	Informix Advanced Enterprise Edition / Informix Advanced Developer Edition
Encryption at rest	Included	Included	Included	Included	Included	Included
Parallel operations and partitioning	Included	Not available	Not available	Not available	Included	Included
Enterprise Replication (ER) clustering	Unlimited	Not available	Cluster limited to a total of two root nodes	Unlimited	Unlimited	Unlimited
High Availability (H/A) cluster	Unlimited	Not available	Limited — One secondary node	Limited — Two secondary nodes	Unlimited	Unlimited
Updatable secondary	Available	Not available	Available	Available	Available	Available
Continuous Log Restore (CLR) secondary	Included	Not available	Included	Included	Included	Included
Distributed SQL/NoSQL	Included	Not available	Not available	Not available	Included	Included
SQL and instance administration features that are excluded	None	ON-Bar backup/restore dbspace prioritization, RTO, private memory cache for CPU VPs, column-level encryption, online table schema changes, DIO, HPL, point-in-time table restore, PSM, last committed query isolation, multiple triggers	ON-Bar backup/restore dbspace prioritization, private memory cache for CPU VPs, online table schema changes, HPL	ON-Bar backup/restore dbspace prioritization, private memory cache for CPU VPs, online table schema changes, HPL	None	None
DataBlade Developers Kit	Included	Included	Included	Included	Included	Included
Built-in advanced extensible functionality	Spatial, Basic Text Search, Node, Large Object Locator, Web Feature Service, Binary, MQ messaging, TimeSeries*	Spatial, Basic Text Search, Node, Large Object Locator, Web Feature Service, Binary, MQ messaging, TimeSeries*	Spatial, Basic Text Search, Node, Large Object Locator, Web Feature Service, Binary, MQ messaging, TimeSeries*	Spatial, Basic Text Search, Node, Large Object Locator, Web Feature Service, Binary, MQ messaging, TimeSeries*	Spatial, Basic Text Search, Node, Large Object Locator, Web Feature Service, Binary, MQ messaging, TimeSeries*	Spatial, Basic Text Search, Node, Large Object Locator, Web Feature Service, Binary, MQ messaging, TimeSeries*
Virtual Table/Index Interface	Included	Included	Included	Included	Included	Included
Storage Optimization Feature	Included	Not available	Not available	Not available	***Now Included!***	Included
Advanced Access Control (LBAC)	Included	Not available	Included	Included	Included	Included

Informix 14.10 Platforms – 64-bit

- Informix v.14.10 is only available as a 64-bit product on the supported OS.
  Earlier Informix versions were selectively available in both 32 and 64-bit versions on some OSs.
  Some OSs are no longer supported by Informix v.14.10 such as MacOS, Linux system Z, Solaris Intel, and the Big Endian port for IBM Power systems.

IBM AIX 7.2
HP-UX Itanium 11.31
Linux Intel RHEL 7.4
Linux Intel CentOS 7.4
Linux Intel SuSE SLES 12.3, 15
Linux Intel Ubuntu 16.04 LTS, 17.10
Linux Power LE RHEL 7.4
Linux Power LE SuSE SLES 12.3, 15
Solaris SPARC 11
Windows Intel Windows 2016

PVU licensing

To license **Processor Value Units (PVU)** we need to know:

- What processor name ?
- What server model?
- How many sockets?
- How many cores?
- Are we running Linux on IBM Power?

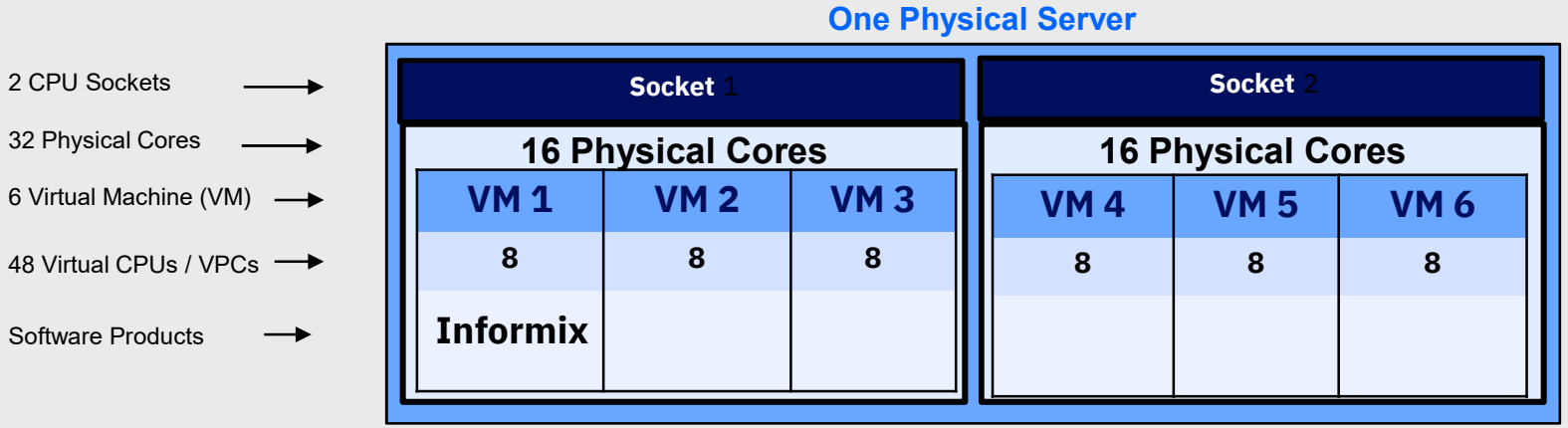
Processor Technologies						
Processor Brand					Processor Type	
Processor Vendor	Processor Name	Server model numbers	Maximum number of sockets per server	IFL Engine/ Central Processor	Proc. Model Number	PVUs per Core
IBM	POWER Systems cores running Linux OS	7R1, 7R2, 7R4, POWER IFL, p24L, S812L, S812LC, S822L,S822LC, S824L, AC922, LC921, LC922, L922 Any POWER System core running Linux	All		All	70
	POWER9	E980	>4		All	120
		E950	4		All	100
		H922, H924, S914, S922, S924	2		All	70
	POWER8	870, 880	> 4		All	120
		E850	4		All	100
		S812, S814, S822, S824	2		All	70
	POWER7 [4]	770, 780, 795	> 4		All	120
		750, 755, 760, 775, PS704, p460, Power ESE	4		All	100
		PS700-703, 710-740, p260, p270	2		All	70
		550, 560, 570, 575, 595	All		All	120

Virtual Processor Core

Virtual Processor Core is a unit of measure by which the Program can be licensed.
A Physical Server is a physical computer that is comprised of processing units, memory, and input/output capabilities and that executes requested procedures, commands, or applications for one or more users or client devices.
Where racks, blade enclosures, or other similar equipment is being employed, each separable physical device (for example, a blade or a rack-mounted device) that has the required components is considered itself a separate Physical Server.
A Virtual Server is either a virtual computer created by partitioning the resources available to a Physical Server or an unpartitioned Physical Server.
A Processor Core (commonly called a processor or CPU) is a functional unit within a computing device that interprets and executes instructions.
A Processor Core consists of at least an instruction control unit and one or more arithmetic or logic unit.
A Virtual Processor Core is a Processor Core in an unpartitioned Physical Server, or a virtual core assigned to a Virtual Server.
Licensee must obtain entitlement for each Virtual Processor Core made available to the Program.

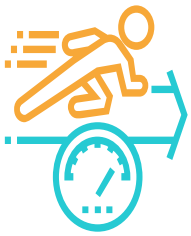
VPC licensing

A virtual processor core (VPC) is a unit of measurement that is used to determine the licensing cost of IBM products. It is based on the number of virtual cores (vCPUs) that are available to the product. A vCPU is a virtual core that is assigned to a virtual machine or a physical processor core if the server is not partitioned for virtual machines.



Example:
8 Virtual CPUs runs Informix
License 8 VPC

What is IBM Informix 14.10?



14.10 is Faster!

- Significant performance improvements in SDS, RSS and HDR secondary updates - **up to 5X increase**
- OLTP transaction performance - **up to 10% faster** than 12.10
- Java UDR performance improvements - up to **40% faster**
- JSON and REST listener performance improvements - up to **2x faster**
- JDBC smart large object access speed improvements - **more than 60%**

What is IBM Informix 14.10?

14.10 has Customer requested Enhancements for Usability, Easier Administration, and Increased Uptime!

- Common Table Expressions
  - A Common Table Expression (CTE) is a named temporary result set derived from a simple query and defined within the execution scope of a SELECT, INSERT, UPDATE, or DELETE statement. The CTE can be referred to later within that same statement, possibly multiple times. CTEs can be used recursively to simplify complex queries
- Updated Unicode specification support to current V11 specifications
- New commands to automate configuration of Enterprise Replication between two servers
- One Informix binary with simple key based licensing to upgrade from edition to edition

Fakultet (matematik) [redigera | redigera wikitext]

Fakultet är en funktion inom matematiken. För ett heltal större än noll är fakulteten lika med produkten av alla heltal från 1 upp till och med talet självt.

Innehåll [dölj]

1 Beteckning
2 Rekursivitet
3 Användning inom kombinatoriken
4 Generalisering
5 Datorberäkning
6 Se även

n	$n!$
0	1
1	1
2	2
3	6
4	24
5	120
6	720
7	5040
8	40320
9	362 880
10	3 628 800
20	2 432 902 008 176 640 000
50	3,04140932... × 10^{64}
70	1,19785717... × 10^{100}
450	1,73368733... × $10^{1,000}$
3249	6,41233768... × $10^{10,000}$
25206	1,205703438... × $10^{100,000}$
1000000	8,263931688... × $10^{5565708}$

Beteckning [redigera | redigera wikitext]

Fakultet betecknas med ett utropstecken (!), *fakultetstecken*. Alltså är till exempel

$$3! = 1 \cdot 2 \cdot 3 = 6$$

(3! utläses *tre-fakultet*) och allmänt för alla heltal $n > 0$

$$n! = 1 \cdot 2 \cdot 3 \cdot \ldots \cdot n$$

Man gör dessutom definitionen

$$0! = 1$$

På så sätt är fakultetsfunktionen definierad för alla naturliga tal.

Rekursivitet [redigera | redigera wikitext]

Fakultetsfunktionen kan uttryckas rekursivt eftersom det gäller att

$$n! = n \cdot (n-1)!$$

CTE - Common Table Expressions

Recursive query computing the factorial of numbers from 0 to 9

```
WITH  temp (n, fact) AS
(SELECT 0, 1                                -- Initial Subquery
  UNION ALL
 SELECT n+1, (n+1)*fact FROM temp -- Recursive Subquery
      WHERE n < 9)
SELECT * FROM temp;
```

n	fact
0	1
1	1
2	2
3	6
4	24
5	120
6	720
7	5040
8	40320
9	362880

Other example of computing Fibonacci Numbers
(each number is the sum of the two preceding ones)

```
WITH fib(p, n) as (
  select 0, 1                          -- initial subquery
  UNION ALL                            -- 'UNION ALL'
  select n, (p+n) from fib             -- recursive subquery
    where n < 100                      -- terminate condition
)
select p as fn from fib;
```

fn
0
1
1
2
3
5
8
13
21
34
55
89

Installation Simplified for Informix 14.10

- “Base” image is Developer Edition – everyone starts with this! No other edition available for download!
- Edition Installer used to “promote” to your entitled license
- Installation process:
  - Install the Developer Edition
  - Run the edition installer for promoting it to any other edition
- Why?
  - Removes the need to completely reinstall the product for a new edition
  - “promoting” or “demoting” an existing installation is a simple operation
  - Solution goes through DevOps pipeline (dev, test, (Developer) staging & small production (Express, Workgroup), large production (Enterprise)) without reinstalling Informix.

Same concept soon with Db2 11.5 which starts with a free developer edition download

Informix edition installer

- Examples:

  Informix Express Edition License Installer 14.10.FC1 English (CC14EEN)
  INFORMIX_EXPRESS_ED_Lic_Ins_14.10.zip

  Informix Workgroup Edition License Installer 14.10.FC1 English (CC14FEN)
  INFORMIX_WG_ED_LIC_Ins_14.10.zip

  Informix Enterprise Edition License Installer 14.10.FC1 English (CC14DEN)
  INFORMIX_EE_License_Ins_14.10.FC1.zip

  INFORMIX_EE_License_Ins_14.10.FC1.zip contains
  - ee_edition.jar
  - README-Edition.txt

C:\Informix>onstat -

IBM Informix Dynamic Server Version 14.10.FC1DE -- On-

C:\Informix>java -jar e_edition.jar -i gui

C:\Informix>onstat -

IBM Informix Dynamic Server Version 14.10.FC1E -- On-L

C:\Informix>java -jar we_edition.jar -i gui

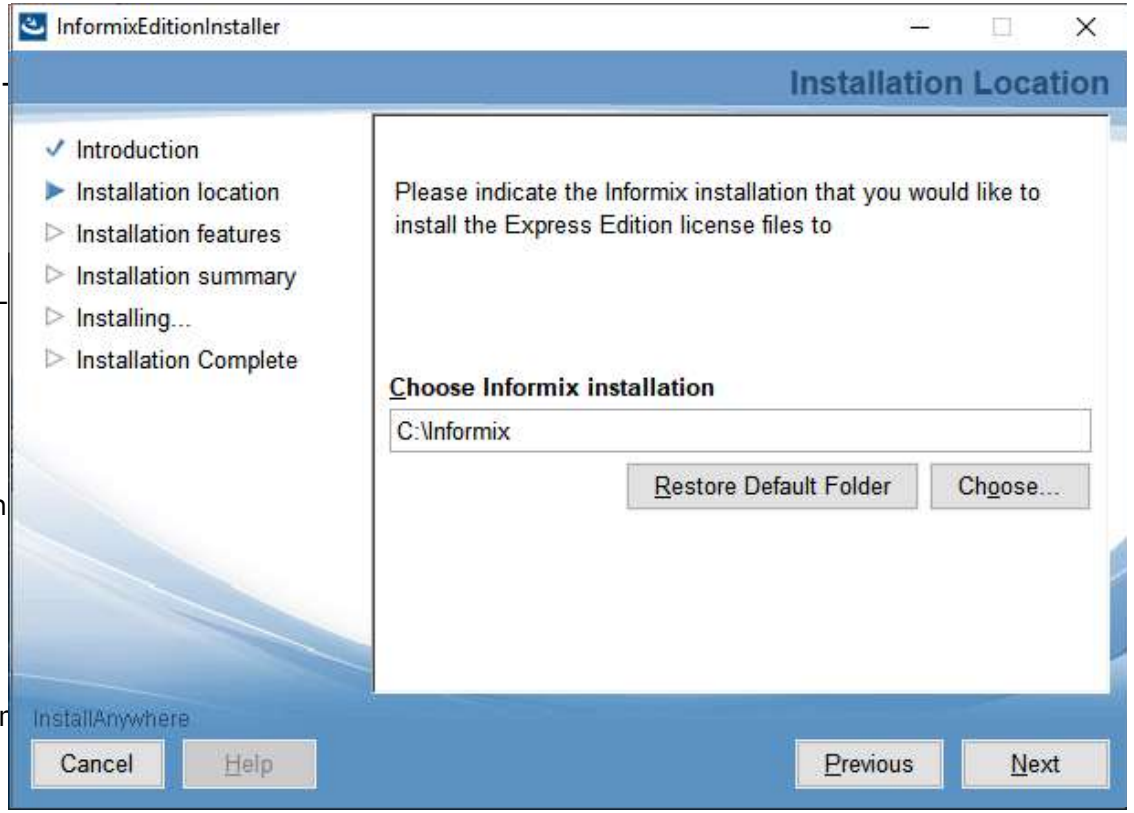
C:\Informix>onstat -

IBM Informix Dynamic Server Version 14.10.FC1WE -- On

C:\Informix>java -jar ee_edition.jar -i gui

C:\Informix>onstat -

IBM Informix Dynamic Server Version 14.10.FC1 -- On-Lin



What is IBM Informix 14.10?

14.10 has Customer requested Enhancements for Usability, Easier Administration, and Increased Uptime!

- Common Table Expressions
- Updated Unicode specification support to current V11 specifications
  - Adding support for text characters that are new over the last 10 years; Asian characters, emojis to name a few
- New commands to automate configuration of Enterprise Replication between two servers
- One Informix binary with simple key based licensing to upgrade from edition to edition
- JDBC 4.2 compliance
- CLIENT_LABEL tags client name or program name for server-side monitoring
- Improved uptime by changing from “**Slow” ALTER TABLEs** to **in-place ALTER TABLEs**

Informix 14.10 Improves uptime!

Slow ALTERs are very expensive and so are generally avoided, but in 14.10:

– Many Slow ALTERs have been enhanced to be in-place ALTERs:
  - Altering character type data from one character type to another (next slide)
  - Altering between INT, BIGINT, INT8, SERIAL, BIGSERIAL, SERIAL8 types
– With these in-place ALTER improvements some index rebuilds can be avoided

Altering Primary Key (PK) columns can require downtime when there are Check Constraints and Foreign Keys (FK), but in 14.10:

– Rebuilding the Check Constraints and FKs for PK ALTERs between many INT, BIGINT, INT8, SERIAL, BIGSERIAL, SERIAL8 types can be avoided and/or postponed
– Many new ALTER PK syntax additions have been added to Informix SQL

In Place Alter Improvements for character data types

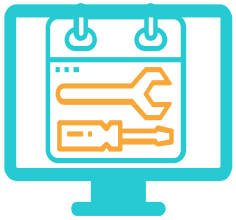
Slow Alters are very heavy as they require building a new table, copying all of the data from the existing table, and then dropping the old table.

- Previously the following types of Alters were Slow Alters:
  - CHAR -> VARCHAR (smaller or larger)
  - CHAR -> CHAR with existence of Boolean column in the table
  - CHAR -> CHAR with existence of lvarchar column in the table
  - VARCHAR -> VARCHAR (smaller or larger)
- Until now! These have been enhanced to be In-Place Alters.

Cases exist where altering a column requires an index rebuild but we can now avoid index builds in the following cases:

- VARCHAR -> Larger VARCHAR (index on single column)
- VARCHAR -> Larger VARCHAR (index on composite column - (varchar, int))

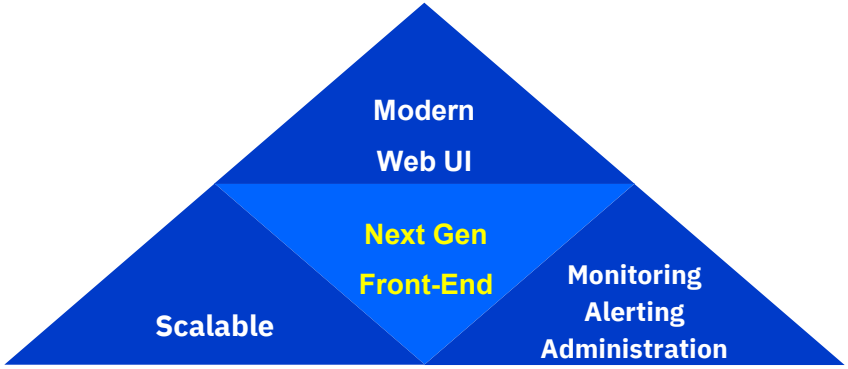
What is IBM Informix 14.10?

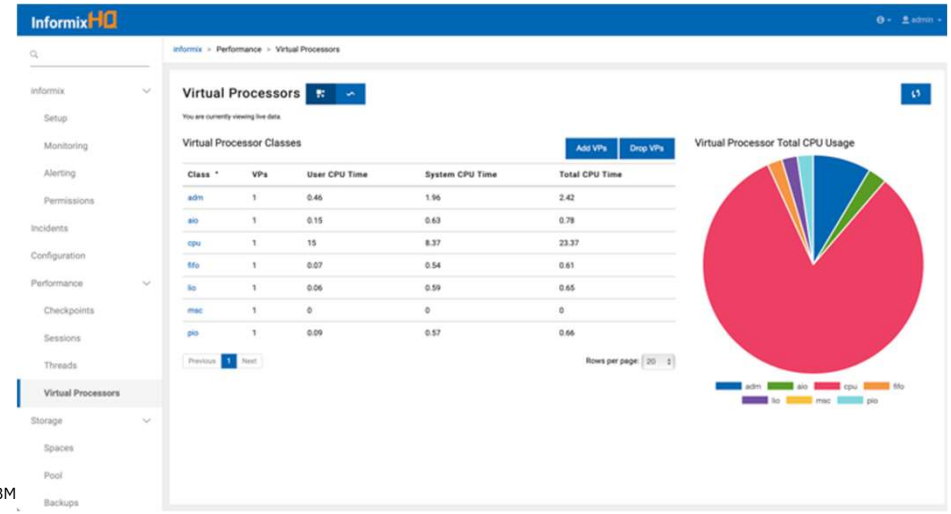


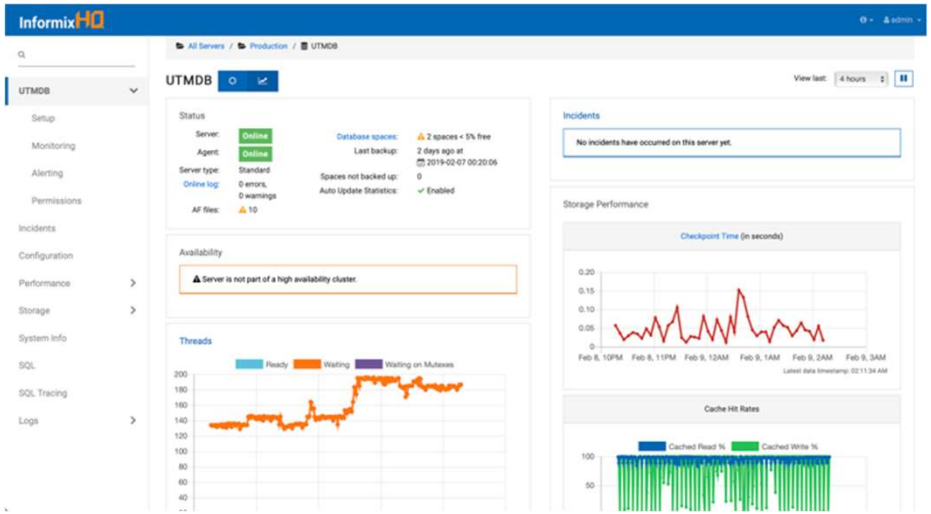
14.10 has InformixHQ!

- New web based administration and monitoring tool!
- Integrated with Informix 12.10, 14.10 versions with full support
- Supports integration with modern IT infrastructure tools like Pager Duty, Twilo, email

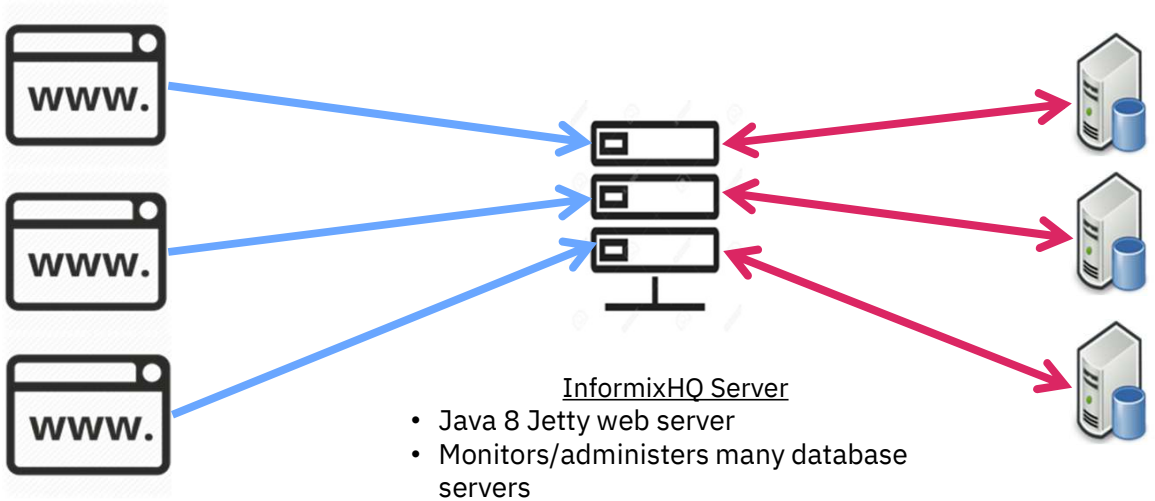
InformixHQ 1.0.0







InformixHQ Architecture



User Interface (Web)

- Redesigned for smoother experience
- Modernized tech and design
- Written in Angular 2 (Javascript)

InformixHQ Server

- Java 8 Jetty web server
- Monitors/administers many database servers
- Connects directly to database server for
  - Live Data
  - Administration
- Connects to Monitoring agent for
  - Monitored data
  - Events
- REST API
  - For website, tools, 3rd parties

Monitoring Agent

- Java 8 agent
- Installed on each production database server
- Requires only read access to system
- Native command execution to gather OS statistics


InformixHQ
admin
Monitoring
Alerting
Permissions
Incidents
Configuration
Performance
Checkpoints
Sessions
Threads
Virtual Processors
Storage
Spaces
Pool
Backups
Recovery Logs
System Info
SQL
SQL Tracing
Logs
OS Memory
View last: 4 hours
Used Memory
Used Swap
Total Memory
24 GB
16 GB
8 GB
0 B
10:23:00 pm 10:53:00 pm 11:23:00 pm 11:53:00 pm 12:23:00 am 12:53:00 am 1:23:00 am 1:53:00 am 2:23:00 am
Latest data timestamp: 02:23:32 AM
Disk I/O Activity
View last: 4 hours
Disk Metric: Disk Busy %
loop0 loop1 loop2 loop3 loop4 loop5 loop6
loop7 ram0 ram1 ram10 ram11 ram12 ram13
ram14 ram15 ram2 ram3 ram4 ram5 ram6
ram7 ram8 ram9 sda sda1 sda2 sda3 sdb
sdb1 sdc sdd sdd1 sde sde1 sdf sr0
5
4
3
2
1
0
10:21:00 pm 10:51:00 pm 11:21:00 pm 11:51:00 pm 12:21:00 am 12:51:00 am 1:21:00 am 1:51:00 am 2:21:00 am
Latest data timestamp: 02:20:15 AM
Network I/O - Bytes Received Per Second
View last: 4 hours
eth3
eth5
lo
192 KB
128 KB
64 KB
0 B
10:21:00 pm 10:51:00 pm 11:21:00 pm 11:51:00 pm 12:21:00 am 12:51:00 am 1:21:00 am 1:51:00 am 2:21:00 am
Latest data timestamp: 02:20:01 AM
Network I/O - Bytes Transmitted Per Second
View last: 4 hours
eth3
eth5
lo
768 KB
512 KB
256 KB
0 B
10:21:00 pm 10:51:00 pm 11:21:00 pm 11:51:00 pm 12:21:00 am 12:51:00 am 1:21:00 am 1:51:00 am 2:21:00 am
Latest data timestamp: 02:20:01 AM

ormixHQ admin

UTMDB > Performance > Checkpoints

IDB
etup
Monitoring
Alerting
ermissions
lents
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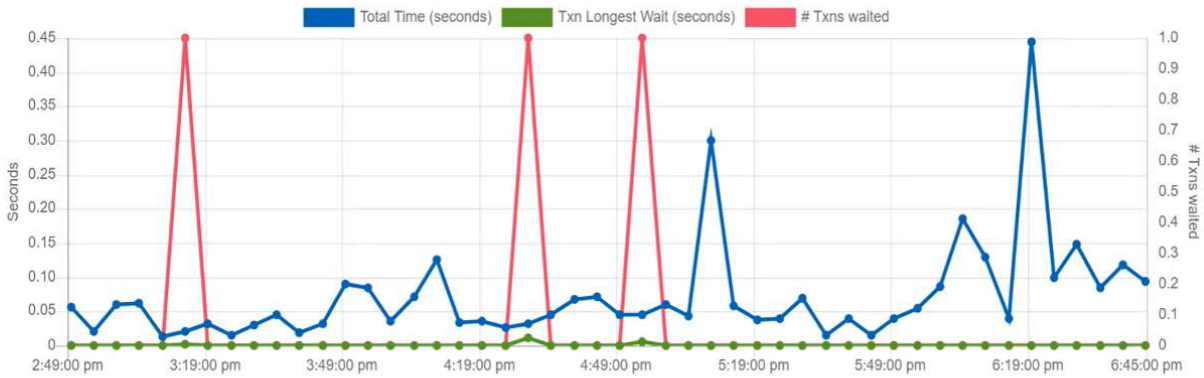
ormance
heckpoints
essions
hreads
irtual Processors
age
em Info
Tracing

Checkpoints

View last: 4 hours



Automatic Checkpoints (AUTO_CKPTS)
OFF

Recovery Time Objective (RTO_SERVER_RESTART)
Disabled

Checkpoint Interval (CKPTINTVL)
5 minutes

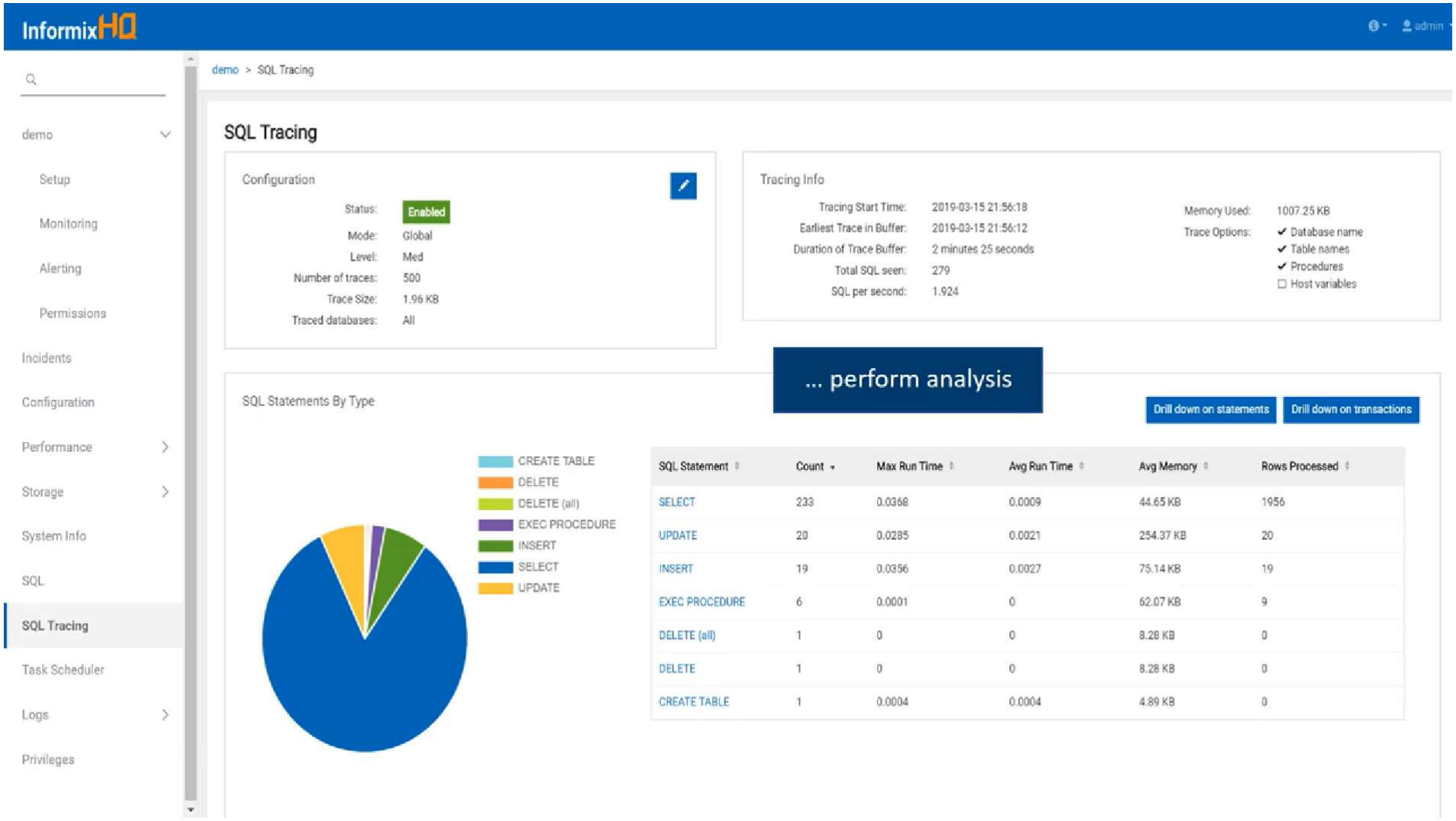
Run a checkpoint

Type: Normal

Run Checkpoint

Search for Interval, Trigger, LSN...

Interval	Start Time	Trigger	LSN	Total Time	Crit Time	Block Time	Flush Time	Txns Blocked	Longest Txn Block Time	Avg Txn Block Time	Dirty Buffers	Physical Log Pages
241397	2019-03-13 18:44:48	CKPTINTVL	2211:0x111e0514	0.093	0.000	0.000	0.089	0	-	-	1982	82
241396	2019-03-13 18:39:48	CKPTINTVL	2211:0x11155754	0.119	0.000	0.000	0.104	0	-	-	1373	82
241395	2019-03-13 18:34:48	CKPTINTVL	2211:0x110ec7a0	0.083	0.000	0.000	0.078	0	-	-	1348	109
241394	2019-03-13 18:29:48	CKPTINTVL	2211:0x110693b0	0.147	0.000	0.000	0.136	0	-	-	3525	827


InformixHQ
admin
demo > SQL Tracing
demo
Setup
Monitoring
Alerting
Permissions
Incidents
Configuration
Performance
Storage
System Info
SQL
SQL Tracing
Task Scheduler
Logs
Privileges
SQL Tracing
Configuration
Status: Enabled
Mode: Global
Level: Med
Number of traces: 500
Trace Size: 1.96 KB
Traced databases: All
Tracing Info
Tracing Start Time: 2019-03-15 21:56:18
Earliest Trace in Buffer: 2019-03-15 21:56:12
Duration of Trace Buffer: 2 minutes 25 seconds
Total SQL seen: 279
SQL per second: 1.924
Memory Used: 1007.25 KB
Trace Options: ✔ Database name ✔ Table names ✔ Procedures ☐ Host variables
... perform analysis
SQL Statements By Type
Drill down on statements
Drill down on transactions
CREATE TABLE
DELETE
DELETE (all)
EXEC PROCEDURE
INSERT
SELECT
UPDATE
SQL Statement | Count | Max Run Time | Avg Run Time | Avg Memory | Rows Processed
SELECT | 233 | 0.0368 | 0.0009 | 44.65 KB | 1956
UPDATE | 20 | 0.0285 | 0.0021 | 254.37 KB | 20
INSERT | 19 | 0.0356 | 0.0027 | 75.14 KB | 19
EXEC PROCEDURE | 6 | 0.0001 | 0 | 62.07 KB | 9
DELETE (all) | 1 | 0 | 0 | 8.28 KB | 0
DELETE | 1 | 0 | 0 | 8.28 KB | 0
CREATE TABLE | 1 | 0.0004 | 0.0004 | 4.89 KB | 0

What is IBM Informix 14.10?

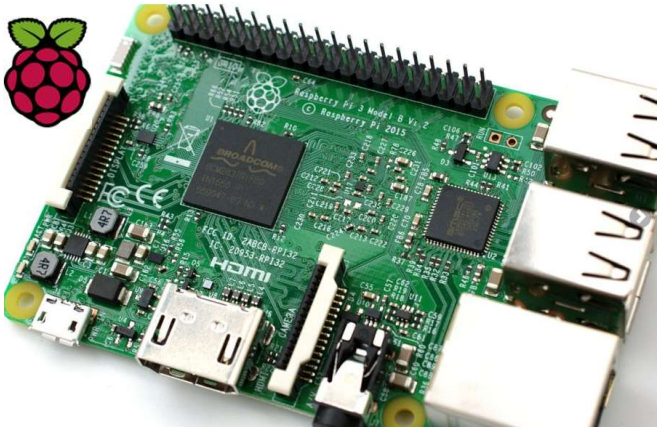
14.10 has Improvements in Extensibility and IoT!

- ARMv8 support
- Count the number of objects in a given region in a given time range
- *tstamp* distinct type for TimeSeries usability
- Count and find missing readings for a given sensor or meter
- Support for geodetic and projections systems other than WGS 84 (World Geodetic System 1984, standard for use in cartography, geodesy, and satellite navigation including GPS)
- Subsecond GPS readings (1/10 of a second timestamps)

Informix / Raspberry Pi / ARM v8

In 2015, IBM Informix extended its footprint beyond the traditional on-premise or cloud deployment model to include **edge-of-the-network** capabilities. IBM Informix is the only enterprise-class database ported to ARM V6 (and above) and the most popular O/S's that run there. This ARM port of IBM Informix is not limited in terms of functionality; it includes all the advanced features such as **Sensor Data support, JSON/BSON integration, data replication, dynamic scalability** and more. This range of feature and platform support is why IBM Informix is **IBM's Internet-of-Things database engine**.

With **IBM Informix v.14.10**, IBM Informix now supports the 64-bit ARM V8 platform.



The **Raspberry Pi** is a series of small single-board computers

ARM (**A**dvanced **R**ISC **M**achine) is a family of reduced instruction set computing (RISC) architectures for computer processors

What is IBM Informix 14.10?

Informix remains a great option for the Cloud!

- IBM Cloud continues to be a flexible and preferred option for Informix deployments – now updated with 14.10!
- IBM Cloud Private for Data (ICPd) Add on Catalog presence (*coming soon!*)
- Informix in Hybrid Cloud

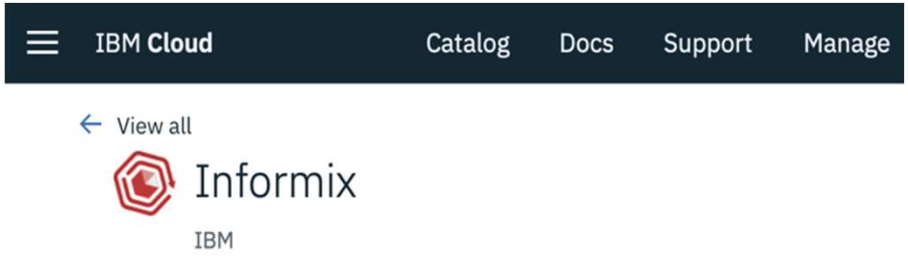
IBM Informix 14.10 in Hybrid Cloud

Private Cloud or On-premise Download

- IBM Passport Advantage
- IBM Partnerworld
- IBM Trials and Downloads

Containerization

- Docker Hub
  - ibmcom/informix-developer-database
  - ibmcom/informix-innovator-c
  - ibmcom/informix-developer-sandbox



Public Cloud

- IBM Cloud
  - Choose a size – small, med, large, X-large

Informix on IBM Cloud

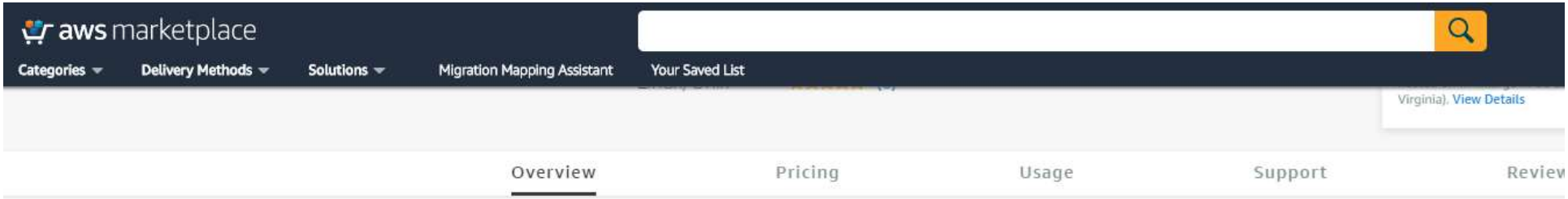
Offers the complete feature set of Informix on-premise deployments without the cost, complexity and risk of managing your own infrastructure

	Small	Medium	Large	X-Large
CPU	Private 2 x 2.0 GHz Cores	Private 4 x 2.0 GHz Cores	Private 8 x 2.0 GHz Cores	Bare metal server 12 x 2.4 GHz Xeon Cores
Memory	8GB RAM	16GB RAM	32GB RAM	128GB RAM
Disk	1x100GB (SAN), 1x500 GB (SAN); 100GB at 500 IOPS	1x100GB (SAN), 1x1TB (SAN); 100GB at 1200 IOPS	1x100GB (SAN), 1x2TB (SAN); 100GB at 1600 IOPS	2x800GB SSD configured with RAID 1 (~800GB), 6x1.2TB SSD configured with RAID 10 (~3.5TB)
Network	1 Gbps Network	1 Gbps Network	1 Gbps Network	10 Gbps Redundant Network
Price	$1,250.00 USD /Monthly	$2,200.00 USD /Monthly	$4,000.00 USD /Monthly	$8,000.00 USD /Monthly

Comes with a preconfigured instance optimized for **online transaction processing applications**. Also gives you the flexibility to create your own instances for **analytic** or **mixed workloads.**

Delivered as **an automated infrastructure-as-a-service** and **database provisioning system**, giving you the flexibility and control to tailor your environments.

https://www.ibm.com/cloud/informix/pricing



Product Overview

Check out what is new in HCL Informix 14.10:
https://informix.hcldoc.com/14.10/help/topic/com.ibm.po.doc/new_features_ce.htr
.
Enable deeper analytics from the gateway edge to cloud with high performance, reliability, security, ease of use and low cost of ownership.

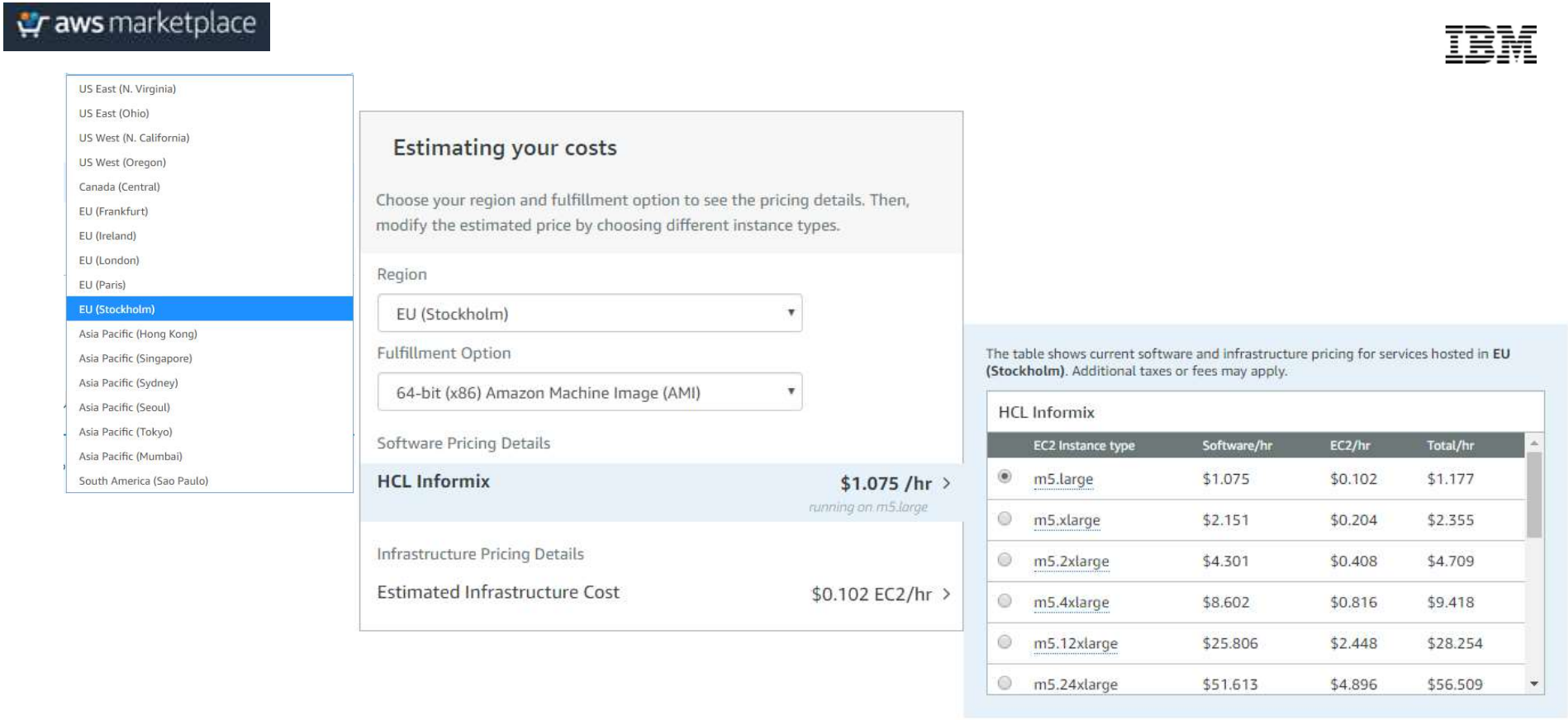
HCL Informix is configured for OLTP workloads and includes entitlement to the HCL Informix Warehouse Accelerator - delivering incredible query acceleration through columnar, compressed, in-memory technology. HCL Informix also has InformixHQ included and configured for use.

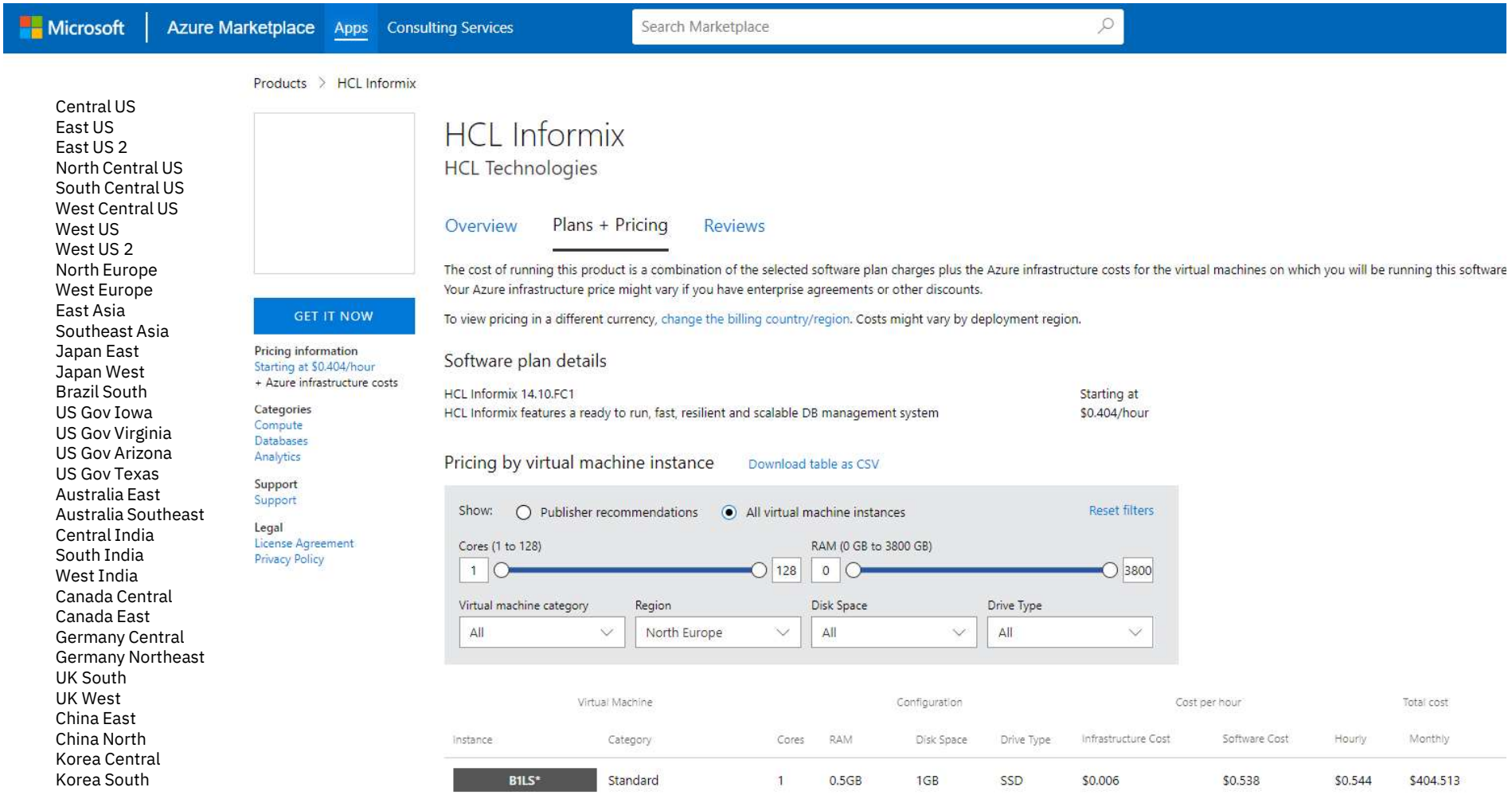
Whether you are looking for help maximizing your daily business activities with efficient operational analytics, deploying applications to the private or public cloud, working with sensor or meter data, or just looking to increase your productivity and usability - HCL Informix brings you a cost-effective, powerful solution that addresses all your data management requirements.

Informix is a trademark of IBM Corporation, registered in many jurisdictions, and is used under license

Highlights

- Integrate time series, JSON, and SQL data together in the same database, in the same queries, to the cloud.
- Ingest and store streaming terabytes of sensor or meter data and other information necessary for IoT solutions.
- Fast access to relational, TimeSeries, and JSON collections through MQTT and REST, MongoDB and SQL APIs.


aws marketplace
IBM
US East (N. Virginia)
US East (Ohio)
US West (N. California)
US West (Oregon)
Canada (Central)
EU (Frankfurt)
EU (Ireland)
EU (London)
EU (Paris)
EU (Stockholm)
Asia Pacific (Hong Kong)
Asia Pacific (Singapore)
Asia Pacific (Sydney)
Asia Pacific (Seoul)
Asia Pacific (Tokyo)
Asia Pacific (Mumbai)
South America (Sao Paulo)
Estimating your costs
Choose your region and fulfillment option to see the pricing details. Then, modify the estimated price by choosing different instance types.
Region
EU (Stockholm)
Fulfillment Option
64-bit (x86) Amazon Machine Image (AMI)
Software Pricing Details
HCL Informix
$1.075 /hr
running on m5.large
Infrastructure Pricing Details
Estimated Infrastructure Cost
$0.102 EC2/hr
The table shows current software and infrastructure pricing for services hosted in EU (Stockholm). Additional taxes or fees may apply.
HCL Informix
EC2 Instance type
Software/hr
EC2/hr
Total/hr
m5.large $1.075 $0.102 $1.177
m5.xlarge $2.151 $0.204 $2.355
m5.2xlarge $4.301 $0.408 $4.709
m5.4xlarge $8.602 $0.816 $9.418
m5.12xlarge $25.806 $2.448 $28.254
m5.24xlarge $51.613 $4.896 $56.509



Central US
East US
East US 2
North Central US
South Central US
West Central US
West US
West US 2
North Europe
West Europe
East Asia
Southeast Asia
Japan East
Japan West
Brazil South
US Gov Iowa
US Gov Virginia
US Gov Arizona
US Gov Texas
Australia East
Australia Southeast
Central India
South India
West India
Canada Central
Canada East
Germany Central
Germany Northeast
UK South
UK West
China East
China North
Korea Central
Korea South

Google Cloud

Blog Latest Stories Product News Topics

GOOGLE CLOUD PLATFORM

IBM's software catalog now eligible to run on Google Cloud

Chuck Coulson
Global Technology Partnerships

December 1, 2016

If your organization runs IBM software, we have news for you: Google Cloud Platform is now officially an IBM Eligible Public Cloud, meaning you can run a wide range of IBM software SKUs on Google Compute Engine with your existing licenses.

Under IBM's Bring Your Own Software License policy (BYOSL), customers who have licensed, or wish to license, IBM software through either Passport Advantage or an authorized reseller, may now run that software on Compute Engine. This applies to the majority of IBM's vast catalog of software -- everything from middleware and DevOps products (Websphere, MQ Series, DataPower, Tivoli) to data and analytics offerings (DB2, Informix, Cloudant, Cognos, BigInsights).

What comes next depends on you. Help us identify the IBM software that needs to be packaged, tuned, and optimized for Compute Engine. You can let us know what IBM software you plan to run on Google Cloud by taking this short survey. And feel free to reach out to me directly with any questions.

POSTED IN: GOOGLE CLOUD PLATFORM—PARTNERS

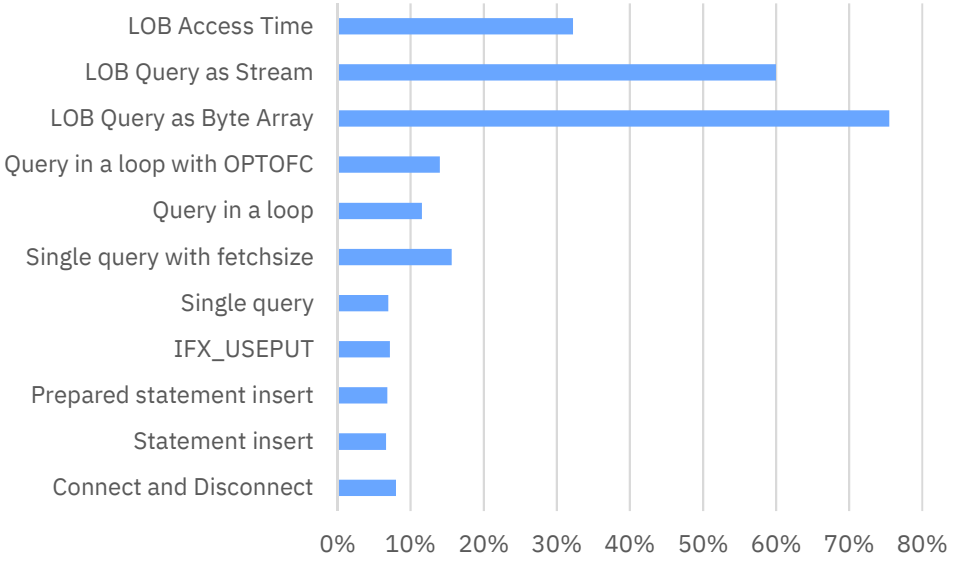
IBM Informix 14.10 for Developers

JDBC

- Java 8 – better performance
- JDBC 4.2 compliant – more APIs & flexibility
- Upgraded BSON library – performance and flexibility

ODBC

- Smart triggers support
- Core driver for Python, Node.js, Go, …
- github.com/openinformix



Docker Hub

- App Dev sandbox

```
docker pull ibmcom/informix-developer-sandbox
```

informix-developer-sandbox

This docker image contains pre-deployed Informix Developer Edition.

1 - Starting the Sandbox Docker Container for the First time.

% docker run -it --name client --privileged -p 9001:9001 -e LICENSE=accept ibmcom/informix-developer-sandbox:latest

-p, expose port 9001 inside the container as port 9001 outside the container

-it When using this option you will be placed into a shell. When exiting this shell the docker container will be stopped.

-td If you use the -td option instead of -it option, the container will be started and you will not be placed inside a shell. So you have to attach to the container.

2 - Start/Stop the Sandbox Docker container

% docker start/stop ifx

3 - To attach to the Sandbox Docker container (shell)

% docker exec -it client bash

Informix Roadmap – v14.10
Official External version

2019 Q1	2019 Q4
Ability to relocate encryption key away from Informix server	Asynchronous connections
ARM V8 support for Informix on embedded RISC based devices	Edge-2-Cloud solution stack; Real-time streaming analytics at the edge solution
Common Table Expression – SQL standard	Enhanced Autonomics for maximum uptime
Compress Smart Blobs	Multi-modal and HTAP
Encrypted backups by default	Sensors in motion
Fine grained sub-second TimeSeries support	Smart Trigger API for ODBC
Informix support on Power 9	SQL compatibility enhancements
Java UDR infrastructure updates	TimeSeries compression on other datatypes
New web tool 'InformixHQ' to administer Informix servers	Unicode Phase 3 - character based semantics
Performance improvements and benchmarks	Update java version in installer
Simple Key Based Upgrade from Trial to paid; edition to edition	Plus more...
Subsecond GPS readings (1/10 of a second timestamps)	
Support for geodetic and projections systems other than WGS 84	
Unicode support for spec v11	
Update to current 64-bit OS platform versions	

http://ibm.biz/AnalyticsRoadmaps

IBM Data & AI

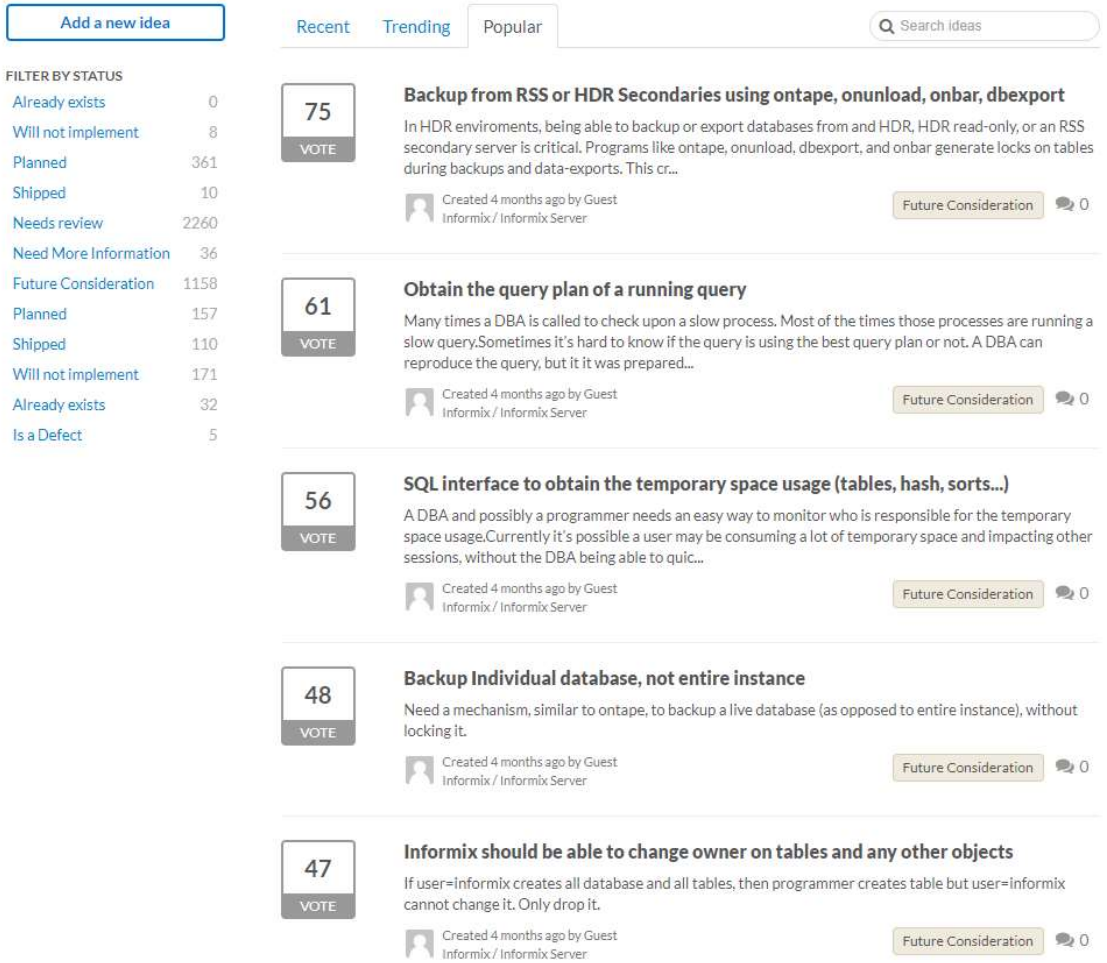
WELCOME TO THE IDEA FORUM FOR IBM DATA & AI CLIENTS!_

Our team welcomes any feedback and suggestions you have for improving our offerings / products!

This forum allows us to connect your offering product improvement ideas with IBM product and engineering teams.

Reminder: *This is not the place to submit defects or support needs, please use normal support channel for these cases*

Replaces old **RFE** (Request for Feature Enhancement site.

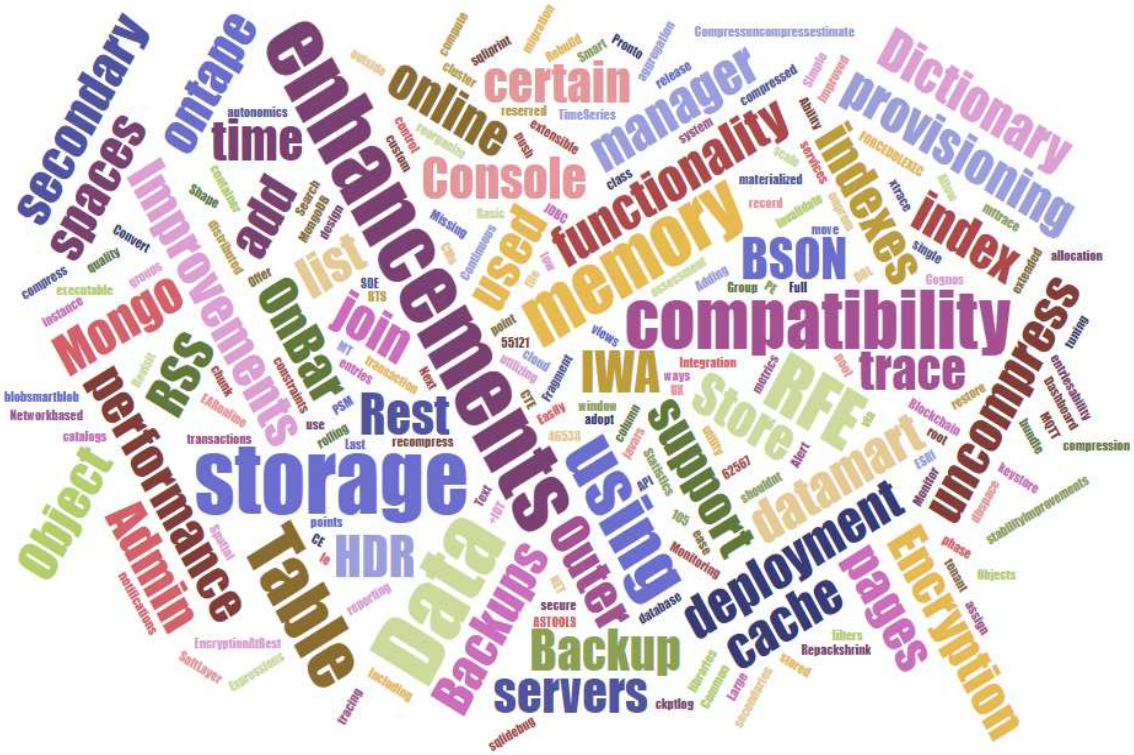


http://ibm.biz/IBMAnalyticsIdeasPortal

Informix Roadmap

Things to come in 2019, 2019+ or never…
Under consideration, prioritizing…

- *The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality.*
- *The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.*



The European Informix Days 2019 will be a **two day event** hosted at the **IBM Watson IoT Center in Munich** on **June 3-4, 2019**. Throughout the two days there will be presentations from the Informix lab and support, from customers and IBMers. Informix's Chief Architect Shawn Moe will give a presentation on the new Informix features which became available with the recently released version IBM Informix 14.10.

Tentative Agenda

- State of the Informix business
- Overview of Informix 14.1 and road ahead
- Informix HQ: A new way to manage Informix
- New applications made possible by Informix especially in the Internet of Things (IoT) area / customer and partner experiences (several presentations
- Best Practice presentations e.g.
  - Performance
  - High availability
  - Hybrid database (TimeSeries, JSON, Spatial)
- Technical deep dive presentations
- General technical presentation on Informix and new technologies
- Ask the experts

Participation is free of charge. Please register for the event at https://ibm.biz/InformixDays2019

Thank You