

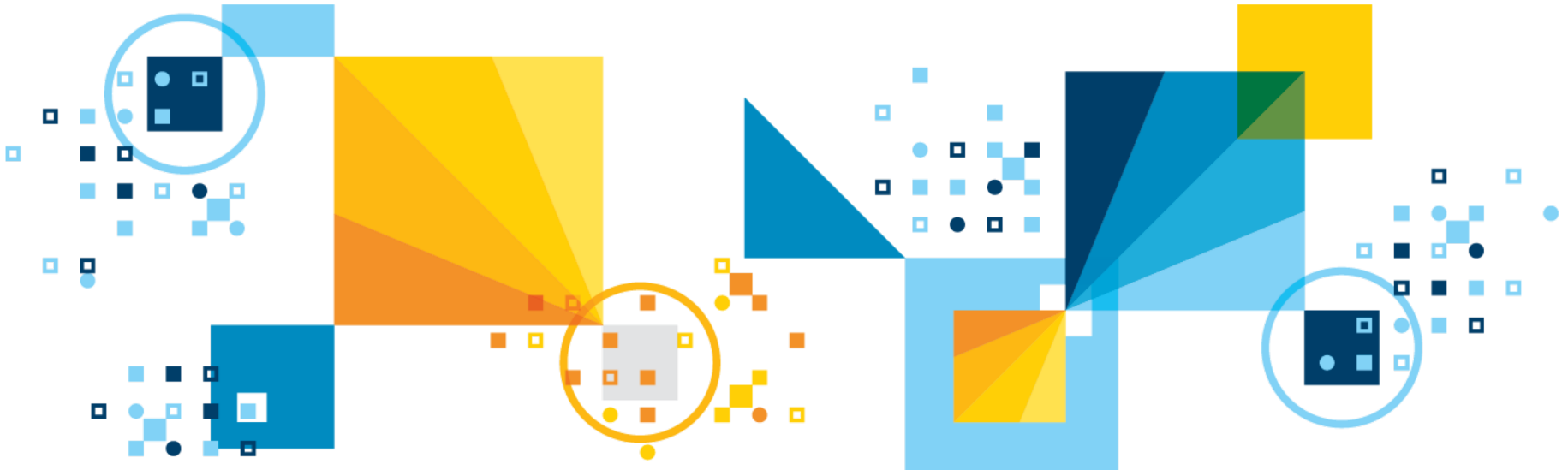
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Informix Vnext – New Features at Near Infinite Scale – Future Proofing Your Investment



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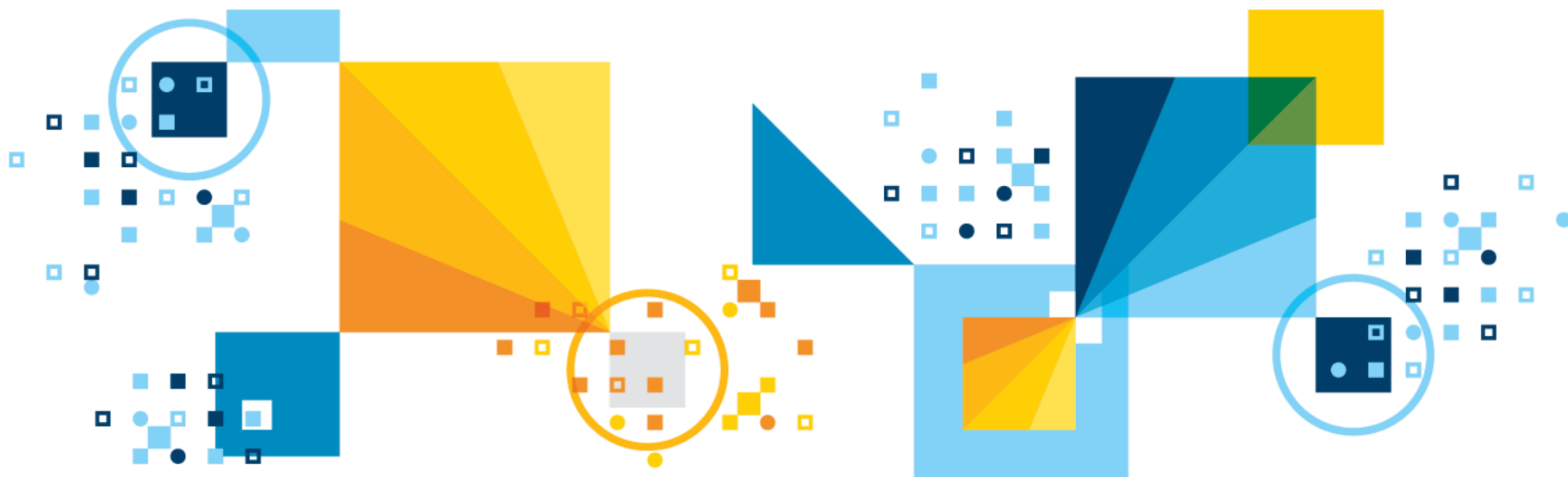
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Agenda

- **14.10.FC10 – What's new**
- **Vnext**

Inform*x* 14.10.FC10



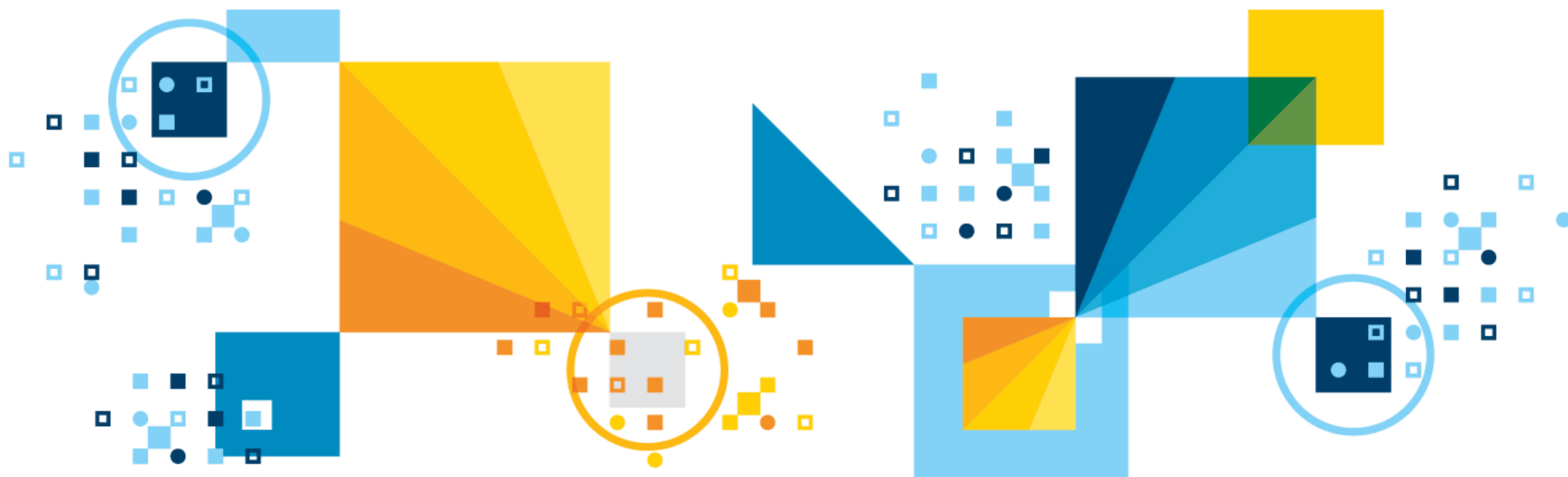
14.10.FC10

1. **CSDK 4.50.xC10 was released on Linux Intel 32 bit to aid in a customer upgrade to 14.10.**
2. **CSDK behavior change in codeset conversion for the CLVCHARPTRTYPE; starting 14.10.xC10, codeset conversion will be done if Client and DB Locale differ when the CLVCHARPTRTYPE is used. For more information, see the [lvvarchar pointer host variable](#).**
3. **The JDBC SSL/TLS internal connection APIs have been reworked to enable encrypted connections from more Java/cipher combinations:**
 - Old code from JDBC was written for old IBM versions of Java
 - Times changed for Java and newer Java versions (8+) don't use the same old IBM variations for setting SSL/TLS contexts
 - Updates to JDBC driver now defers to the JVM for the ciphers and TLS level https://www.java.com/en/configure_crypto.html
4. **JAVA is being removed from the Informix bundle as of 14.10.FC11, currently scheduled for release in Q4 2023; customers will need to provide their own JAVA.**

14.10.FC10

- **14.10.xC10 is now available in the Informix Container available as part of the newly released 4.6.6 Informix Cloud Pak for Data.**

Informix Vnext



Current Scale

- **Informix has always been known as a database that can dynamically scale, with memory, cpu and disk that can be configured to scale to huge values.**

- **That scaling can hit some walls based on some of the default maximum “under the covers” values of Informix product limits; other limits are hit due to data growth:**
 - Exploding at record volumes, causing machines, storage, cpus and memory to get faster, cheaper and bigger.
 - Machine generated data driving growth
 - Legacy limits in some cases from the era of 16 or 32 bit computing

- **Last Informix visited its product limits was in Ver. 10, in March 2005:**
 - Customers have hit them

Near Infinite Scale

- **Since the product is still in development at this point, actual new limit numbers cannot be stated here:**
 - But the ones that are changing are listed in a few slides
 - The final numbers per limit will be much higher
 - Specific changes requested by customers over the years, IBM and HCL Informix Product Management and Development staffs

- **New numbers are high enough to future proof your business:**
 - Hardware will become the new issue
 - Problem always moves somewhere

- **Less down time and increased performance will be the result, near infinite scalability**

- **Future proofing your business**

Near Infinite Scale

- **Numbers are droll and dull, but what can you do with new, larger page sizes, much larger chunks, much larger row size, larger timestamp format, more maximum pages per partition, more maximum rows per page, larger index key sizes**

- **Possibilities are endless in 64 bit and beyond computing**
 - Everything is faster, more in memory and less on disk I/O
 - Everything data wise in memory is possible for today's databases
 - Imagine the speed of that
 - Or new machine architectures where there is no spinning disk and or disk for that matter, all persistent memory, and all the data in memory
 - IPAD was the beginning

- **Max instance size for Informix is low petabytes presently**
 - What will it be in Vnext is much larger

Informix vNext Planned Features and Benefits

Feature/Capability	Customer Benefits
Increase existing Informix product limits	<p>Lowering TCO; Even greater Business Continuity; ability to massively scale the db Informix customers with big instances on very fast hardware are genuinely impeded now by several maximums dictated by our architecture.</p> <p>They need larger chunks, larger partitions, larger pages, and more rows per page.</p>
<ul style="list-style-type: none"> • Adding a new rowid format 	More rows per page (io and utilization of space; use larger partitions (running out of storage space))
<ul style="list-style-type: none"> • Larger partitions 	New tables will take advantage of this by default; Existing tables will have to be rewritten to take advantage of the larger partition sizes
<ul style="list-style-type: none"> • New page address format 	Allows a much larger chunk size
<ul style="list-style-type: none"> • Larger chunks 	Will exist right away
<ul style="list-style-type: none"> • More rows per page 	Significantly raise the number of rows per page
<ul style="list-style-type: none"> • Larger page sizes 	Yes (planned, not started yet)
<ul style="list-style-type: none"> • Larger index keys 	Yes
<ul style="list-style-type: none"> • Timestamp moving to 8-byte (was 4-byte) 	Will fix Incremental Archive capability; Used by default;

Informix vNext Select Not Changing Features and Benefits

Feature/Capability	Customer Benefits
Limits That Will Not Change Presently	<p>While our customers do urgently need larger containers to hold all the data they are generating, they do not need <i>more</i> containers.</p> <p>An instance sprawling with a million chunks or spaces would be extremely unwieldy.</p> <p>Therefore, these items won't change.</p>
<ul style="list-style-type: none"> • New DBSPACE type 	<p>The above changes will be handled in the existing dbspace</p>
<ul style="list-style-type: none"> • New partition number format 	<p>Will not change</p>
<ul style="list-style-type: none"> • More Dbspaces 	<p>This isn't a change that will bring significant benefit</p>
<ul style="list-style-type: none"> • More partitions per Dbspace 	<p>Will not change</p>
<ul style="list-style-type: none"> • More chunks 	<p>This isn't a change that will bring significant benefit</p>
<ul style="list-style-type: none"> • Maximum row size 	<p>This is something we are looking at doing in a future Vnext release</p>

Informix vNext Planned Features and Benefits

Feature/Capability	Aha	Customer Benefits
<p>Obtain the query plan of a running query</p>	<p>INFX-I-249</p>	<p>Lowering TCO: A DBA can be called to check upon a slow process. Most of the times those processes are running a slow query. Sometimes it's hard to know if the query is using the best query plan or not. A DBA can reproduce the query, but it it was prepared without values or if the statistics were changed after it started there is no guarantee that the query plan seen by the DBA is the same as the running query. Currently have "onstat -g pqs" but it's mostly cryptic and undocumented. If a user has X-Windows he can try xtree, but it doesn't meet today's standards. Also have SQLTRACE, but if it was not set when the query was launched it will not capture the info (and besides, due to the circular nature of the buffer it may not be there at the time it is needed). Two ways to use it:</p> <ul style="list-style-type: none"> • Onstat -g qplan <sessionid> will print the explain (onstat -g ses to get sessionid) • pseudo table sysexplain query builds up the output and prints it on the screen (limit output to 32K and will truncate)
<p>Storing Large Objects in a file system</p>	<p>INFX-I-300</p>	<p>Oracle Compatibility This feature will allow users to store SmartBlob (SB) Large Objects (LO's) externally, in directories of their choosing., outside the database. The user will then be responsible for their own backups, restores, and replication of the LO's. A traditional smart blob space will still be required for all SB meta data, and this will still be maintained by the server in terms of logging, recovery, replication, etc.</p>

Informix vNext Planned Features and Benefits

Feature/Capability	Aha	Customer Benefits
Parallel Table Level Restore (TLR) with archecker (Phase 1)		<p>TLR via archecker is implemented serially so can take many hours to complete depending on the size of your table. We are working to parallelize this functionality for much faster execution time by taking a phased approach.</p> <ul style="list-style-type: none"> • Phase 1 – Given a L0 backup request, archecker shall scan all dbspaces specified in the AC_DBS instead of scanning each individually • Phase 2 – The larger performance benefits will be seen in this Phase 2 with the Logical Log Staging and Logical Log Apply threads being done in parallel which currently is planned for the next point release.
CDC log capture from secondary	INFX-I-319	<p>Frees processing power on the Primary by moving it to the Secondary. Currently a customer can only read log data from the primary server for CDC.</p> <p>With this implementation you will be able to read the transaction logs from a read only secondary server (and not primary) as Informix source for CDC and apply to target.</p>
CREATE/ALTER DATABASE — Implicit transactions, owner-qualified names unique, cursors for update	INFX-I-459	<p>Oracle compatibility: Oracle databases run in mode-ANSI, where database objects are referenced by <owner>.<object> notation, transactions are implicitly created, all database rows that are queried are locked for update, and other behaviors. Informix supports mode-ANSI but this is not the default mode, nor has this behavior been widely used.</p> <p>This feature allows three mode-ANSI behaviors to be defined in a non mode-ANSI Informix database.</p> <p>Informix running in non ANSI mode should also deliver better overall performance than with mode-ANSI.</p>

Informix vNext Planned Features and Benefits

Feature/Capability	Aha	Customer Benefits
Add SID to audit log	INFX-I-110	<p>Security - Auditing Enhancement Currently there is no way to correlate different entries or operations of the same session. We have PID, but for Java applications this is not presented. - In certain situations, it can be useful to cross reference audit log information with other traces of activity (like logical logs) and these usually contain SID.</p> <p>By default, you get the new style with additional SID but, as this might affect customers who are currently using automated software to process audit log records, we have added onshowaudit -S setting which will output records without the SID (old style).</p>
Allow indexes to be made invisible to queries	INFX-I-416	<p>Lowering TCO/Oracle Compatibility Performance and safety win when removing unused indexes, the first step is to be able to make your index invisible to queries to analyze impact. As the index is still being maintained by the server, the rollback to make the index visible again to the queries is quick and painless.</p>
onkstore to support option to migrate from a local keystore to a KMIP keystore	INFX-I-510	<p>In 14.10, we support the request to move a remote key store to a local key store, but we do not support the reverse.</p> <p>The onkstore utility will now support migrating a local key store to a remote key store.</p>

Informix vNext Planned Features and Benefits

Feature/Capability	Aha	Customer Benefits
Updated Global Language Support (GLS) (Phase 1)		<p>Modernize – App Dev Bringing ICU Unicode support up to date; Allow application developers to utilize current, standard code sets;</p>
Informix should not need ROOT permissions		<p>Informix will change the default installation to a non-root method which will support multi-user access, but without required root installation and process/file ownership. Default access control will be via authentication of users maintained by the database, rather than operating system users. Enhance the existing “private server” mode to support multi-user access and to support all Informix functionality previously unsupported in private server mode. Existing root mode installation will still be supported but will not be the default mode. Required for full non-root container support.</p>
Incremental Archives		<p>By increasing our system timestamp we will give you the ability to do incremental archives again.</p>
SET SCHEMA: Informix should support switching 'schemas' in the middle of a transaction		<p>In Informix, this action is currently tied to the SET SESSION AUTHORIZATION operation which is in effect for the duration of a particular SQL session and thus cannot change during that session. Currently Informix must <i>commit</i> the current transaction and then start a new transaction with the new schema. In order to support the desired behavior, it is necessary to implement a new SQL operation that will support changing of the schema during the execution of a single database transaction.</p>

Informix vNext Planned Features and Benefits

Feature/Capability	Aha	Customer Benefits
Group_concat support added		<p>Oracle compatibility GROUP_CONCAT is a function which concatenates/merges the data from multiple rows into one field.</p> <p>It is a GROUP BY function which returns a string if the group contains at least 1 non-null value, if it does not, it returns a Null value</p>
SOUNDEX() support		<p>Oracle compatibility The SOUNDEX() function returns a 4-character code which can be used to compare with the sound of other strings.</p> <p>The code represents the sound of the words in the argument..</p>

Informix vNext Planned Features and Benefits

Feature/Capability	Aha	Customer Benefits
InformixHQ		
<ul style="list-style-type: none"> • Replication 		<p>Point and Click setup and monitoring of an Enterprise Replication cluster for increased usability and lowered complexity path in the utilization of the best of breed ER functionality ER Domain and Replicates - View and Create Increased Usability; Lowering complexity;</p>
<ul style="list-style-type: none"> • Upgrades 		Java17 and Gradle Upgrades
<ul style="list-style-type: none"> • Security 		Remove admin password from text file
<ul style="list-style-type: none"> • Ease of Use 		<p>Enhanced Online log Enhanced SQL Editor that will be able to run multiple SQL statements at a time</p>
<ul style="list-style-type: none"> • Usability 		Dark and light mode

Informix vNext Planned Features and Benefits

Feature/Capability	Customer Benefits
Performance Enhancements	
<ul style="list-style-type: none"> Performance better or equal than prior release: 14.10.xC1 	Investigating new compiler impacts, better scaling on Linux, improvement of storage performance, ...
<ul style="list-style-type: none"> JDBC Performance Enhancements 	<p>JDBC query performance improvements and memory used per statement reduced dramatically (~260,000bytes per statement down to 3816bytes)</p> <p>Improved performance when querying CLOBs up to two times faster</p>
<ul style="list-style-type: none"> User Defined Routine (UDR) execution performance improvement 	Use and execution of UDRs will see general improvements in performance
<ul style="list-style-type: none"> Pagination Query 	<p>Queries like: <code>SELECT ... ORDER BY ... SKIP m ... FIRST n ...</code></p> <p>Informix will create a Materialized Query Temp Table to keep the result set so it doesn't redo the query every time you skip pages and able to fetch the results from cache</p>

Informix vNext Planned Features and Benefits

Feature/Capability	Customer Benefits
Performance Enhancements (cont'd)	
<ul style="list-style-type: none"> • ONCONFIG SORT_IOSIZE_PAGES 	Configurable selection to be able to increase default 32 (64kb) to 32k (64MB) for a long query which can improve the overall query time
<ul style="list-style-type: none"> • Options added to auto cast TEXT or CLOB to Longlvarchar for query performance 	<p>For table with CLOB columns, enable with session environment variable: set environment cast_clob_to_longlvarchar 'on'; select * from tab;</p> <p>For table with TEXT columns, enable with session environment variable: set environment cast_text_to_longlvarchar 'on'; select * from tab;</p> <p>-- multiple rows will be transferred in one SQLI call, improving the performance of the query; (Limit <2GB CLOB and TEXT)</p>

Planned Vnext Operating System Life Cycles and Compilers

Bold = build platforms

Platform	32-bit 12.10	64-bit 12.10	64-bit 14.10.xC1	64-bit vNext
AIX	6.1, 7.1	6.1 , 7.1, 7.2	7.2	7.2, 7.3
Linux – Intel	RHEL 5,6 CentOS 6 SuSE SLES 11 Asianux 3.0 Debian 5.0 Ubuntu 8.04 LTS thru 12.04 LTS	RHEL 5 ,6,7 CentOS 6,7 SuSE SLES 11, 12 Asianux 3.0 Debian 5.0 Ubuntu 8.04 LTS thru 17.10	RHEL 7 (min update 4) CentOS 7 (1708) SuSE SLES 12, SLES 15 Ubuntu 16.04 LTS – 20.04 LTS Linux 32bit CSDK added in xC10	RHEL 8.4 , 8.5 SuSE SLES 15 Ubuntu 22.04 Rocky Linux 8, 9.1 AlmaLinux 8, 9.1
Linux – IBM POWER (Little Endian)		RHEL 7.1 SuSE SLES 12 Ubuntu 14.04 LTS	RHEL 7 (min update 4) SuSE SLES 12, SLES 15	RHEL 8.4 SuSE SLES 15 Ubuntu 22.04
Linux – IBM Z		RHEL 5,6,7 SuSE SLES 11,12	RHEL 7 SuSE SLES 12	RHEL 8.4 SuSE SLES 15
Solaris SPARC		10 ,11	11 (min update 3)	11 (min update 4)
Windows	Windows 2008R2 thru 2016 Windows 7,8	Windows 2003R2 thru 2016 Windows 7 thru 10	Windows 2016 thru 2019 Windows 10	Windows 2019 thru 2022 Windows 10 and/or 11
ARM AWS Graviton	V7 (Debian 7)		V8 (OpenSUSE) <i>Debian V7 (32bit) for Raspberry Pi</i> V8 Debian 64bit	ARM TBD on which version AWS Graviton
Containerized			Docker Cloud Pak RedHat Marketplace (TBD)	Docker in IBM Container Registry (ICR) Cloud Pak for Data
HP-UX Itanium		11.31	11.31	deprecate

*32-bit clients are only supported in 14.10 and vNext via the 4.10 CSDK product until 4.10 EOS date

Informix Vnext Beta Program & Aha

- If you would like to participate in the early adopters of a near infinite scale Informix Vnext beta program, please send a note to: spickett@us.ibm.com
- I submitted an idea to Aha for a customer, its there.
- Aha - <https://ideas.ibm.com/>

Questions





Backup

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