IBM Netezza
7.2.1.3-P1

IBM Netezza Release Notes

Note
Before using this information and the product it supports, read the information in "Notices" on page A-1

Revised: 30 September 2016

This edition applies to IBM Netezza Release 7.2.1.3-P1 and to all subsequent releases until otherwise indicated in new editions.

Contents

Electronic emission notices

When you attach a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices that are supplied with the monitor.

Federal Communications Commission (FCC) Statement

This equipment was tested and found to comply with the limits for a Class A digital device, according to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, might cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user is required to correct the interference at their own expense.

Properly shielded and grounded cables and connectors must be used to meet FCC emission limits. IBM® is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications might void the authority of the user to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device might not cause harmful interference, and (2) this device must accept any interference received, including interference that might cause undesired operation.

Industry Canada Class A Emission Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

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Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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This product is a Class A product. In a domestic environment, this product might cause radio interference in which case the user might be required to take adequate measures.

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This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-IBM option cards.

This product is an EN 55022 Class A product. In a domestic environment, this product might cause radio interference in which case the user might be required to take adequate measures.

Responsible manufacturer:

International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
914-499-1900

European Community contact:

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IBM-Allee 1, 71139 Ehningen, Germany
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Germany Class A Statement

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaatenund hält die Grenzwerte der EN 55022 / EN 55032 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung von IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung von IBM gesteckt/eingebaut werden.

EN 55022 / EN 55032 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden: “Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen.”

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem “Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG).” Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC Richtlinie 2014/30/EU) für Geräte der Klasse A

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV-Vorschriften ist der Hersteller:

International Business Machines Corp.
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Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:

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Tel: +49 800 225 5426
e-mail: HalloIBM@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 / EN 55032 Klasse A.

Japan JIS C 61000-3-2 Compliance

（一社）電子情報技術産業協会　高調波電流抑制対策実施
要領に基づく定格入力電力値： Knowledge Centerの各製品の
仕様ページ参照

Japan JIS C 61000-3-2 Compliance (less than or equal to 20 A)

高調波電流規格 JIS C 61000-3-2 適合品

Japan Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guidelines (products less than or equal to 20 A per phase)

Japan JIS C 61000-3-2 Compliance (greater than 20 A, single-phase)

高調波電流規格 JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対策ガイドライン」対象機器（高調波発生機器）です。
- 回路分類：6（単相、ＰＦＣ回路付）
- 換算係数：0

Japan Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guidelines (products greater than 20 A single-phase)

Japan JIS C 61000-3-2 Compliance (greater than 20 A, three-phase)

高調波電流規格 JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対策ガイドライン」対象機器（高調波発生機器）です。
- 回路分類：５（３相、ＰＦＣ回路付）
- 換算係数：０

Japan Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guidelines (products greater than 20 A three-phase)

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This is electromagnetic wave compatibility equipment for business (Type A). Sellers and users need to pay attention to it. This is for any areas other than home.

Russia Electromagnetic Interference (EMI) Class A Statement

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать радиопомехи, для снижения которых необходимы дополнительные меры

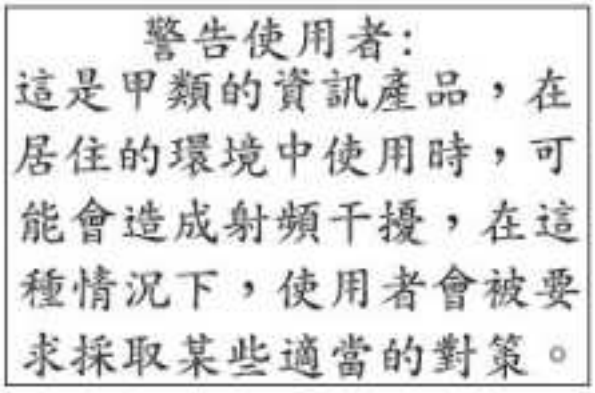
People's Republic of China Class A Electronic Emission Statement

中华人民共和国“A类”警告声明

声明

此为A级产品，在生活环境中，该产品可能会造成无线电干扰，在这种情况下，可能需要用户对其干扰采取切实可行的措施。

Taiwan Class A Compliance Statement



Regulatory and compliance

Regulatory Notices

Install the NPS® system in a restricted-access location. Ensure that only those people trained to operate or service the equipment have physical access to it. Install each AC power outlet near the NPS rack that plugs into it, and keep it freely accessible.

Provide approved circuit breakers on all power sources.

The IBM PureData® System for Analytics appliance requires a readily accessible power cutoff. This can be a Unit Emergency Power Off Switch (UEPO), a circuit breaker or completely remove power from the equipment by disconnecting the Appliance Coupler (line cord) from all rack PDUs.

CAUTION:
Disconnecting power from the appliance without first stopping the NPS software and high availability processes might result in data loss and increased service time to restart the appliance. For all non-emergency situations, follow the documented power-down procedures in the *IBM Netezza System Administrator's Guide* **to ensure that the software and databases are stopped correctly, in order, to avoid data loss or file corruption.**

Product might be powered by redundant power sources. Disconnect ALL power sources before servicing.

High leakage current. Earth connection essential before connecting supply. Courant de fuite élevé. Raccordement à la terre indispensable avant le raccordement au réseau.

Homologation Statement

This product may not be certified in your country for connection by any means whatsoever to interfaces of public telecommunications networks. Further certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

IBM Netezza Release 7.2.x

The release notes provide special information about IBM Netezza® Release 7.2.x including a summary of new features and changes, known issues, and customer bugs fixed in the release.

Review these topics before installing or upgrading to Release 7.2.x. The term 7.2.x refers to IBM Netezza Release 7.2 or any of the later point releases or service packs for that release. If information relates to a specific release, these topics use the full release number.

CAUTION:
Never add supplemental hardware components to a Netezza system. A Netezza appliance can have open slots or rack space in some models; however, do not add hardware components to a Netezza system unless directed to or when working with IBM Netezza Support or Field Service. Inserting unsupported (or unexpected) hardware components to the system can adversely affect the system operation. Also, never remove any active hardware components such as disks or S-Blades without following the documented procedures for failing over or replacing failed components.

Supported systems and upgrades

NPS Release 7.2.x contains updates and new features for the Netezza family of data warehouse appliances.

You can install Release 7.2.x and later 7.2.x releases on the following systems:

- IBM PureData System for Analytics N3001
- IBM PureData System for Analytics N200x
- IBM PureData System for Analytics N1001. The N1001 model family is an update to the IBM Netezza 1000 model family, with the same architectural and interface specifications.)
- IBM Netezza 1000 (also called Netezza TwinFin® in earlier models)
- IBM Netezza 100 (also called Netezza Skimmer® in earlier models)
- IBM Netezza High Capacity Appliance C1000
- IBM Netezza Platform Development Software

Important: Release 7.2.0.1 is a special release that supports only the IBM PureData System for Analytics N3001-001 model appliance. You cannot install Release 7.2.0.1 on any appliance other than the N3001-001 model. You cannot upgrade from Release 7.2.0.0 to 7.2.0.1. Release 7.2.0.2 and later support both the 7.2.0.0-supported appliances as well as the N3001-001 model appliance.

Note: Release 7.2.x cannot be installed on or used to upgrade any 4.x or earlier Netezza releases on z-series Netezza hardware models (8000-series, 10000-series or 5200-series). You cannot upgrade any IBM Netezza 100 or Netezza 1000 system that is running a 5.0.x release to 7.2.0.x. You must upgrade the 5.0.x system to an intermediate 6.0.x release, and then you can proceed to 7.2.x.

Supported upgrade paths

You can upgrade to IBM Netezza Release 7.2.x from any NPS 6.0.x, 6.1.x, or 7.x release, or from an earlier release of 7.2.x to a later 7.2.x release.

The minimum release requirements for upgrades are as follows:

- For an IBM PureData System for Analytics N3001 model (except N3001-001), a minimum of FDT Release 4.2 and HPF Release 5.4.
- For an IBM PureData System for Analytics N3001-001 model: FDT Release 4.2.1 and HPF Release 5.4.1.
- For an IBM PureData System for Analytics N2002 model: a minimum of FDT Release 3.0.5 and HPF Release 5.3.
- For an IBM PureData System for Analytics N2001 model: a minimum of FDT Release 3.0 and HPF Release 5.0.
- For an IBM PureData System for Analytics N1001 model: a minimum of FDT release 2.3.1 and HPF release 4.13
- For IBM Netezza 100 or IBM Netezza 1000: Netezza Release 6.0.x or later and a minimum of FDT release 2.3.1 and HPF release 4.13
- For IBM Netezza High Capacity Appliance C1000 models: Netezza Release 6.1 or later, and a minimum of FDT 2.3.1 and HPF release 4.13

The Netezza upgrade process runs a verification check that alerts you to any issues that block or affect an upgrade. If your current Netezza release, HPF release, or FDT release are below the minimum requirements, update your HPF software first, the FDT firmware second, and the Netezza release software third. You can downgrade from Release 7.2.1.x to a prior 6.0.x, 6.1.x, or 7.x release that has run on your system. For a description of the upgrade and downgrade steps and details on the requirements for your release, see the *IBM Netezza Software Upgrade Guide*.

Note: Within the user documentation, the term *z-series* identifies Netezza appliances that use the Rev7-series SPU. The z-series systems include 10000-series models, 5200-series models, and some 8000z series models and the development SPUBox.

For details on the upgrade and downgrade, see the *IBM Netezza Software Upgrade Guide*.

Netezza host operating system

This topic describes the Red Hat operating system support and requirements for the IBM Netezza hosts.

Release 7.1.0.x requires a minimum of Red Hat Enterprise Linux (RHEL) 5.3. The IBM PureData System for Analytics N2002 models ship with RHEL 6.4 as the base operating system. The IBM PureData System for Analytics N2001 models ship with RHEL 6.2 as the base operating system. Other IBM Netezza systems usually ship with RHEL 5.9 or 5.7 as the base operating system. NEC InfoFrame DWH Appliances must upgrade from RHEL 5.3 to 5.5 before they can upgrade to 7.1.0.x or later. You can use the **cat /etc/redhat-release** command to identify the RHEL release on your system.

Netezza supports the ability to upgrade existing Netezza 1000, Netezza 100, and NEC InfoFrame DWH Appliances to a later Red Hat release. Contact Netezza Support for assistance with an operating system upgrade and the available

upgrade releases for your platform. If your current Netezza 1000 system uses the MantraVM compliance application, Support must also upgrade the MantraVM application to version 1.1. Be sure to upgrade the MantraVM application first, before the RHEL 5.5 operating system.

CAUTION:
Do not update, patch, or otherwise alter the Linux kernel or other Linux binary files on your system unless Netezza Support directs you to do so. IBM Netezza does not support unauthorized updates or custom modifications of the kernel.

New in this release

This section describes the new features in Netezza Release 7.2 and later releases.

The sections describe the features available in the base 7.2 release, and later sections describe features added in follow-on releases such as 7.2.1. Review the topics to familiarize yourself with the new capabilities and behaviors in the releases.

IBM PureData System for Analytics N3001 appliances

Release 7.2 introduces support for the next generation of IBM PureData System for Analytics appliances with the N3001 family.

The N3001 appliances improve the performance and capabilities of previous models. There are several models including a quarter-rack, half-rack, full rack, and two-rack models. A four-rack model (not shown) is also available. Each full-rack model supports up to 48 TB of user storage. For details about models and availability, contact your Netezza sales representative.

Figure 1-1. IBM PureData System for Analytics N3001 systems: quarter, half, full, and two-rack summary

The IBM PureData System for Analytics N3001-001 appliance is a smaller-scale member of the N3001 family. The N3001-001 uses a pair of System x3650 M4 HD hosts configured as highly available servers that you install within existing racks in

your data center. The N3001-001 appliance includes the Netezza Platform Software and can hold up to 4TB (or 16 TB with 4x compression) of user data.

The following figure shows the N3001-001 appliance.

Figure 1-2. IBM PureData System for Analytics N3001-001 appliance

Kerberos authentication support

Starting in Release 7.2, if your environment uses Kerberos authentication to validate users, you can use Kerberos instead of local authentication or LDAP authentication to validate your Netezza database user accounts.

With Kerberos authentication, users are first validated against the user name and password that is stored on the Kerberos server. After successful Kerberos authentication, the Netezza system then confirms that the user account is defined as a Netezza database user.

If you choose to use Kerberos authentication, then all database user accounts except admin are authenticated by Kerberos. This implementation does not support mixed authentication modes; that is, you cannot authenticate some users by LDAP or local authentication and some by Kerberos.

The Netezza implementation of Kerberos support uses MIT Kerberos 5 Release 1.12.1. (Kerberos is a trademark of the Massachusetts Institute of Technology (MIT).) The Netezza software kit includes all the required libraries and binaries to run Kerberos on the Netezza hosts. The NPS client kits include the libraries required to use the NPS clients, ODBC, JDBC, and OLE DB connectors with Kerberos authentication of the database user accounts. Your IT or system administrators are responsible for the setup of the Kerberos environment on your client systems including the configuration files and the tools for managing tickets.

For more information about using Kerberos authentication, see the *IBM Netezza System Administrator's Guide*

Workload management changes

Release 7.2 introduces the following changes for the workload management (WLM) area.

Release 7.2 introduces changes to the scheduler that can help to improve query scheduling by focusing on the plan estimates (also referred to as latency) and throughput of the query workload. These changes help to improve the system's

response and prioritization of queries as they arrive, and the overall GRA sharing accuracy for the system. The scheduler now uses a combination of criteria based on the optimal query throughput, query latency, and GRA resource sharing percentages, to schedule the queries that run on the system.

To help with the query latency assessments, Release 7.2 adds a new category of query called *medium queries*. Previously, the system defined short queries as those that had runtime estimates of less than 2 seconds (configurable), and long queries were all of the other queries including those such as loads that had no estimates. A medium query is defined as a query that has runtime estimates between 2 and 60 seconds (configurable). The long queries are now all other queries longer than medium, including those with no estimates. The scheduler gives some medium queries a scheduling boost over long queries. The closer a medium query estimate is to 2 seconds, the bigger the performance boost. Medium queries that are closer to the 60-second runtime estimate may see little to no boost over long queries.

With the new assessment for medium queries, the scheduler can improve its selection process to find the optimal query throughput and workload for the system. The scheduler watches for the GRA sharing requirements and also for the time that a medium or long query waits to make sure that a longer query is not starved of resources by continuous medium queries.

The scheduler prioritizes short and medium queries by their latency estimates. Long queries are scheduled on a first-in first-out basis where the oldest queries are scheduled to run first.

In Release 7.2, WLM also introduces new and updated system views for tracking the progress and snippet resources used when queries run. These details can help you to answer questions about why a query took so long to complete, or why a system may not have been running queries as quickly as expected.

- The _v_plan_resources view now includes more information about the time spent in different phases of execution.
- The new _v_snippet_resource view provides information about snippet-specific resource consumption, such as the scan size, result size, and other indicators that you can use to evaluate the snippet workload for changes that could have impacted the query runtime.
- The _v_plan_progress and _v_snippet_progress are new views that can help you to track the progress and state of active queries and snippets for troubleshooting. The information can help to identify why a system may be running more slowly than expected.

WLM has also added some tracking to help identify how queries and snippets use the nzlocal disk resources. The _v_system_util view includes information about the overall local disk usage, and the _v_plan_progress and _v_snippet_progress show the nzlocal usage by plan and snippet. These views can help to troubleshoot problems and identify which queries or snippets were the leading nzlocal consumers.

For more information about workload management, see the *IBM Netezza System Administrator's Guide*

Callhome support

In NPS Release 7.2, the call home support capability includes numerous changes and improvements for monitoring and sending notifications to IBM Support when problems occur on the IBM Netezza systems.

The callhome updates in this release include the following changes:

- Callhome now uses the HTTPS/SOAP protocol as the default protocol for opening PMRs when a callhome event triggers on the system. The IBM Netezza appliance still uses SMTP for sending email notifications to the customer contacts after a PMR is opened.
- There is an additional disk monitor event notification that monitors and triggers for cases where disks are encountering problems or are failing. After you upgrade to Release 7.2, you should remove your existing callhome events and configure the new events to define the latest list of event rules for callhome support.
- The callhome support now uses the **nzcallhome** command to enable, disable, and configure the services. The **nzOpenPmr** command is deprecated, and you should transition to using **nzcallhome** to manage the callhome services and notifications. The **nzcallhome** command includes numerous new options for enabling and disabling notification features. See the online help or the command description in *IBM Netezza System Administrator's Guide* for details on the options.
- The **nzcallhome** command offers new options for reporting inventory and status information, as well as for requesting a system upgrade.

The callhome support is disabled by default. The IBM installers can enable the support when they set up a new Netezza appliance. You can enable callhome support yourself on a system that you upgraded to Release 7.2.0.x or later; if you encounter issues, contact IBM Netezza Support.

For more information on the callhome support, see the *IBM Netezza System Administrator's Guide*.

Load status improvements

Release 7.2 adds improvements that capture more progress information about active loads and load status information for the IBM PureData System for Analytics appliance.

When active loads are running on your NPS system, you can use the _v_load_status view to display information about the load operations. You can query the system view _v_load_status to display details about the progress of loads that are running on the system. The view shows information about the load operations such as the table name, database name, data file, number of processed rows, and number of rejected rows. More information has been added to the load log file for performance-related details about the load operation. For more information about data loading, see the *IBM Netezza Data Loading Guide*.

GPFS support

If your environment has an IBM General Parallel File System (GPFS™) implementation, the IBM PureData System for Analytics appliances can be configured to mount external GPFS file system locations.

The GPFS file system support allows NPS users to read from and write to GPFS file systems in the same way that they can read to and write from NFS file systems. For example, NPS users could specify GPFS locations when they use **nzbackup** to create file system backups of NPS databases or tables, and then use **nzrestore** to restore the backup sets from those GPFS locations. Similarly, users could use **nzload** to load data files that are located on GPFS file systems, and also use CREATE EXTERNAL TABLE to unload to a GPFS location.

GPFS requires some configuration steps and procedures to set up on the NPS hosts. Contact IBM Support for more information about setting up GPFS on your NPS appliances.

IBM Netezza Replication Services changes

Release 7.2.0.0 also includes support for IBM Netezza Replication Services version 1.6.

Release v1.6 of Replication Services offers these significant improvements to the replication environment:

- Replication services can now run on a third-party replication log server. The PTS hardware bundle is no longer a requirement.
- Replication hardware and software can now provide high-availability support with the Red Hat clustering add-on.
- Incremental recovery is available, as well as individual database addition to an existing replication set
- All Netezza appliances in a replication set must be on the same major version of NPS software. NPS replication supports minor-version compatibility between nodes.
- IIPv6 is now supported with the PTS software.

In addition, replication services provides a number of enhancements. The following changes are included:

- Improved error handling and messages.
- Improved performance through changes to catalog access.
- Support for altering a database via a stored procedure as well as verification prior to joining a replication set.
- Enhanced performance of replication log writing on master for workloads that modify sequences.
- Increased concurrency when creating replicated databases.
- Row count checks to ensure master/subordinate synchronization.
- Improved replication support for sequences at boundary condition.
- Multiple enhancements to replication commands:
  - **nzreplshowsql** enhanced output
  - **nzreplfork** performance improvement
  - **nzreplprunepts -size** option
  - **ptsconfigure -list -m** to detect missing replicated source directories

For a list of existing replication restrictions, see IBM Netezza Technote #7039299.

ODBC, JDBC, and OLE DB changes

Release 7.2 includes the following changes to the ODBC, JDBC, and OLE DB data connectivity clients.

- With the Release 7.2 Kerberos authentication support, the ODBC, JDBC, and OLE DB drivers have special information for operating with Kerberos user authentication. For more information, see the *IBM Netezza ODBC, JDBC, OLE DB, and .NET Installation and Configuration Guide*.
- If you use your IBM Netezza JDBC driver to support connections to an IBM Cognos environment that uses Kerberos single-sign-on (SSO) support, Cognos performs the user authentication steps that the JDBC driver would normally

perform. It then passes an authentication ticket to the JDBC driver in the connection request. In this environment, you must configure the JDBC driver to bypass its normal authentication and use the authentication ticket.

Database and SQL language changes

Release 7.2 includes the following changes to the database operations and SQL language syntax and commands.

- Adds the min and max scalar functions to return the minimum value or the maximum value specified in a set of two or more values.
- Adds the hex_to_binary and hex_to_geometry functions that convert a hexadecimal character encoded string to its equivalent VARBINARY or ST_GEOMETRY value.
- Adds the string_to_int function to convert a hexadecimal, octal, decimal or binary string to a decimal value.
- Adds the int_to_string function to convert a decimal value to hexadecimal, octal, decimal or binary string.
- Adds a new external table option IncludeHeader that you can specify when unloading data to include the column names as a comment in the external table file.
- Adds a new system view _v_load_status that you can query to display more information about the progress of loads that are running on the system. The view provides details about the load operations such as the table name, database name, data file, number of processed rows, and number of rejected rows. Two new fields `Rows/Second` and `Bytes/Second` have been added to the load log file to provide more performance-related details about the load operation.

For more information, see the *IBM Netezza Database User's Guide*.

System configuration and settings changes

Release 7.2 includes the following changes to the system configuration and configuration settings.

- The host.bnrRestoreStreamsDefault registry setting controls the default number of streams to use for a multistream restore operation. If you specify a nonzero stream number for the registry setting, you can use **`nzrestore -streams AUTO`** to explicitly specify that the backup stream count should be used. For more information, see the *IBM Netezza System Administrator's Guide*
- The system.enableZoneMapsForTempTables setting controls whether the system creates zone maps for temporary tables. The default value is true to create the zone maps. Zone maps improve query performance, but could impact load performance on systems that concurrently create temporary tables and load records. You can set this variable to false to improve load performance, but queries against those temp tables will not have the performance benefit of zone maps. To set the variable, you must log in to the Netezza active host as the nz user and edit the `/nz/data/config/system.cfg` file to add (or update) the system.enableZoneMapsForTempTables variable. Save and exit the file, then restart the Netezza software using the **`nzstop`**/**`nzstart`** commands to place the variable value into effect.
- The host.schedMediumQueryLimitSecs setting specifies the upper limit of a medium query (as described in "Workload management changes" on page 1-4). The default is 60 seconds. The lower bound is set by the upper limit for a short query, which is specified by the host.schedSQBNominalSecs setting (which defaults to 2 seconds).

Command and CLI changes

Release 7.2 includes the following changes to command-line utilities.

For more information, see the CLI reference of the *IBM Netezza System Administrator's Guide*.

- The **nzrestore** command now supports multistream restore operations. If you created multistream backups using **nzbackup**, the system automatically use multistream restore. Restores could take less time to complete as a result, but performance will depend on the devices that support your filesystem locations.
- The **nzcallhome** command is new and replaces the **nzOpenPmr** command for management and configuration of the callhome services.
- The **nznpssysrevs** command is new and displays a summary of the installed software revisions on the appliance. Sample output follows:

```
[nz@nzhost ~]$ nznpssysrevs

     NPS Version     : Release 7.2.0.0 [Build 40130]
     FDT Version     : FDT 2.6.1
     Config   IP     : Not set (address:10.0.0.1)
     Host Type       : HS-22
     Red Hat Version : Red Hat Enterprise Linux Server release 5.7 (Tikanga)
     HPF Version     : 5.3.2
```

- The **nzsql** command has several changes:
  - The `-O <file_name>` option allows users to send the command output to a file.
  - The `-w` option indicates that the database user password will be supplied by an authentication service, such as Kerberos.
  - The `-W` option is similar to the `-pw` option and contains the password for the database user account.
- The **nzsqa swapspace** internal Support command includes new options to display more information about the local swap space usage for each snippet in a plan file.
- The **nzhw** command now includes a Security column. For IBM PureData System for Analytics N3001 systems that have self-encrypting drives (SEDs), the Security column shows the following values:
  - `Enabled` indicates that the SED is auto-locked with an authentication key
  - `Disabled` indicates that the SED is not auto-locked; it is operating in secure-erase mode.
  - `N/A` indicates that the security setting is not applicable. This value appears for all components except for SEDs.

Important: With NPS Release 7.2, the Red Hat Enterprise Linux 4.x, SUSE Linux 9, and Solaris 9 clients are deprecated and are no longer supported for use with the NPS clients. Note that the HP-UX 11i v1 platform will be deprecated in 2015 following the end of the scheduled maintenance support by the vendor.

Note: If users at your site use older revisions of clients, such as 7.0.x clients, upgrade to the latest 7.2.x clients. Older clients might not support features in the new release.

Entitled software

The IBM PureData System for Analytics N3001 appliances may include IBM software entitlements that you can assess and use with your N3001 appliance.

Any entitlements are for use **only** with the IBM PureData System for Analytics appliance that they are associated with in Passport Advantage. The entitled software licenses are available from IBM Passport Advantage®. Entitlements are usually associated with the customer accounts that are associated with the system purchase. Contact your IBM representative for assistance with the entitled software applications. For more information about Passport Advantage, see http://www.ibm.com/software/howtobuy/passportadvantage/pao_customers.htm.

Note: Any entitled programs are not applicable when the IBM PureData System for Analytics appliance is configured and used with IBM DB2® Analytics Accelerator environments.

Documentation updates

The IBM Netezza Release 7.2.x documentation contains numerous updates for the release.

Copies of the user documentation are available in the documentation package included with the Netezza Platform Software software bundles on the IBM Fix Central site. The documentation is also available in the IBM Knowledge Center. Refer to the IBM Knowledge Center for the latest information for the IBM PureData System for Analytics releases.

New features and changes in Release 7.2.1

The following sections describe the new features and changes in NPS Release 7.2.1.

Concurrent truncate support

This release includes documentation updates for the enhancement delivered in NPS Release 7.2.0.4 and later that enables support for SELECTs in concurrent transactions against a truncated table.

For NPS releases before 7.2.0.4, disk storage for a truncated table is freed when the truncating transaction commits. (A truncating transaction can also safely be rolled back, preserving its storage and content.) In addition, after a truncating transaction commits, any SELECT operations from concurrent older transactions against the truncated table fail with the error `Cannot access table because of concurrent truncate`.

In NPS 7.2.0.4 and later, disk storage for a truncated table is freed only when there are no active concurrent transactions that started before the truncate committed. If there are no such concurrent transactions at the time a truncate commits, the storage is freed a few seconds after the commit. Open transactions that started before the TRUNCATE committed can still see the rows in the table from before the TRUNCATE.

For more information about the TRUNCATE command behavior, see the *IBM Netezza Database User's Guide*.

Table-oriented zone maps

NPS Release 7.2.1 introduces a new design for organizing zone maps. Zone maps are a feature of the IBM Netezza appliances that help to reduce or eliminate unnecessary disk scans by skipping portions of the table that do not contain any

rows that match the WHERE restrictions specified in a SQL query. For more information about zone maps, see the *IBM Netezza System Administrator's Guide*.

For releases before 7.2.1, Netezza appliances use a column-oriented zone map structure where all zone map statistics for the same column number across all tables are stored together in the dataslice. In Release 7.2.1, Netezza adds the table-oriented zone map feature that organizes the zone maps such that the zone map statistics for all columns from the same table are stored together in the dataslice. Table-oriented zone maps help to improve load and delete operations to the tables, especially in environments that apply table updates incrementally (also called trickle-feed updates). The zone map column statistics are the same, so both offer the query performance advantages for avoiding unnecessary disk scans.

The zone map format is a system-wide setting. For systems that are initialized with 7.2.1, the default is to use table-oriented zone maps. When you upgrade an NPS appliance to Release 7.2.1, the existing column-oriented zone maps are preserved. To use table-oriented zone maps, you use the **nzzonemapformat -table** command to convert the zone maps. You must pause the system to run the conversion. The conversion process could take from a few minutes to an hour, depending on the amount of data stored on the appliance. Take that time into account when scheduling the service window to perform the conversion to minimize the impact on database users and applications.

Note that if your system uses table-oriented zone maps, you cannot downgrade to a release before 7.2.1 unless you convert the zone maps back to column oriented format using the **nzzonemapformat -column** command. The downgrade process stops with a message that zone maps must be converted back to column-oriented zone maps if table-oriented zone maps are present. After performing the zone map conversion using the **nzzonemapformat** utility, run the downgrade again.

Data connectivity clients

NPS Release 7.2.1 introduces the following updates to the data connectivity clients:

- The JDBC clients are updated for JDK Release 1.7. If your Netezza host is running Release 7.2.1 or later, your JDBC clients require JDK Release 1.7 or later. For configuring the JDBC data source, the Data Source Configuration window includes new fields. The JDBC driver was tested for conformance with Version 4.1 of the Oracle JDBC API specification; unsupported methods are documented.
- Clients can connect using the Netezza .NET Framework data provider, called NZdotNET. This data provider supports Microsoft .NET Framework 4.5 or later and is integrated with Visual Studio 2012 or later. The NZdotNET .NET Framework data provider is based on the ADO.NET 3.0 data provider specification; unsupported methods and properties are documented. For more information, see the *IBM Netezza ODBC, JDBC, OLE DB, and .NET Installation and Configuration Guide*.

Client support packages

NPS Release 7.2.1 introduces the following updates to the NPS client support:

- There is a new NPS client package that contains ODBC and JDBC drivers for Red Hat Enterprise Linux 7.1 POWER8® Little Endian platforms. Release 7.2.1.1 adds support for the NPS clients on this platform.
- Release 7.2.1.1 adds support for Windows 2008 platforms for NPS clients, ODBC, JDBC, OLE DB, and .NET.

- Release 7.2.1.1 adds support for Red Hat Enterprise Linux 7.1 running on POWER8 Little Endian clients.

Data loading changes

NPS Release 7.2.1 introduces the following updates to the data loading support:

- The **nzload** command now supports merge operations through the use of three new options:
  - `-merge` option—Specifies whether to merge the contents of the data file into the target table by inserting rows, updating rows, or both
  - `-mergeSchema` option—Specifies the schema of the target table and, optionally, a match condition for the `-merge` option
  - `-mergeOn` option—Specifies a match condition, a filter, or both for the `-merge` option
- The **nzsql** command can be used to establish a connection before a load from a remote external table or an unload into a remote external table. When creating the external table for the remote load or unload, specify the new `NZSQL` value (or the equivalent value, `YES`) for the RemoteSource external table load option.
- This release enhances the use of delimiters in data loading, as follows:
  - Adds support for the text-delimited format to the RecordDelim external table load option, which previously supported only the fixed-length format. You can use this option to specify a string literal to use as the row or record delimiter. Do not use backslash (\) as a record delimiter; there is a known issue that backslash is not supported for load operations.
  - Adds the LFinString external table load option. You can use this option to specify whether an embedded newline value that is also the record delimiter is treated as real data. This option is not supported for the fixed-length format.
- There are two new external table load options for changing the default delimiter of a space (' ') in time and timestamp values:
  - MeridianDelim option - Specifies a single-byte character that separates the seconds component from the AM or PM token in the 12-hour delimited and undelimited formats of a time value
  - DateTimeDelim option - Specifies a single-byte character that separates the date and time components of the timestamp data type

Call home changes

In Release 7.2.1, call home has the following changes and enhancements:

- If your environment uses proxy routing from the NPS appliance through your network to the IBM servers that support call home, you can now configure the proxy server name and port in the `callHome.txt` file. For more information, see the call home section in the *IBM Netezza System Administrator's Guide*.
- The **nzcallhome** command now includes a `-verifyConnectivity` option to test the appliance call home connectivity.
- Call home now supports the ability for users to customize the time ranges within which events are appended to an existing recent open ticket using de-duplication settings in the `callHome.txt` file.
- The call home feature now collects and transmits more log files to help Support diagnose and troubleshoot disk errors.

Database and SQL language

NPS Release 7.2.1 introduces the following updates to the Netezza SQL language and database:

- The CREATE TABLE command now includes support for the IF NOT EXISTS syntax, which causes the CREATE TABLE command to ignore the error when a table already exists with the specified name. Note that the system does not perform any checks to verify that the table shape and content matches the data in the CREATE TABLE command.
- The DROP TABLE command now includes support for the IF EXISTS syntax, which causes the DROP TABLE command to ignore the error when a table of the specified name does not exist.
- The fixed-length format for data loading now supports a configurable record delimiter for text-delimited load and unload using the external table attributes `recorddelim` and `recDelim` respectively. If users do not specify `-recDelim`, the default value is a newline.
- The MERGE command is now supported for Netezza database loading operations. You can use MERGE to insert new rows or replace matching rows in an existing table based on a match clause that you create. Versioned tables and tables that use row-level security are not supported with MERGE. For more information about the MERGE support, see the *IBM Netezza Data Loading Guide*.
- You can now specify a delimiter for date and time values as well as time and meridian values using the external table options `DATETIMEDELIM` and `MERIDIANDELIM`.
- The ALTER USER ... AUTH "LOCAL" is now supported when the system is configured for Kerberos authentication.

IBM Security Key Lifecycle Manager support for AEKs on IBM PureData System for Analytics N3001 appliances

Release 7.2.1 adds the ability for administrators to store the authentication encryption keys for their IBM PureData System for Analytics N3001 appliances in an IBM Security Key Lifecycle Manager (ISKLM) server. If you auto-lock your N3001 systems and you have ISKLM set up in your environment, you can configure the NPS hosts to store and retrieve the AEKs from ISKLM. ISKLM helps by keeping your AEKs in a secure location away from the N3001 appliance. Note that you cannot generate and rotate the SED authentication key using ISKLM at this time. The ISKLM support allows the storage and retrieval of the keys, but you must manually create and rotate the key per your company's policies using the **`nzkey generate`** command. For more information, see the SED section of the *IBM Netezza System Administrator's Guide*

Kerberos authentication changes

Release 7.2.1 adds support for NPS administrators to create locally authenticated database users as exception cases when the system is configured to use Kerberos authentication for database user accounts. In previous releases, Kerberos did not support both local and Kerberos authenticated user accounts on the same system.

Commands and system administration

NPS Release 7.2.1 introduces the following updates to the system administration tasks and Netezza command line interfaces:

- The **nzsql** command is now available in the Netezza Windows client kit. You can now use the nzsql command from your Windows client to open sessions to the Netezza databases on your appliances.
- The **nzload** command now supports `-merge` and `-mergeschema` to perform the MERGE operation from a command line, as well as `-dateTimeDelim` and `-meridianDelim` for specifying the delimiter between the data and time or between the time and meridian. The command also supports a configurable `-recDelim` record delimiter for text-delimited load and unload. If users do not specify `-recDelim`, the default value is a newline.
- The **nzkey**, **nzkeybackup**, **nzhostbackup**, and **nzkeydb** commands now support options to manage AEKs stored in a IBM Security Key Lifecycle Manager (ISKLM) server.
- The **nzkmip** command is new in this release and is used for migrating a local SED keystore to an ISKLM keystore, and for testing the connections.
- This release adds support for new 64-bit clients for IBM Spectrum Protect (formerly Tivoli® Storage Manager), EMC NetWorker, and Veritas (formerly Symantec) NetBackup backup and restore connectors.

  Note: Throughout the Netezza topics, the terms Tivoli Storage Manager and TSM are also used to refer to the applications, clients, and features of the IBM Spectrum Protect product family.
- The **nzzonemapformat** command is new in this release and converts zone maps from column-oriented format to table-oriented format, or back again, and can show the current zone map format on the system.

System configuration settings

NPS Release 7.2.1 introduces the following updates to the system configuration settings:

- When a system reaches the maxConnections limit, no new database sessions are allowed on the system. If there is an issue that requires investigation, some commands that open database connections could be blocked. In 7.2.1, the system now allows up to 10 admin user connections to support troubleshooting and recovery tasks that might be required on the system after the user connections limit has been reached.

New features and changes in Release 7.2.1.3

The following sections describe the new features and changes in NPS Release 7.2.1.3.

In-memory external tables

Release 7.2.1.3 adds support for defining external tables in memory. This feature helps to reduce catalog impacts when users create and drop a large number of external tables on a very frequent basis, or when users perform frequent bulk inserts and loads using the client drivers such as ODBC, JDBC, and others. For those users, frequent external table creates and drops caused catalog growth because of the external table metadata and resulted in reduced catalog access performance. To improve catalog performance, administrators had to schedule an NPS outage to vacuum and re-index the catalog. By creating in-memory external tables, the catalog will not grow with metadata and you can decrease or remove the need for scheduled downtime to vacuum and reindex the catalog.

The feature is disabled by default. To enable the feature, a system administrator must add the external_table_in_memory variable to the `postgresql.conf` file and set the variable to either one or more file name prefixes or to an empty string (an empty string matches all file names). The NPS software must be restarted to put the variable into effect. If the NPS system typically has a lot of bulk insert and load operations through ODBC, JDBC, and other connectors, you could define a setting similar to the following to create those bulk load external tables in memory:

```
external_table_in_memory="BulkEtl_,BulkExtTab_"
```

When an external table is created, the system checks the setting of the variable. If the external table name matches one of the specified patterns (such as BulkExtTab_0) or the variable is set to an empty string, the system stores the metadata for the table in memory, not in the catalog. The system also prints a message to the `pg.log` file to note that the external table is an in-memory table. The metadata remains in memory until the external table is dropped or until the session is terminated. These external tables are visible only to the session in which they were created.

External tables in memory are special cases and do not support the `\d` describe command nor can they be altered. If you must alter an external table that is stored in memory, you must drop the current table and create a new external table with the necessary changes. If you require an external table to persist across sessions, make sure that the table name does not match the variable prefix values. Do not use delimited identifiers when creating in-memory external tables.

Reduced time requirements for major upgrades

During NPS upgrades from one major release to a new NPS major release, the upgrade process performs a catalog update step that dumps the catalog for each database to a temporary location and then loads the catalog while applying any changes that are needed in the new release. This process also occurs when downgrading from one major release to a previous major release. The catalog update process is a serialized event, and takes places for each database on the system one at a time. For systems with many large databases, the serialized catalog update could require several hours to complete while the system is offline in a service window.

Starting with Releases 7.2.0.9 and 7.2.1.3, the **nzupgrade** command can process the database catalog updates in parallel to take advantage of the host CPU resources. This parallel processing helps to reduce the overall upgrade time, and thus decreases the service window time for the upgrade. The upgrade process also transfers the shared object files for user-defined objects (UDXs) more efficiently.

The upgrade performance changes are disabled by default. You enable the improved upgrade performance by including the `-m` option when you run the **nzupgrade** command. When enabled, the upgrade runs the database upgrades in parallel for a number that is equivalent to half the number of CPU cores on the system. You can adjust the number by specifying the `-P` *number_of_databases* argument of the **nzupgrade** command.

Typically, catalog updates occur during transitions to a different major NPS release, but if a fix pack upgrade includes a catalog update, you can use the parallel processing feature (`-m`) to perform the upgrade or downgrade in less time. For more information, see the *IBM Netezza Software Upgrade Guide* and the section on catalog upgrade time reductions.

Client support changes

NPS Release 7.2.1.3 introduces the following updates to the NPS client support:

- Release 7.2.1.3 adds support for Windows 10 platforms for NPS clients, ODBC, JDBC, OLE DB, and .NET.

Database and SQL language

NPS Release 7.2.1.3 introduces the following updates to the Netezza SQL language and database:

- Two new session variables max_groom_steps (default is 500) and groom_pause_time (default is 5 seconds) can help to prevent situations where GROOM TABLE operations could run out of memory and fail. The failures typically occur when the GROOM TABLE operation processes thousands of plan files. The session variables cause the system to pause a groom operation after a specified number of steps, and to wait for a specified pause time, which helps to avoid a buildup of plans that are awaiting execution in shared memory. If the users who run GROOM TABLE see out-of-memory failures, they can set or change the session variables to avoid the memory failure.

Commands and system administration

NPS Release 7.2.1.3 introduces the following updates to the system administration tasks and Netezza command line interfaces:

- The **nzupgrade** command has new arguments `-m` and `-P` to support the improved upgrade performance for systems with large catalogs.

System configuration settings

Release 7.2.1.3 adds a new `postgresql.conf` file setting for the external tables in memory feature. The `external_table_in_memory` variable specifies either a comma-separated list of one or more file name prefixes (`external_table_in_memory="<name_prefix>[,<name_prefix>,...]"`) or an empty string. When an external table is created by a CREATE EXTERNAL TABLE command or through bulk inserts and updates by using client drivers such as ODBC or JDBC, the system checks this setting. If the external table name matches a specified prefix or the variable is set to an empty string (an empty string matches all file names), the system creates an in-memory external table.

New features in Release 7.2.1.3-P1

The following sections describe the new features in NPS Release 7.2.1.3-P1.

Random chunk distribution

The maximum number of non-empty tables on the system depends on the table row counts and widths and on the number of extents that the tables use. Release 7.2.1.3-P1 introduces a feature for storing user tables that are created as DISTRIBUTE ON RANDOM so that the overall number of user tables on the system can be increased. This feature, called random chunk distribution, optimizes the disk space (extent) utilization. This feature intentionally skews the storage of the records for a table to one or a very few extents. Using a minimal number of extents reduces the allocated storage for tables, which allows users to create more small tables. With this feature, users can create as many as 200,000 non-empty tables, or even more.

The random chunk distribution feature is disabled by default. To enable the feature, use the system.enableRandomDistributionChunkSize system registry variable. It requires a pause and resume of the system to take effect. The feature does not change the behavior for tables that are distributed on 1 - 4 specific columns (hash distributions).

User tables that take advantage of the chunk distributions might appear on the skew reports. Because these tables are typically small tables, you can ignore them as part of your table skew investigations.

For more information, see the section on random chunk distributions in the *IBM Netezza System Administrator's Guide*.

System and session configuration settings

Release 7.2.1.3-P1 introduces the following configuration settings to support the random chunk distribution feature:

- The **system.enableRandomDistributionChunkSize** system registry variable enables or disables the random chunk distribution feature at the system-wide level. If the value of the **system.enableRandomDistributionChunkSize** registry variable is yes or on and users specify DISTRIBUTE ON RANDOM when creating tables, the system uses random chunk distribution to store records for the tables. The default value of the **system.enableRandomDistributionChunkSize** registry variable is no (off).
- If you set the **enable_random_dist_chunk** session variable to no or off (for example, specify set enable_random_dist_chunk = no), it disables the random chunk distribution feature at the session level if the value of the **system.enableRandomDistributionChunkSize** registry variable is yes or on. The default value of the **enable_random_dist_chunk** session variable is yes (on). If the value of the **system.enableRandomDistributionChunkSize** registry variable is no or off, setting the **enable_random_dist_chunk** session variable to yes or on has no effect.

Known issues

This topic describes the known issues for this release of the IBM Netezza software.

Table 1-1. Known issues in Release 7.2.1

Tracking number	Description
99581	NPS numeric values with a precision greater than 29 digits could cause an overflow error when using the .NET provider.
102752	If you use encrypted backups to Tivoli Storage Manager, note that problems have been observed on NPS systems that are running Red Hat version 6.4 or later. When the TRACEFILE option is specified in the dsm.opt file, the encrypted backup process fails and creates a core file. As a workaround, comment out the TRACEFILE option in dsm.opt and run the backup again.

The tracking numbers have changed in this release to the RTC reporting system, and the older numbers are shown in parentheses.

Table 1-2. Known Issues

Reference	Issue/Description
13503 (4062)	The Netezza system does not support Abort privileges for the group public.
14127 (10205)	The following are restrictions on the simultaneous use of an external table: • Only one session can write to an external table at a time. • Simultaneous writing and reading of an external table is not supported. Any number of users can read an external table at the same time. In the absence of a session currently writing to the external table, any number of readers are permitted. **Note:** The Netezza system does not enforce these restrictions. It is up to the user and application code to abide by them. If you do concurrent or multiple inserts into an external table, the content of the file that stores the external table might contain partial or incomplete records.
14396 (12007)	The nz CLI commands are unable to detect a missing value for the `-u` option, unless it is the last option or you pass it as a quoted empty value (as in -u '').

14494 (12621)	UTF8: exists clauses with nchar class columns and UTF8 encoding result in equality operator errors. For example:
	`select col1_nchar3 from join_utf8_1 where exists(`
	`select col2_nchar10 from join_utf8_2 where`
	`col2_nchar20 = col2_nvarchar5 and col2_nchar20 =`
	`col2_nvarchar15 ) order by col1_nchar3 DESC limit 100;`
	
	The workaround is to use the cast function. For example:
	`select col1_nchar3 from join_utf8_1 where exists(`
	`select col2_nchar10 from join_utf8_2 where`
	`CAST(col2_nchar20 as nvarchar(20)) = col2_nvarchar5 and`
	`CAST(col2_nchar20 as nvarchar(20)) = col2_nvarchar15 )`
	`order by col1_nchar3 DESC limit 100;`

14503 (12666)	SQL operations on a float column can yield inconsistent results if not used properly. The hashing of floating point data can result in certain SQL operations that return inconsistent results if not used correctly. Inconsistent results can occur if floating point columns are used as the distribution key, as a join column, or in group by, order by, and distinct select operations. Do not use floating point columns for such operations. **Note:** A floating point column is a column defined in the CREATE statement with a data type of FLOAT, DOUBLE, FLOAT4, or FLOAT8.
15337 (17311)	The system treats time values without timezones as GMT times. An example follows: • `create table ttz (ttz timetz);` (a time with timezone column) • `insert into ttz values ('1:00');` (a time value without a timezone) • `select * from ttz;` (shows the value that has a timezone offset of 0 (GMT))
15357 (17442)	For system efficiency, avoid the use of joins with external tables.
15512 (18446) 15513 (18447)	Certain operations do not work on synonyms. For example, you cannot generate statistics on synonyms, nor can you truncate a synonym.

Table 1-2. Known Issues (continued)

Reference	Issue/Description
15757 (19891)	Some joins involving the use of an external table causes the following error: `Error: 1000000161: query does not support complex External Table scan` **Note:** In the example, the number displayed after the word "ERROR" is the internal table ID. You can load the data from the external table into a user table first and modify the query to use the new user table for the join query.
15840 (20265)	When you change the default case of the system between the time a database backup is made and the time it is restored, during restoration the system does not re-create the database views. For example: • You back up a database that has views. • You change the default case on the system. • You restore the database to the system (whose default case was changed). • View creation fails, but the restore completes. • You can find failed create view statements in the log file `restoresvr.log`. To avoid this issue, re-create your backups after changing the default case on your system. As a work-around, you can manually re-create views by using the view definitions you find in `restoresvr.log`. Besides views, this same situation exists for permission grants (users, groups, and target objects). You can find failed statements that signify permission grants in `restoresvr.log`.

15872 (20426), 15886 (20512)	The system creates the default `nzlog` and `nzbad` file names by taking the table name, the schema name, and the database name, and appending `.nzlog` or `.nzbad`. Example formats are:
	`tablename.schema.databasename.nzlog`
	`tablename.schema.databasename.nzbad`
	
	Since there is a file name limit of 255 characters, if you use a very long table and database name, you could exceed the file name limit. If you exceed the limit, the system returns an error message that states that the file name is too long.
	
	You can avoid this issue by specifying a shorter name for your `nzlog` and `nzbad` files. You can also use the `-lf` option for the `nzlog` file, and the `-bf` option for `nzbad`, to specify names.

16023 (21171)	Correlated subqueries are not supported in a SELECT column list.

Table 1-2. Known Issues (continued)

Reference	Issue/Description
16085 (21441)	There is new behavior with respect to implicit type casting in order to bring the Netezza in line with the SQL Standard. In comparisons between disparate data types, earlier Netezza versions would sometimes incorrectly cast non-string types to strings. For example, in a comparison between an integer column and a string column, Netezza might convert the integer to a string type for the comparison. This was incorrect. Now, the string column always converts to an integer for such a comparison (and runtime conversion errors occur if the string data cannot be converted to an integer value). Another example is a comparison between an integer column and a timestamp column. In the past, Netezza might have converted both to strings for the comparison. This was incorrect. Now, Netezza returns a syntax error on such a comparison. If this new behavior is not what you want, you need to use explicitly cast operations to force the data type conversions you need.
16176 (21643)	When you negate an integer of a given integer type, the result is an integer of the same type. There is an issue with negating the most negative values that Netezza supports. When you negate the most negative value that Netezza supports for a given integer type, the result is the same negative value. For example, if col1 is a byteint and contains -128, the statement "select -col1" will return -128 (an incorrect result). This issue applies to all four integer types: byteint, smallint, integer, and bigint.
16199 (21698)	Netezza does not currently support the HP-UX Itanium 32 bit driver with DataDirect DM.
20641 (26925)	If you use LDAP user authentication, LDAP server timeouts can impact the **admin** user account. If a Windows Server running Active Directory is in an in-between state (that is, it is up but it is not responding to pings or it is slow to respond to requests) the Netezza server can become unresponsive while waiting for the request to be answered or to timeout. No users are able to authenticate during this time, including the **admin** account. Also **nz*** commands such as **nzstate** and **nzsession** can hang during this time. Active sessions are not impacted. After the authentication request has completed or the timeout value has been reached, the Netezza server responds normally.
20761 (27054)	When the number of active connections, both user connections and process connections, reaches the limit defined by the `max_connections` `postgresql.conf` configuration setting, some system components might be unable to connect to the system database. When this occurs, the affected component might terminate and cause the system to shut down. As a best practice, plan the maximum number of simultaneous user connections as follows: use the value of `max_connections` and subtract twice the total number of simultaneous reclaims, loads, and backups that could run on the system. The result is the approximate maximum number of user connections. The maximum can vary at times based on the number of connections in use by reclaims, loads, backups, and processes such as rollbacks and aborts.

Table 1-2. Known Issues (continued)

Reference	Issue/Description
23101 (40686)	The ODBC and new OLE DB driver setting "Optimize for ASCII character set" impacts situations when binary data is passed in fields such as CHAR and VARCHAR types. If you are using ODBC or OLE DB and have such fields, enable the "Optimize for ASCII" driver setting. **Note:** If you use binary data in CHAR/VARCHAR fields and you also have Unicode characters in CHAR/VARCHAR fields, the same client cannot support both of those conditions. If you use a JDBC driver, binary data in CHAR/VARCHAR fields is handled correctly if you use a byte stream to return results. If you are using a string to return results, Java also interprets the binary values which can impact the data.
24883 (42568)	The **nzconvertsyscase** command does not change the case of unquoted objects in query history configurations. If you have created query history configurations, and you change the letter casing of the Netezza system, you must re-create the query history configurations to use the correct casing for database and user names.
27197 (45183)	Query history can sometimes cause the **nzupgrade** command to hang with the message `Journal recovery in progress`. This message indicates that data is being loaded into the history database, and the command is waiting for the load to complete. This problem usually occurs in testing environments where the load intervals and thresholds are set very low. These settings allow users to load the recent query history into the database on an almost continuous basis for immediate querying of the history data. Such low settings are not recommended for or used in production environments. If you encounter this upgrade problem, you can correct the problem by disabling history collection and then restarting the Netezza software before you upgrade. For more information about disabling query history collection, and for the recommended settings for the loading intervals, see the *IBM Netezza System Administrator's Guide*.
27312 (45302)	Run GENERATE STATISTICS on your query history database periodically to improve query performance for the database. You should run GENERATE STATISTICS on the history database if you notice that history queries are running slower than expected or after the database contents change significantly.
31043 (49397)	If a regeneration command fails because of pending I/O on the source disk, the system manager might report `error removing the disk from md`. The system proceeds to a rediscovering state and the source disk is marked as failed. The system uses the mirror disk of the source for queries. Start a regeneration process to the spare drive to proceed.
33342 (51977)	When you back up a database, Netezza always creates the specified backup location even if the backup is aborted later due to lack of sufficient disk space to hold the backup.
36172 (55153)	The OBDC and JDBC drivers do not receive parameter metadata from the host and therefore cannot display information for calls to methods such as getParameterType and getParameterTypeName.
36249 (55238)	Running **nzinitsystem -reinit** to reinitialize NPS causes all the event templates to disappear.

Table 1-2. Known Issues (continued)

Reference	Issue/Description
43991 (64213)	In the NzAdmin interface, the Row Count value in the Table view can become stale if the table statistics are not up to date. In these cases, the row count represents the most recent maximum row count, which might not be the actual row count. For accurate row counts, you should run GENERATE STATISTICS to update the table statistics.
49804 (70890)	If a Netezza system is in maintenance mode for an extended time, the system manager may be unable to detect some error conditions because the AMMs and the host may fall too far out of time synchronization. When a system is restored to clustering mode, the system automatically synchronizes the time between the primary/active host and the AMMs.
52478 (74003)	The **nzds rebalance -check** command cannot detect a topology change as a result of a path failure. To obtain the most current information on topology, use the **nzds show -topology** command. The **nzds show -topology** command also displays warnings for suspected imbalance and oversubscription issues.
54339 (76083)	If you run an **nzhostrestore** while the system is performing a disk regeneration, the host restore could fail with the error that the system is not running. If this happens, you may be unable to start the system. As a best practice, do not run **nzhostrestore** if there is a regen in progress. You can re-run the **nzhostrestore** command after the regen completes to restore the host and restart the system.
54495 (76256)	If a disk regeneration starts on two data slices and one regen progresses to x% complete, note that a system restart at this point could cause the second data slice to start regenerating, and the first data slice may show 0% instead of X% complete. When the first data slice regen resumes, the regen will start at the X% point, not from 0.
57016 (79041)	If you pass a null value to user-defined functions that use the new data types ST_GEOMETRY or VARBINARY, you may see the error `function( UNKNOWN) does not exist`. You can avoid the problem by using an explicit cast such as `function(NULL::ST_GEOMETRY(val));` for example.
58352 (80550)	For systems with x3650 hosts, you could find large log files in `/nz/kit/log/sysmgr` (or `/root`) named `arcerror.txt`, `UcliEvt.bak`, or `UcliEvt.log` created by root. These files are from the **arcconf** tool that manages host SAS Controllers. The files can grow to approximately 2 MB, but they should not be considered as issues. The files are used only by the tool and they cannot be disabled.

Customer bugs fixed in this release

Review the following topics for the customer-reported bugs that were fixed in the release.

Customer-reported bugs fixed in Release 7.2.0.0

The following customer-reported bugs were fixed or closed in Release 7.2.0.0.

The issue tracking system migrated to a new IBM Rational Team Concert™ application. The numbers in the following table show the RTC tracking number with the former IBM Netezza tracking numbers in parentheses.

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0

Number	Summary

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0 (continued)

Number	Summary
28172 (46262)	Adds improved tracking of the local swapspace usage (NzLocal space) to identify the queries that are using the most NzLocal space. The query plan files now report the maximum swap space used, and the **nzsqa** commands can report on more detailed swapspace usage for troubleshooting.
37076	Adds a new external table option IncludeHeader that, when set to true, causes the system to output column names in the external table file.

38677 (58112)	Adds a performance improvement for queries that use LIMIT and UNION ALL syntax, such as:
	`SELECT * FROM`
	`(SELECT A1,..., An FROM T1`
	`UNION ALL`
	`SELECT B1,..., Bn FROM T2`
	`...`
	`) SUBQUERY`
	`LIMIT 10;`

44326 (64624)	Fixes an issue where the SHOW PROCEDURE command returned the error `invalid user id 0` because of a table dependency check. The command now returns the error that a table could not be found.
45671 (66219)	Adds Kerberos authentication support for database user accounts.
48382 (69313)	Fixes an issue where NzAdmin reported that a table had no skew, although the table was written to only one data slice.
48635 (69596)	Adds improved dynamic hardware inventory management to more quickly report and react to changes in appliance hardware, such as a disk that has been removed from the storage arrays.
49456 (70494)	Improves log file management by adding a cron job that collects the IPMI logs on a monthly basis and saves them in /nz/var/log/ipmi.log, and adds a logrotate entry to rotate the logs.
50653 (71905)	Updates the encl_setIds script to add a -spa option that limits updates to a specified SPA.
52327 (73831), 72479	Adds hexadecimal conversion functions hex_to_binary and hex_to_geometry to convert a hexadecimal character encoded string to its equivalent binary value. Adds string_to_int to convert hexadecimal, octal, decimal or binary string to a decimal value, and int_to_string functions to convert decimal value to hexadecimal, octal, decimal or binary string
52429 (73948)	Improves the internal "fabric cost" or the speed of the internal network to improve network estimates and query scheduling decisions.
53486	Adds a new system view _v_load_status that displays information about the active load operations, and adds more detail to the load log files for troubleshooting and tracking.
57490 (79557)	Fixes an issue where CREATE TEMP TABLE could sometimes fail with the error `no such table exists`.
58349 (80547)	Updates an ODBC macro DBL_DIG to return 15 digits, where the 15th is a rounded value for the remainder, to improve the precision of SQL_DOUBLE values.
59762 (82191)	Adds an updated LSI driver to improve cases where an HBA reset on an IBM PureData System for Analytics N200x system resulted in **nzsasphy** core file.
59919 (82379)	Improves the performance of a DELETE or UPDATE query that includes a JOIN as part of the restriction.
60883 (83545)	For a replication services environment, adds support for localhost IPv6 addresses in addition to the already supported IPv4.

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0 (continued)

Number	Summary
61747 (84554)	Fixes an issue where the _v_replication_sync and _v_replication_state_uniq views returned multiple rows for the same subordinate node.
63527 (86541)	Fixes an issue where a query that uses a UNION could sometimes fail with `ERROR: 256 : Code generation failure in Select query` in some cases because NPS did not check the attribute types of subselects and the outer qualifier.
66679	Improves buffer usage and memory allocation to help reduce cases where queries could sometimes "hang" and never finish because they are waiting for SPU-to-host packet buffers on busy NPS systems.
70703	Fixes an issue where a query that contains an inner or exists join where one table is a large fact table and the output column list of the join contains a case expression could sometimes result in an NPS restart.
71259	Fixes an issue where the NPS system could remain in the Initialized state if many SQL connections are sent to the system before the system is in the Online state.
71292	Fixes memory allocation issues in the stored procedure internal code that resulted in a postmaster restart when the stored procedure query aborted at the same time that the client connection was terminated.
71787	Fixes an issue where an **nzhostbackup** that failed left the NPS software in the Paused state. The NPS software should return to the Online state.
71833	For a replication services environment, improves the performance of the master transaction logging and storage of table-level access.
71908	Improves the incremental restore process to better manage the checking and creating or dropping of constraints during database and table restores. This change protects against cases where restores could hang if a concurrent transaction is selecting against the table that is being restored.
72134	Fixes an issue where the Support tool **nzmicrodiskrepair** failed because it did not wait long enough for the system to transition to the Paused state.
72135	Improves the Support tool **nzmicrodiskrepair** to fix an issue where the script could hang when a prior run failed because the system was not in the Paused state.
72441	Fixes an issue where an incremental restore operation failed for a table in a non-default schema when the table included a table constraint.
72579	Fixes an issue where a reduction in memory usage for loads caused a case where loads could pend on 8-rack or 10-rack IBM PureData System for Analytics N1001 (also called IBM Netezza 1000 or Netezza TwinFin) appliances. The problem occurred in cases where the appliance was in a degraded state, where a SPA had at least two failed S-blades (SPUs) and there was not enough memory for the load query.
72706	Adds more coverage for cases where a SPU cored when a transaction restart occurred after a serialization cycle or a system state change.
73137	Fixes an issue where a query caused an NPS restart because it attempted to use a transient table after the table had been previously used and dropped by the same query.
73509	Fixes an issue during disk replacement when a disk in Copyback mode is reported as Failed/Unknown. The disk is now reported as having a Warning state.
73635	Fixes an issue where a query that includes aggregates with variables that reference expressions in a subquery could sometimes cause NPS to restart.

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0 (continued)

Number	Summary
73673	Improves the **nzds -detail** command to show a Primary Storage column that shows the hardware ID of the disk on which the primary data slice copy is stored.
74209	Fixes an issue within the internal cleanup routines to address a case where DBOS could restart because queries were aborted (such as by a system state change) before those queries fully registered with DBOS processes.
74387	Improves system manager processing and reporting of missing FPGAs on Netezza Database Accelerator Cards (DACs), and also updating status when the DACs resolve the issues during reboot.
74720	Fixes an issue where comments on a table cannot be viewed after the table is altered.
74945	Improves the multi-destination nzbackup command to check for and return an error when the expected number of bytes written to a file system destination did not match the actual number of bytes written.
75054	Fixes an issue where a query that included a restriction could return an incorrect result when the SELECT clause included a fixed value and an aggregate function.
75407	Adds an update to the SPU Linux kernel that reduces SPU lockups during frequent **nzstop**/**nzstart** system testing.
75550	Fixes an issue where a restore of a database that had comments on it failed because the target database had a different name, and the system did not have a database that matched the backup database name.
75611	Improves the multi-destination **nzbackup** command to address the case where a destination is full and the system attempts to write a control file to that same location, resulting in the backup failing with a `no space left on device` error.
76074	Fixes an issue where the **nzsqa** troubleshooting command was not exiting cleanly after a Ctrl-C interrupt and sometimes resulted in NPS hanging.
76736	Fixes an issue where the PTS monitor failed to identify and replicate files after user had executed **nzreplprunepts**.
76968	Adds more error handling and log message output to the nz_dnsmasq service.
77143	Improves the cost optimization planning to avoid overestimations in cases of queries on columns that might be defined with a large width, but which typically contain much smaller data values.
77180	Fixes an issue where the modulo function was not correctly processing numeric values in the divisor.
77184	Fixes an issue where a query that included a large expression statement was too large to fit in a default expression buffer, resulting in a truncated expression and a query failure with the error `ERROR: 256 : Code generation failure.`
77277	Improves the internal processing of the network device manager to check only on the interfaces that we use, such as bond and eth interfaces, and to ignore interfaces such as usb0 to reduce false alarms in the hwNeedsAttention event.
77432	Fixes an issue where a NOT IN statement in a bridge query could result in a DBOS reset.
77509	Improves the FPGA detection routines to ensure that FPGAs are supported on the appliance model that is undergoing the part replacement.

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0 (continued)

Number	Summary
77513	Fixes an issue where a query that was casting a date value for each row of a table that had hundreds of millions of rows failed with an out-of-memory error.
77534	Fixes an issue where the **nzrestore** command did not restore the correct increments when the target database existed at the time of the restore.
77554	Adds the distribution key information to the Table information in the NzAdmin and Netezza Performance Portal interfaces.
77618	Fixes an issue where CASE WHEN queries did not correctly process literals for int8, timestamp, and interval data types.
77653	Fixes an issue where the LAST VALUE function could sometimes skip a column under certain IF THEN ELSE conditions resulting in a SPU reset.
77665	Improves the optimizer internal planning routines to better handle a case where a query has CASE expressions inside join conditions. Previously, the planner would use an internal nested loop join to process that query, but for large joins, the query could fail with an `/nzscratch permission denied` error.
77670	For a replication services environment, improves performance of activation/startup when a subordinate node is activated.
77802	Improves performance of some queries that use window aggregates with a full partition by avoiding a broadcast operation for a table that is already distributed on a 'partition by' column.
77811	Fixes performance issues for some queries with outer join updates for IN list optimizations that were originally delivered through 41184.
77816	Fixes an issue where a session that could not connect to the NPS system because the system already reached its maximum number of connections was left in an indeterminate state. These sessions are now cleared.
77903	Fixes an issue that prevented the **nzreplprunepts** command from running when a PTS reached 100% capacity on its disks. Fixed with the `-auto` option described in 78739.
77936	Improves the **nzload** command to check for the specified data file on the client machine and return an error if the file is not found before starting any load processes that could require rollback processing.
77939	Fixes an issue where **nzbackup** with multiple streams aborts and fails during table backups.
77960	Fixes an issue where a transaction abort on an NzAdmin client connection session could result in a database restart.
78180	For a replication services environment, fixes an issue where a replication capture process did not start after resuming the master.
78413	Adds support for the detection and processing of a PCI error on the IBM PureData System for Analytics N200x system S-Blades. With this change, if the system detects a PCI bus training error, the system powercycles the S-Blade. If the error persists, the system manager fails the blade for replacement.
78471	Improves client session cleanup procedures when users fail login authentication checks.
78627	Fixes an issue where queries that use arithmetic functions on numerics could fail with `ERROR: overflow in 128 bit arithmetic`.

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0 (continued)

Number	Summary
78717	Fixes an issue where backup operations using the Netezza Tivoli connector on a multiple schema system failed because the schema information was not included in the backup request.
78849	Improves the documentation for the **nzbackup** and **nzrestore** commands to note that the ODBC name is the cluster name or virtual IP of the appliance.
78871	Fixes an issue where versioned tables were not displaying the correct error for cross-database insert, update, or delete commands.
78874	Improves the system manager to ensure that it does not attempt to process commands such as rebalancing and others while the NPS system is in the down state.
78888	Improves the timezone() function to return a timestamp value rather than a varchar and thus avoid extra time for an internal casting operation.
78913	Improves the **nzsql -0** and **\0** options to log error messages for SQL commands. Previously, these options captured the standard SQL command output.
78979	Fixes an issue where, after a transaction is aborted, locks incorrectly remained in place for the _t_user database.
79066	Improves internal query planning code to reduce cases where a plan is aborted due to a workload management ceiling delay, resulting in an NPS restart.
79070	Improves the performance of the timezone() function.
79074	Fixes an issue where an unload then a load of an altered table either errors out or resets the SPU when all columns are NOT NULL and at least a few columns are varchar type.
79102	Fixes a memory management issue in the system manager than can sometimes cause the system manager to restart after logging `unexpected exception 'std::bad_alloc'` messages.
79127	Fixes an issue that when a temp table is renamed during a transaction, the old name was still visible in the _v_table view.
79135	Fixes a rare kernel issue that could occur when an NPS process is launched, and during the setup of the signal handlers, certain signal were allowed through that should have been blocked.
79195	Fixes an issue where an UPDATE query on a versioned table resulted in a postmaster restart.
79226	Improves the optimizer to ensure that any join that derives from a join to an external table is also processed as an inner node for the join. In cases where the external table resolves to an outer node, the query will fail with the error `ERROR: query does not support complex External Table scan`.
79252	Fixes an issue in NzAdmin where the UI did not display user objects and their privileges.
79341	Fixes an issue where the NzAdmin interface displays incorrect object privileges for a database that has multiple schemas defined.
79416	Fixes an issue where the NzAdmin UI display did not refresh the navigation tree in the right frame when the user selected a SPA other than SPA1 in the hardware view.
79428	Updates the SPU MCP kernel for library updates related to scheduler fixes that could cause SPUs to restart.
79442	Improves the internal join processing routines for using pre-broadcast tables instead of rescanning tables during two-phase planner evaluations.

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0 (continued)

Number	Summary
79451	Fixes an issue where the database owner could not access a table owned by another user within the database.
79511	Adds a system configuration setting system.enableZoneMapsForTempTables that controls whether the system creates zone maps for temporary tables. The default value is true to create the zone maps. Zone maps improve query performance, but could impact load performance on systems that concurrently create temporary tables and load records. You can set this variable to false to improve load performance, but queries against those temp tables will not have the performance benefit of zone maps. To set the variable, you must log in to the Netezza active host as the nz user and edit the /nz/data/config/system.cfg file to add (or update) the system.enableZoneMapsForTempTables variable. Save and exit the file, then restart the Netezza software using the nzstop/nzstart commands to place the variable value into effect.
79576	Improves the just-in-time query cost estimations for cases where a pre-broadcast table did not offer a zone map benefit.
79617	Updates the NPS upgrade to install the IBM Netezza Software Support Tools. With this release, you no longer need to download and separately install the software support tools.
79682	Fixes an issue where a database backup created on NPS 6.0.8 failed during a restore on NPS 7.0.4.3-P1 in cases when the source database was not owned by the admin user.
79924	Improves replication transaction replay performance of "by-value" delete operations when many rows are deleted and the table has a non-random distribution key.
79954	Improves system manager to detect and take action on a SCSI error that occurs when the system is in the Pre-Online state, and fails the disk after the system transitions to the Online state.
79955	Improves the system manager tracking and reporting of disks that have reported page fault error (PFE) problems during the discovering state when the NPS software starts.
79977	Fixes an issue where the nzrestore command could not set the database owner, if required, if another user connected to the database during the restore.
80062	Fixes an issue with the two-phase planner when push-down restrictions on a fact table are not correctly handled resulting in a sub-optimal plan being generated. If the two-phase planner was disabled as a workaround for this defect, the recommendation is to re-enable it.
80063	Fixes an issue where a SPU job process terminated from nullable input value for combination of to_char, add_months and to_date.
80066	Reduces an unnecessary timeout during nzsql backend processing that could sometimes occur when reading data from the socket.
80117	Fixes an issue where the system allowed a CREATE VIEW command to create an invalid view definition that included an ORDER BY clause in a subquery. The CREATE VIEW command now returns an error.
80120	Fixes an issue where a history table load failed because QUERYTEXT fields contained a Byte Order Mark (BOM) that caused an invalid UTF-8 character.

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0 (continued)

Number	Summary
80212	Fixes a issue that would occur on systems that had a large number of records in the ACL system table (over 12 million) where queries against the system catalog could take a long time to complete. The ACL table holds the records for all the privileges granted to the database users.
80275	Fixes an issue where a query on the LENGTH field of _v_procedure returned the error `ERROR: not all toast chunks found for value`.
80318	Improves the Postgres log messages that are written when a later NPS client connected to an older/earlier NPS host release. Previously, the pg.log file showed the message `DEBUG: connection failed: host=(null) user=ADMIN database=SYSTEM info=Protocol ver mismatch, renegotiating with lower ver`. After this change, the message is `info=Protocol ver mismatch, renegotiating with lower ver`.
80338	Fixes an issue in the ODBC driver to handle situations where a network timeout could cause a socket to return an EAGAIN error. In cases where the ODBC driver used a non-zero connection timeout, the query could fail and sometimes return a `Communication link failure` error.
80375	Improves the behavior for rounding microseconds for epoch when used with negative intervals.
80398	Fixes an issue where a query that uses the exponent operator (^) returns an `Unterminated quoted string` error when the exponent is a decimal value that does not begin with a 0. As a result of this change, identifiers cannot begin with a period, parenthesis cahracter, plus, or minus in addition to a blank space or a number.
80422	Fixes an issue where query history could not load a version 1 history file to an NPS 7.0.4.4 system due to incorrect values for an internal history table column name.
80425	Fixes an issue in the FPGA handling that could cause a query to fail with the error `SPU job process terminated`.
80471	Fixes an issue where the date() function did not correctly process a date in the ISO concatenated date format YYYYMMDD.
80624	Fixes an issue where the to_date('000000', 'mmddyy') did not return an error for a day or month value of 0. In previous releases, the value 0 would be accepted and converted to the first day or first month. With this release, date values that have all zeroes return an error.
80813	Fixes an issue where the \d <table_name> command required more time to complete in a database that included constraint data.
80871	Fixes an issue where the SHOW SCHEMA command did not show all the schemas for a user who was granted privileges to show all the schemas for a database.
80875	In a replication services environment, fixes an issue where the PTS installer did not create the software bundle binaries with the correct privileges of 754 (rwxr-xr).
81089	In a replication services environment, adds support to be able to restart replication processes such as. replcapture and replapplymgr without restarting the database or suspending replication.

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0 (continued)

Number	Summary
81099	Adds a Postgres variable enable_notin_transformation that disables the NOT IN query checks for NULL values in join columns. In NPS Release 7.0.4 and later, the fix for 13527 resolved an issue for handling NULL values in joins for multi-expression NOT IN queries and NOT IN correlated subqueries. However, the changes increased query time for some types of queries, such as the following: • Multi-expression with no explicit correlation, for example: select * from P where (p1, p2) not in (select s1, s2 from S); • Multi-expression with explicit correlated predicate, for example: select * from P where (p1, p2) not in (select s1, s2 from S where s3 = p3); • Single expression with explicit correlated predicate, for example: select * from P where p1 not in (select s1 from S where s3 = p3 If your applications require the same pre-7.0.4 performance for these three query types, and you do not use NULLs in the join columns of these queries, you can use the default enable_notin_transformation value as OFF (or FALSE). You can set the variable on a session level or the system level. To set the variable on a session level, in your database session, use the SET command such as: `set enable_notin_transformation=false;` To change the variable on a system-wide level, log in to the Netezza active host as nz and edit the postgresql.conf file. Add or change the variable to set it to false, then restart the Netezza software using the nzstop/nzstart command to place the value into effect. Note that this change bypasses the changes in 13527 that addressed NULLs in join columns, so be sure that your queries do not use NULLs in join columns to avoid incorrect results for these types of queries. If there are NULLS in the join columns, then you must set enable_notin_transformation to ON/TRUE so that there is consistent behavior for all NOT IN queries.
81219	Fixes an issue where the nzsasphysw and sascheck commands do not have the same output.
81254	Fixes an issue where an nzrestore command failed because a table in the backup set used a hyphen (-) in the name but the unique constraint was not specified in the nzrestore command.
81323	Improves the error checking and reporting when a CREATE [OR REPLACE] AGGREGATE command specified an unsized numeric or decimal value in the RETURN or STATE fields. Prior to this change, the command could cause the database to restart. User-defined aggregates require numerics to have a defined precision and scale when specified in the RETURNS or STATE fields. NPS now returns an error for these cases.
81421	Fixes an issue where a user could not abort a transaction that the user owned.
81498	Improves cases where systems could encounter out-of-memory errors when the host global shared memory was used excessively by a subset of queries such as bridge queries, lengthy IN-lists for joins, and Postgres COPY ... FROM operations.
81503	Improves some memory allocator routines to help reduce host out-of-memory errors.
81567	Fixes an issue where grants and revokes on the MATERIALIZED VIEW object were not processed by the system.
81642	Fixes an issue in a Netezza Replication Services environment where commands that were allowed in a read-only database were not logged.

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0 (continued)

Number	Summary
81813	Improves the snippet result cache design to ensure that a snippet that scans a materialized view index table always runs and is not cached.
81821	Fixes an issue with the century extraction when to_char is used to convert the current_date.
81881	Fixes an issue where the nzlogmerge command failed with an `argument list too long message`.
82054	Fixes an issue where an ALTER TABLE on an object that has privileges defined could take longer than expected.
82079	Fixes an issue where the ODBC driver on the Windows platform did not handle a session timeout that resulted in an WSAEWOULDBLOCK condition.
82083	Updates the documentation for the nzhealthcheck command to note that if you change the admin database user password, you must manually restart the nzhealthcheck service.
82407	Fixes an issue in IBM Netezza Replication Services environments where a GRANT command on objects in a specific database and schema could grant the privilege on all schemas in the target database.
82299	Fixes an issue in the ODBC driver where a string was being null-terminated in the CONCAT function, which resulted in query failures with the error `Syntax error or access violation.`
82336	Fixes an issue where Postgres restarted during system start-up because internal history routines could not process a NULL value for an audit label.
82407	Fixes an issue in IBM Netezza Replication Services environments where a GRANT command on objects in a specific database and schema could grant the privilege on all schemas in the target database.
82421	Fixes an issue where a query that included both the ntile() and row_number() functions and that share the same partition by and order by clauses could sometimes cause an NPS restart.
82624	Fixes an issue where the command to create a user-defined function failed with the error `GetReplicatedDbIdByOid: Database with dbid 0 does not exist` when the UDF also referenced a user-defined shared library.
82640	Fixes an issue where the NzAdmin interface closed when a user clicked in the left navigation tree view to expand Database to list the Schema information. The problem occurred for a user who had Select privilege on the Database but did not have List privilege on the database.
83087	In a Netezza replication services environment, improves the performance of a SET REPLICATION node_name NONE command to reduce cases where the command could hang on a busy system.
83143	Fixes an issue where a query that includes the USING clause could cause a postmaster core if the select clause contains an analytic function and runs a full join on two tables.
83434	Fixes an issue where a query that includes a synonym that points to a sequence in another schema can fail when the query includes a calculation in the select statement.
83519	Fixes an issue where an nzrestore failed because an incremental backup did not capture an ALTER TABLE change where the size of an NCHAR column increased between the full and incremental backup.
83602	Fixes an issue where a query with a right outer join returns incorrect results when the WHERE clause contains an IN non-correlated subquery.

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0 (continued)

Number	Summary
83718	For a replication services environment, adds support that allows different NPS nodes in the replication set to use NPS releases that differ only by a minor NPS release variation, such as a patch version of the same major NPS release. If the NPS releases are very different, note that the subordinate node suspends operation if they cannot process a newer log version.
83723	Adds support to store the OS user name that was used to connect with ODBC, JDBC, and OLE DB clients as part of the standard session tables and views like _t_sessctx, _v_session, _v_session_brief, _v_session_detail, and _v_session_detail_tx.
83742	Fixes an issue where the NzAdmin client did not show the ALTER TABLE commands for a table.
83996	Fixes an issue in 7.0.4 and later where a non-admin user cannot run GENERATE STATISTICS. The command failed with the error `ERROR: nz_aclcheck_object: object "", incorrect type`.
84067	Fixes an issue where a SQL script that runs the nzsql \c connection command returned a successful script value even when the \c command failed inside the script.
84309	Added an internal error handler for catching an out of memory exception for nzstats queries which caused a system manager restart.
84404	Fixed an issue where the nzrestore command did not consider the system case of certain delimited objects like schema names, resulting in an nzrestore failure when it encountered some unique object names that differed in letter casing.
84444	In a replication services environment, improves the PTS installation process to check and warn when PTS host settings are not as expected, rather than attempt to correct them.
84625	The NzAdmin client now provides a single generic error when a user is denied access because of an incorrect account name, an invalid password, or because the account has been locked. This protects the information about valid account names from a potential attacker. The error message is `Wrong User ID/Password Or Account is Locked`.
84701	Fixes an issue where the to_num function result that is then cast to a bigint resulted in an incorrect value in cases where the to_num argument was read from a table.
84945	Fixes an issue where a CREATE EXTERNAL TABLE unload process might not clean up all child processes, resulting in a postmaster restart.
84977	Fixes a rare timing issue that caused DBOS to restart when a transient table in the snippet result cache table matched the same table ID as a later/different query plan.
84996	Updates the NPS software and clients to use OpenSSL 0.9.8za. This OpenSSL update includes a number of fixes and updates including the fix for CVE-2014-0224. This vulnerability for ChangeCipherSpec messages could allow man-in-the-middle attackers to take control of sessions. For details on the fixes, see http://www.openssl.org/news/vulnerabilities.html. Upgrading the NPS software to 7.0.4.5-P1 installs the updated OpenSSL libraries and protects NPS against this vulnerability. It is recommended that users upgrade NPS clients to 7.0.4.5-P1 as well.
85082	Fixes an issue in Netezza replication environments where 64-bit integer values such as CSNs and sequence numbers were processed as 32-bit integer values.

Table 1-3. Customer-reported bugs fixed in Release 7.2.0.0 (continued)

Number	Summary
85132	Fixes a timing issue where the system manager queries a disk's firmware revision before the disk has finished initializing.
85281	Fixes an issue where nzlogmerge fails and sometimes cores when processing a large number of files.
85288	Helps to reduce cases where DBOS crashes could occur due to out-of-memory issues in queries that scan virtual tables.
85372	Fixes an issue where a query that uses an aggregate function and set operator could return more rows than expected in the results.
85685	Fixes an issue where the NzAdmin interface was not displaying any details for the user sessions active on the appliance.
86155	Fixes an issue in the ODBC driver where a query passed to a SQLPrepare call that uses LIMIT syntax in a nested query takes longer than usual to execute. It is recommended that you update your ODBC clients to 7.0.4.5-P2 or later when connecting to NPS systems that are running 7.0.4.5-P2 or later to resolve this issue. Older ODBC clients will still have this issue even if the NPS software is updated on the appliance hosts.
86181	For IBM DB2 Database Accelerator environments, fixes an issue where transient tables did not have the correct padding character for spaces in columns. The system now checks for EBCDIC encoding and uses the EBCDIC space (0x40) for padding of the transient table columns.
86218	Fixes an issue in JDBC driver logic where leading white characters in INSERT statement causes a ClassCastExcection in NzPreparedStatament.
86598	Fixes an issue where a catalog query that includes LIMIT 0 syntax took a long time to complete.
86878	Fixes an issue where the ODBC driver PREPARE query is taking a long time to complete.
87096	Fixes an issue where an alter command on a temp table failed with the error `CatAlterZmapAttrs: insert error 9`.
87770	In a replication services environment, fixes an issue where multiple parallel update transactions overlapping on the same set of tables, along with a lot of non-update (read-only) transactions occurring concurrently, can in rare cases cause a synchronization issue that suspends the subordinate node.

Customer-reported bugs fixed in Release 7.2.1

The following table lists the customer-reported bugs that were fixed or closed in Release 7.2.1. In this release, the issue tracking system migrated to an IBM Rational Team Concert application. The numbers in the following table show the RTC tracking number with the former IBM Netezza tracking numbers in parentheses.

Table 1-4. Customer-reported bugs fixed in Release 7.2.1

Number	Summary
13927 (8743)	Adds support for the **nzsql** command to the IBM Netezza Windows client kit.
14819 (14118)	Adds MERGE support to the **nzload** command.
15709 (19651)	Adds support for using the nzsql command to establish a connection before a load from a remote external table or an unload into a remote external table.

Table 1-4. Customer-reported bugs fixed in Release 7.2.1 (continued)

Number	Summary
25715 (43516)	Fixes an issue where comments supplied in ODBC queries were omitted from query history and in NzAdmin windows. Comments enclosed inside an escape sequence are dropped.
29414 (47630)	Adds support for CREATE TABLE .. IF NOT EXISTS and DROP TABLE ... IF EXISTS syntax.
30707 (49027)	Adds support for a Netezza .NET Framework data provider, called NZdotNET.
46863 (67603)	Enhances the use of delimiters in data loading by adding text-delimited format to the RecordDelim external table load option, and by adding the LFinString external table load option.
50958 (72254)	Adds SQL MERGE command support for the Netezza appliance.
71319	Adds support for 10 additional admin user connections for troubleshooting when the maximum number of user connections is reached on the NPS host. These extra connections allow the administrators or IBM Support to log in and run commands like **nzstats**, **nzhw**, **nzpush** and others as well as to start an admin database session to investigate and possibly terminate user connections for resolving the problem.
72743	Adds two external table load options for changing the default delimiter of a space (' ') in time and timestamp values: MeridianDelim and DateTimeDelim.
73579	Adds support for installing IBM Netezza Analytics into an IBM DB2 Analytics Accelerator environment.
80110	Improves the call home management and processing during NPS upgrades and downgrades.
85576	Fixes an issue where table attributes such as comments could not be displayed for a versioned table.
86335	Fixes an issue where NPS hosts showed false alerts that the hosts had exceeded the average power usage threshold. This **nzhealthcheck** monitoring has been disabled because it is not intended for the hosts in NPS appliances.
86472	Fixes an issue where the query internal code generation calculated an invalid record size resulting in a SPU reset.
86638	Fixes an issue where, after a restored database is renamed, backed up, and restored again, the restore fails to create views that reference other views because the view definitions reference the old database name. If users in your environment often rename databases between backup operations, consider running new full backups for those databases after you upgrade to a version of NPS that contains this fix.
86987/98704	Introduces internal comparison changes that allow NULL values to compare to true if the left and right operand are equal. This allows joins that allow NULL equality to be executed as efficient hash joins.
87396	Fixes an issue where internal routines that process expressions in the query planning did not record all the column information used in an expression, leading to a database restart.
88203/95584	Fixes an issue where a join restriction that allows for null equality previously was implemented as an efficient nest loop join. It is now treated as a hash join.
88350	Fixes an issue where privileges granted on system objects were failing.

Table 1-4. Customer-reported bugs fixed in Release 7.2.1 (continued)

Number	Summary
88561	Fixes an issue where a query that has a restrict operation that involves a join expression with a boolean equality operator could sometimes result in a database restart.
90023	Fixes an issue where a GROUP BY query with a HAVING clause did not fully eliminate columns that were no longer required for the group aggregation, which caused extra rows to be included in the results.
91032	In an IBM Netezza replication services environment, improves the performance by-value DELETE operations.
92148	Fixes an internal query plan optimization that improves the performance of queries against the system catalog that join on multiple attributes.
92154	Fixes an issue where a backup operation could fail if a vacuum operation ran concurrently with the backup. The system now aborts a vacuum operation when there is a backup already running on the system.
92159	Adds a notice message that can alert users when their queries return a subset of results because of a configured rowset limit for the user or the user's group. If a query returns a subset of results, the system writes the message `NOTICE: Rowset limit of <limit> applied` to the `pg.log` file. For ODBC/JDBC users, the SQLGetDiagRec()/ getwarning functions can show the notice when it occurs.
93333	Adds a new command SHOW TEMP TABLE that lists all the temp tables that exist at the time the command runs, and size of the tables on the SPUs. The database user must have the System privilege to execute this command.
93429	Adds support for JDK Release 1.7. If your Netezza host is running Release 7.2.1 or later, your JDBC clients require JDK Release 1.7 or later.
93514	Fixes an issue where the ScanNode object in the plan file did not show the correct schema name for an object.
94002	Fixes an issue where query performance for queries on the _v_odbc_columns* or _v_jdbc_columns* views took longer to complete.
94316	Adds changes to help reduce query runtimes and memory consumption for queries that have nested selects and function calls in the projection list, such as select func(select(func(x))).
94590	Fixes an issue where changing the system to use LDAP authentication prevented a locally authenticated admin database user from logging into any database.
94656	Fixes an issue where the nzload command failed with a `reference zone 1` error when the first column of the record to be loaded is defined as nullable and contains a null value.
94760	For a Netezza replication log server/PTS system, fixes an issue where the Linux inotify default for the maximum number of folders (directories) was too low for very active replication environments.
94780	Fixes an issue where IBM Netezza High Capacity Appliances did not start after an upgrade to NPS Release 7.2.
94813	Updates the internal nzdumpschema Support tool to collect more parameters like enable_simple_jit_avoidance to troubleshoot queries.
94868	For NEC InfoFrame DWH Appliance models ZA25 and ZA50, fixes an issue where the **nznetw** command displays an incorrect status for the switch ports.

Table 1-4. Customer-reported bugs fixed in Release 7.2.1 (continued)

Number	Summary
94886	Fixes an issue where loads to a versioned table failed with errors such as `ERROR: Column reference "rowid" not supported for views` for special user table attributes referenced in the load.
95006	Fixes an internal channel validation routine that failed while dataslice filtering was in effect, resulting in a database restart.
95076	Fixes an issue where the nzrestore command fails with an error `Cross Database Access not supported for this type of command`.
95119/90082	Adds a series of improvements to the CASE WHEN support to resolve issues such as pg_atoi errors that stemmed from internal temporary variable initialization problems.
95212	Fixes an issue for IBM Netezza Replication Services environments where the subordinate nodes might not have received updated metadata files.
95217	Fixes an issue where a join to a pre-broadcast table created a negative startup cost and biased the cost to ignore other more optimal join paths. If you had set the enable_2phase_cost_adj variable to false as a workaround for this issue, you should change the variable value back to true after you upgrade to NPS 7.0.4.9.
95234	Fixes an issue where the nzhistcreatedb command failed when the customer supplied the history database owner's account password on the command line using the -p option.
95251	Fixed a rare timing issue where a system that had hundreds of concurrent sessions encountered a lock that prevented Netezza commands from running on the system.
95315	Fixes an issue where the NzAdmin interface could hang when trying to access a locked database.
95431	Fixes an issue where the **`nzpush`** Support command could not retrieve the SPU DSA log file. This change adds OS library files that are required for the task.
95490	Fixes communication issues that caused an NPS system to hang and stop processing queries.
95530	Fixes an issue where all queries fail with the error `storage transaction table is full` and the user must stop and restart the system.
95695	Fixes an issue where a query failed with the error `ERROR: parsenodes_mutator: Unexpected node type 103`.
95830	Fixes an issue where a false warning appeared for a backup and restore connector argument that did not apply for the backup connector specified in the command.
95852	Fixes an issue where the date() function returned a `Bad date external representation` error when a date value used a decimal as a separator value, such as date('1.2.2015').
95905	Fixes an issue where a client session terminated but the corresponding DBOS session was not stopped and remained in the processing queues.
95973	Adds support for the use of synonyms to control whether ODBC and JDBC group 1 or group 2 views are used instead of group 3 views.
96038	Adds support for Netezza backup and restore operations with a 64-bit Tivoli Storage Manager 7.1.x client.
96060	Fixes an out-of-memory issue triggered when the single-slice throughput enhancement evaluates OR restrictions against a table's distribution key.

Table 1-4. Customer-reported bugs fixed in Release 7.2.1 (continued)

Number	Summary
96102	Fixes an issue where the NzAdmin Tools > Workload Management > Performance options were disabled after NzAdmin start-up.
96163	Fixes an issue where a CREATE EXTERNAL TABLE command that used the IncludeHeader external table option caused a database restart.
96182	Fixes an issue where the optimizer ignored an additional filtering join to a pre-broadcast table even though the just-in-time (JIT) scan had identified that the pre-broadcast join was beneficial.
96246	Improves workload scheduling to check system resource utilization and, when lower utilization is detected, to schedule more queries to run to increase concurrency and utilization.
96254	Fixes an issue caused by defect 86573 where a dispersion of zero causes hash joins to not be considered. The situation that caused this issue was a MINUS operation of two DISTINCT subqueries where the dispersion value of the projected columns was calculated by JIT dispersion.
96293	In an IBM Netezza replication services environment, fixes an issue where the use of the row_number() function in by-SQL transactions can cause the subordinate to become out of sync.
96338	Fixes an issue where new database users created on an NPS system that is configured for LDAP authentication could not log in due to an expired password. The problem was due to an internal time representation change for password ranges.
96362	Adds support for a Netezza file system backup connector option, FSYNC_DEST_BYTES, that throttles the host writes to an external file system by flushing the modified buffers after a specified number of bytes and waiting for the device to finish. This option helps to reduce cases where the NPS host could restart and failover while writing data to a slow external file system. You can use the FSYNC_DEST_BYTES option to set a maximum write size before flushing the buffers, for example:
96500	Fixes an issue where an incremental restore failed because of foreign key dependencies. The incremental updates could not be applied to databases that contained tables with key constraints.
96545	Fixes an issue where a database restore with the -nodata option created a view that had a different definition than the original view in the backup.
96614	Fixes an issue where a query that called an EXISTS condition in a subselect could encounter a planner loop that caused NPS to restart.
96684	Fixes a code generation issue that added multiple nodes for a user-defined function, resulting in SPU resets.
96703	Fixes an issue where the lastupdate column of _v_restore_history did not show the completion time of the restore operation.
96705	In Netezza Replication Services environments, fixes an issue with parsing distribution keys in a by-value replication process that could cause a subordinate to suspend.
96792	Fixes an issue where the nztmpwatch script was not cleaning up old dbos and sysmgr log files. The script was selecting files based on last access time, not last modified time, so older files were lingering beyond the cleanup date.
96948	Adds support to verify that extent IDs never exceed the defined limit for their data type. Data slices which have invalid, large extent IDs could encounter problems that prevent zone maps from being created for those data slices.

Table 1-4. Customer-reported bugs fixed in Release 7.2.1 (continued)

Number	Summary
96983	Fixes an issue where the nzstats command output displayed incorrect information for the number of hardware components, dataslices, and hardware issues because the command did not have the machine type and model (MTM) information for the system.
96987	Updates the NPS cipher support to remove RC4 (also known as ARC4) ciphers as options for clients that request an SSL connection to the NPS hosts due to vulnerabilities discovered with this cipher. This change does not affect any NPS clients, but third-party clients that support only RC4 ciphers will be unable to connect to the NPS hosts.
96999	Improves support for the includeHeader feature of CREATE EXTERNAL TABLE to include alias names in the column names.
97067	Fixes an issue that can help to reduce the time needed to generate a plan for a query.
97259	In a Netezza Replication Services environment, adds the replHeartbeatLatency variable to control how long the system waits for a heartbeat before considering it a missed hearbeat, and the replHeartbeatMaxMissedInterval variable to specify how many consecutive heartbeats can be missed before the system triggers a missed heartbeat event. These settings help to tune the event notifications for the replication environment.
97268	Fixes an issue where some catalog queries could take longer to run because of extra time spent in access control list (ACL) lookups.
97330	Fixes an issue where a GENERATE STATISTICS command failed with the error `Table size too big for caching`.
97334	For IBM Netezza replication services environments, improves transaction management and queueing algorithms to improve the throughput of queries that are running on subordinate nodes.
97335	For Netezza replication service environments, improves an internal troubleshooting tool to show which plan is in progress when a replapply is waiting to finish.
97350	Fixes a stored procedure issue where two processes attempt to drop the same transient table.
97398	Updates the OpenSSL libraries used by the NPS ODBC and OLE DB drivers to version 0.9.8zf for NPS Release 7.0.2.x and Release 7.0.4.x, and to version 1.0.1m for NPS Release 7.1.x and Release 7.2.x. This change adds the latest OpenSSL libraries to remove RC4 (also known as ARC4) ciphers as options for clients due to vulnerabilities discovered with this cipher.
97472	Adds a session variable enable_pullup_notexists_sublink that allows a user to disable ANSI standard behavior for correlated subqueries used in NOT IN/NOT EXISTS anti-join evaluation. Netezza behavior prior to 46364 (made in 7.0.2.11-P1 and later) did not follow ANSI standard behavior in terms of evaluating correlated subquery predicates that solely referenced the "outer" result set. The default for this session variable is true to use the ANSI standard behavior. To restore the original, non-ANSI, Netezza behavior, set the enable_pullup_notexists_sublink session variable to false.
97508	Fixes an issue where a multi-stream restore from Tivoli Storage Manager backup tape drives could be blocked from completing.
97550	Fixes an issue where in NzAdmin, displaying the object privileges for a database did not display any results. The NzAdmin interface now prompts the user for a database and a schema to display the privileges.

Table 1-4. Customer-reported bugs fixed in Release 7.2.1 (continued)

Number	Summary
97621	Fixes an issue that prevented scheduler rules from supporting the serialization of INSERT INTO <table> VALUES... commands.
98178	Fixes an issue where an external table contains an incorrect value INF for numerics and for cases where float and double data types are empty.
98188	Fixes an issue where NPS upgrades that include a catalog upgrade (such as between major releases like 7.0.4.x to 7.1.0.x), the custom settings for system settings such as QUERYTIMEOUT, SESSIONTIMEOUT, ROWSETLIMIT, MAXPRIORITY or DEFPRIORITY were reset back to their default values.
98226	Fixes an issue that caused an NPS restart while the system was reassembling a stored procedure definition and validating its UTF-8 correctness. This validation occurs when procedure definitions are stored in segments.
98232	For an IBM PureData System for Analytics N3001-001 appliance, fixes an issue where a SPU could not be activated on the second host after the second host had restarted.
98427	Fixes an issue where table statistics are not reset after a TRUNCATE table command. In 7.2.0.5 and later, NPS automatically resets table statistics after a TRUNCATE command. You can set the value to false to maintain the current 7.2.0.4 behavior to retain the table statistics and rowcount of the table before the TRUNCATE, which increase over time as new rows are inserted to the table. For more information, see http://www-01.ibm.com/support/docview.wss?uid=swg21960527.
98454	Fixes an issue where a blade memory check routine failed and caused DBOS to restart. The memory check failure occurred after a previous system pause/resume operation after which queries were automatically restarted.
98491	Fixes an issue where the SPU kernel scheduler process checked the wrong task for a possible restart operation. This problem typically occurred on SPUs that were running many concurrent processes.
98519	Fixes an object lookup issue that caused an **nzrestore** to restart the NPS software when a user-defined function referenced in a view could not be resolved by the restore logic.
98687	Fixes a rare timing issue that occurred when an internal routine that tracks SPU resource usage referenced a plan that was aborted, causing a database restart.
98691	Fixes an issue where several system tables returned a `did not find any relation` error when used with the **nzsql \d** (describe) option.
98696	Fixes an issue where an UPDATE operation to an altered table that references rows by row ID failed with the error `List error in nth()`.
98709	Fixes an issue where the change for 85397 prevented the planner from leveraging the right outer join optimization for queries that join with fact tables. This change adds a variable enable_setop_dispersion_adj to disable the 85397 join dispersion improvement changes in cases where the right outer join optimization is more beneficial.
98747	Fixes an issue where an optimization that transforms qualifying OR lists into a subplan expression did not correctly handle certain cases where the OR list was enclosed in a NOT operator.
98763	Fixes an issue where the command to create a materialized view incorrectly returned the error `CTAS not permitted because of conflicting backup transaction`.

Table 1-4. Customer-reported bugs fixed in Release 7.2.1 (continued)

Number	Summary
98814	Fixes an issue where the data skew value shown in the _v_table_only_storage_stat view did not show the correct skew percentage.
98916	Fixes system catalog performance for queries that directly or indirectly reference the system _v_obj_relation, _v_obj_relation_xdb, and _v_object_data views.
98922	Fixes an issue where a query that compares nchar or nvarchar data using operators such as < , <= , > , >=, BETWEEN, or LIKE could result in poor estimates and less efficient join processing.
98946	Fixes an issue where a windowing aggregate query failed with a `pqFlush() -- connection not open` error.
99049	Fixes an issue where the word AUTHORIZATION changed to become a reserved keyword. It should be a non-reserved keyword available for table or column names.
99055	Fixes an issue where an **`nzrestore -incrementlist`** command unlocked a database.
99210	In Netezza Replication Services environments, fixes an issue where a delete by value command failed with an ambiguous column error because a user table column name matched an internal replication column alias. The change updates the internal alias names with a CSN suffix.
99291	Fixes an issue where the nzload command fails on a Windows client with `Error: NULL delimiter is not allowed for DateStyle : MONDY`.
99310	Fixes an issue in the internal casting of string literals used in SET operations which could result in invalid string literal values that cause the query to fail and restart the NPS software.
99513	Fixes an issue where a query that calls a correlated subquery caused a Postgres reset due to problems processing variables in the node expression evaluator.
99520	Fixes an issue where TRUNCATE operations on tables did not clean up some internal resources, resulting in out-of-memory conditions on SPUs.
99739	For IBM Netezza replication services environments, adds support for Red Hat 7 as a supported operating system for the replication log server.
99741	Changes the default setting to disable the snippet results cache feature on upgrades to 7.1.0.6 because it was optimized for specific types of workloads. For more information, see http://www-01.ibm.com/support/docview.wss?uid=swg21960527.
99742	Changes the default setting to disable the single slice optimization feature on upgrades to 7.2.0.5 because the feature was optimized for specific types of workloads. For more information, see http://www-01.ibm.com/support/docview.wss?uid=swg21960527
99775	Fixes an issue where an upgrade to a patch release did not update some system views to apply changes that provide a performance improvement for queries that use those views.
99865	Fixes an issue where a query that calls LAST_VALUE and uses a window aggregate was incorrectly converted to a FIRST_VALUE call for optimization, resulting in a `Partition rowcount limit exceeded` error.
100152	Improves the latency based scheduler to apply the algorithms to High priority queries in addition to Normal priority queries.
100163	Fixes an **`nzloader`** issue where the loader failed because of an unterminated record, but the failure message referred to an erroneous line feed character that is actually not present.

Table 1-4. Customer-reported bugs fixed in Release 7.2.1 (continued)

Number	Summary
100263	Fixes an issue where a query that uses a range between typecast values failed with the error `convert_timevalue_to_scalar: unsupported type 23`because unsupported data types were not handled correctly by internal casting routines.
100713	Improves internal processes for allocating and managing blocks in the global shared memory. This change helps to prevent some race conditions that could result in a SPU reset.
100729	Fixes an issue where the **nzhw** command failed with an authentication error when using a database user account that has a cached password.
100813	Improves the performance of bridge queries that compare a 32-bit integer data type to an OID data type.
100866	Fixes an issue where the NPS Linux ODBC driver manager did not set the client information fields for query connections, causing client information to be unavailable in the query history database.
100977	Improves the performance of queries against system catalog views that were using a less efficient index to access the ACL system table.
100980	Fixes an issue where a table is considered for pre-broadcasting but at the stage of consideration not all information is present to identify all columns that need projection. In such cases the table will not be considered as a pre-broadcast candidate.
101046	Fixes an issue in multi-stream restore operations where a database backup that had user-defined functions required a long time to load the UDX objects.
101309	Fixes an issue where a cross-database query run from a user database and which referenced a fully qualified SYSTEM view name used a view defined in the user database.
101348	Fixes a timing issue in the SPU Linux kernel that could cause the SPU to lock up and require a SPU restart.
101535	Fixes an issue in a SQL UPDATE command where the updated relation has an alias and the alias is used to reference a column in the target list.
101572	Fixes an issue where a routine that reserves space in a metadata log for data slices was failing and preventing NPS from starting.
101576	Fixes an error in the *IBM Netezza Database User's Guide* for the ALTER TABLE ... RENAME TO command which stated that renaming a table invalidates all the views defined against that table. Changing the table name no longer invalidates the views that reference it.
101836	Fixes an issue where a session encountered a "memory exhausted" error, and while reporting the error the system tries to allocate more memory, causing the **pg.log** file to grow and consume the available filesystem space.
101954	Fixes an issue where the NPS operator "/=/" utilized nest loop joins instead of hash joins in cases where the left or right operand was an expression.
101980	Fixes an issue where queries on the system catalog run by a non-admin user account were not completing as quickly as for the admin user.
102201	Improves planner estimates when views are referenced in a subquery block to obtain and use the statistics for the underlying column's min/max values.

Table 1-4. Customer-reported bugs fixed in Release 7.2.1 (continued)

Number	Summary
102240	Adds a new NPS client package to support the ODBC and JDBC driver on Linux little-endian 64-bit systems using IBM PowerPC® POWER8 chipsets. The NPS client commands are not supported in this release.

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Accessibility features for IBM PureData System for Analytics

Accessibility features assist users who have a disability, such as restricted mobility or limited vision, to use information technology content successfully.

Overview

IBM PureData System for Analytics includes the following major accessibility features:

- Keyboard-only operation
- Product features, including documentation, that help support accurate use of screen readers

IBM PureData System for Analytics uses the latest W3C Standard, WAI-ARIA 1.0 (www.w3.org/TR/wai-aria/), to ensure compliance with US Section 508 (www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards) and Web Content Accessibility Guidelines (WCAG) 2.0 (www.w3.org/TR/WCAG20/). To take advantage of accessibility features, use the latest release of your screen reader and the latest web browser that is supported by IBM PureData System for Analytics.

The IBM PureData System for Analytics online product documentation in IBM Knowledge Center is enabled for accessibility. The accessibility features of IBM Knowledge Center are described in the Accessibility section of the IBM Knowledge Center help (www.ibm.com/support/knowledgecenter/doc/kc_help.html#accessibility).

Keyboard navigation

This product uses standard navigation keys.

Interface information

The IBM PureData System for Analytics user interfaces do not have content that flashes 2 - 55 times per second.

The Netezza Performance Portal web user interfaces rely on cascading style sheets to render content properly and to provide a usable experience. The application provides an equivalent way for low-vision users to use system display settings, including high-contrast mode. You can control font size by using the device or web browser settings.

The Netezza Performance Portal web user interface includes WAI-ARIA navigational landmarks that you can use to quickly navigate to functional areas in the application.

Vendor software

IBM PureData System for Analytics includes certain vendor software that is not covered under the IBM license agreement. IBM makes no representation about the accessibility features of these products. Contact the vendor for accessibility information about its products.

Related accessibility information

In addition to standard IBM help desk and support websites, IBM has a TTY telephone service for use by deaf or hard of hearing customers to access sales and support services:

TTY service
800-IBM-3383 (800-426-3383)
(within North America)

For more information about the commitment that IBM has to accessibility, see IBM Accessibility (www.ibm.com/able).

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