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## Highlights

- New hardware design delivering 3x faster analytics performance<sup>1</sup>
  - 128 gigabyte per second effective scan rate per rack<sup>2</sup> helps tackle big data faster
  - Fifty percent greater data capacity per rack<sup>3</sup> with no increase in power or cooling
  - Appliance simplicity. Easy to deploy and manage; dramatically simplifies your data warehouse and analytic infrastructure
  - Arrives ready to go with expert integration
  - Powerful platform supporting thousands of users, unifying business intelligence and advanced analytics
  - Powered by IBM® Netezza® technology
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# IBM PureData System for Analytics N2001

*Powered by Netezza technology*

To gain an edge over the competition, organizations must rely on deep, sophisticated analytics on large volumes of historical data. Yet many companies are challenged by time-to-value for enabling new analytical capability, as well as maintaining service level agreements on existing analytics.

IBM PureData™ System for Analytics is a high-performance, scalable, massively parallel system that enables clients to gain insight from their data and perform analytics on enormous data volumes. Analyzing big data volumes are made simpler, **faster and more accessible**. This system, powered by Netezza technology, is designed specifically for running complex analytics on very large data volumes, orders of magnitude faster than traditional custom systems.<sup>4</sup>

The PureData System for Analytics delivers the proven performance, scalability, intelligence, and simplicity your business needs. It is a low cost option; requiring minimal ongoing administration or tuning for a low total cost of ownership (TCO).

The IBM approach to data analysis is patented and proven. Minimize data movement, while processing the data at physics speed. Do this in parallel, on a massive scale, inside an easy-to-use data warehouse appliance extremely fast and at a low cost. And run business intelligence (BI) and advanced analytics that were previously impossible or impractical.



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*“The PureSystems family is allowing Premier to move forward more quickly than we probably would be able to with other systems. These systems are integrated; they are purpose built to work together, and it’s allowing us to get to market faster; it’s allowing us to concentrate on building solutions and not integrating technology and worrying about technology but to bring these solutions for – we want to be solution providers, not technology providers.”*

—Todd Wilkes, Premier Healthcare

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IBM PureData System for Analytics is a purpose-built, standards-based data warehouse and analytic appliance that architecturally integrates database, server, storage and advanced analytic capabilities into a single, easy-to-manage system. Designed for rapid and deep analysis of data volumes scaling into the petabytes, it can help deliver insight never before possible, at a low cost of ownership.

The new PureData System for Analytics takes the success of a proven platform and technology one step further. The new N2001 model was designed not only for performance, but for data center efficiency. Why? Because today’s world depends on more advanced analytics to gain a competitive edge. This increase in capability should come in a simple, agile, powerful system that is also highly efficient. The new PureData System for Analytics offers increased performance with no increase in power. All this comes with less floor space and less resources in the data center. That’s innovation, where it matters.



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Figure 1. IBM PureData System

### **The analytics opportunity**

Deep, sophisticated analytics on volumes of historical data are integral to enterprises in an intelligent economy, giving them an edge over the competition. However, most organizations are challenged by both the time-to-market on new analytical capability as well as maintaining service level agreements on existing analytics. The time has come to shift the focus from managing complexity to simplicity and agility.

### **Strategic analytics should not be complex to deliver and manage**

IBM PureData System for Analytics is a scalable, hardware-accelerated, massively parallel system that enables clients to gain insight from enormous data volumes, 10-100 times faster<sup>4</sup> than they can with traditional systems, without the need to copy the data onto a separate analytics server.

### **Fast. Scalable. Smart. Simple. Completely integrated.**

IBM PureData System for Analytics is designed specifically for running complex analytics on very large data volumes, orders of magnitude faster than traditional custom systems. It delivers the proven performance, scalability, intelligence, and simplicity that organizations need to dive deep into their data.

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*“I think that the PureData System really has the ability to capture a near real time data all the time for us to be able to analyze as a patient still in the office, what can we do to further benefit them.”*

—Jeremy Fortune, Fletcher Allen

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## Fast

The IBM PureData System for Analytics N2001's delivers a performance advantage over other analytic options. This comes from its unique asymmetric massively parallel processing (AMPP™) architecture that combines open IBM blade servers and disk storage with IBM's patented, hardware-accelerated data filtering, using field programmable gate arrays (FPGAs). This combination delivers fast query performance on analytic workloads that supports tens of thousands of business intelligence (BI) and data warehouse users, sophisticated analytics at the speed of thought, and extreme scalability.

IBM PureData System for Analytics N2001 delivers an average of three times faster performance for mixed workloads.<sup>1</sup>

## Scalable

With the IBM PureData System for Analytics solution, organizations can deploy the right-sized environments for their data volumes and workloads, and be confident that as data volumes grow, larger systems can be deployed quickly and easily if needed. The IBM PureData System for Analytics starts with a data capacity of 96 TB for a half-rack system and can grow to well over 700 TB for a four-rack system with built-in hardware compression of four times. This provides 50 percent greater capacity per rack than the N1001 series—without increasing the power or cooling requirements. IBM PureData System for Analytics provides near linear performance scalability as the size of the appliance grows, which means that organizations can pick the appropriate sized appliance to meet both their data volume and performance requirements. This is accomplished

with predictable, scalable performance and no need to add significant additional resources to manage and maintain the appliance as data volumes grow.

## Smart

IBM PureData System for Analytics dramatically simplifies analytics by consolidating all analytic activity in one place, right where the data resides. Moving analytics to the IBM PureData System is straightforward with IBM's embedded analytic platform, IBM Netezza Analytics. With support for PMML 4.0 models, data modelers and quantitative teams can operate on the data directly inside the appliance instead of having to offload it to a separate infrastructure and deal with the associated data preprocessing, transformation and movement. Data scientists can build their models using all the enterprise data, and then iterate through different models much faster to find the best fit. Once the model is developed, it can be seamlessly executed against the relevant data in the appliance. Prediction and scoring can be done right where the data resides, in-line with other processing, on an as-needed basis. Users can get their prediction scores in near real-time, helping operationalize advanced analytics and making it available throughout the enterprise.

IBM Netezza Analytics offers a built-in analytical infrastructure and extensive library of statistical and mathematical functions, supporting a breadth of analytic tools and programming languages. It is delivered with a library of more than 200 prebuilt, scalable, in-database analytic functions that execute analytics in parallel while abstracting away the complexity of parallel programming from the developers, users and DBAs.

The Netezza Analytics functionality also includes in-database geospatial analytics that are compatible with the industry-standard Esri GIS formats. This enables easy integration into existing geospatial analytic environments, and analytics across location and corporate data at the same time and speed.

## Simple and completely integrated

All of these new features are delivered with the same simplicity and ease-of-use that distinguish all IBM PureSystems. Based on proven Netezza technology, this simplicity, and ease of development and deployment is what sets the IBM PureData System

for Analytics apart. IBM PureData System for Analytics delivers high performance automatically, with no indexing or tuning required.

As an appliance, all of the integration of hardware, software and storage is done for you, leading to shorter deployment cycles and industry leading time-to-value for BI and analytic initiatives. The appliance is delivered ready-to-go for immediate data loading and query execution and integrates with leading ETL, BI and analytic applications through standard ODBC, JDBC and OLE DB interfaces.

Included with every system, Netezza Performance Portal provides a web-based GUI that helps administrators to monitor and manage hardware, administer database objects, configure workload management, view active sessions and monitor system resource utilization for capacity planning. The portal provides a consolidated administrative interface supporting one to many PureData Systems for Analytics from one, easy-to-use access point.

IBM PureData System for Analytics is architected for high availability from the ground up. All components are internally redundant, and the failure of a processing node (S-Blade) causes no significant performance degradation for a robust, production-ready environment from the moment the appliance is plugged into your data center.

IBM eliminates complexity at every step so you can redirect valuable resources to the initiatives that will actually impact the bottom line.

## The best value

IBM PureData System for Analytics is a cost effective analytic option. It requires minimal ongoing administration or tuning, minimizing internal resources as well as implementation costs, for an extremely low total cost of ownership. The performance and scalability of IBM appliances is available immediately, without requiring tuning, indexing, aggregations, etc.

IBM offers your company fast time-to-value for important BI and analytic initiatives, which will have a positive impact on your bottom line. With IBM on board, your organization is armed with more accurate intelligence to react quickly and accurately to any opportunities or threats the market may present.

At a time when companies need to be as agile as possible to react to changing market conditions and growing analytic demands, an uncomplicated, easy-to-maintain system that runs blisteringly fast and analyzes your growing data volumes makes a lot of sense.

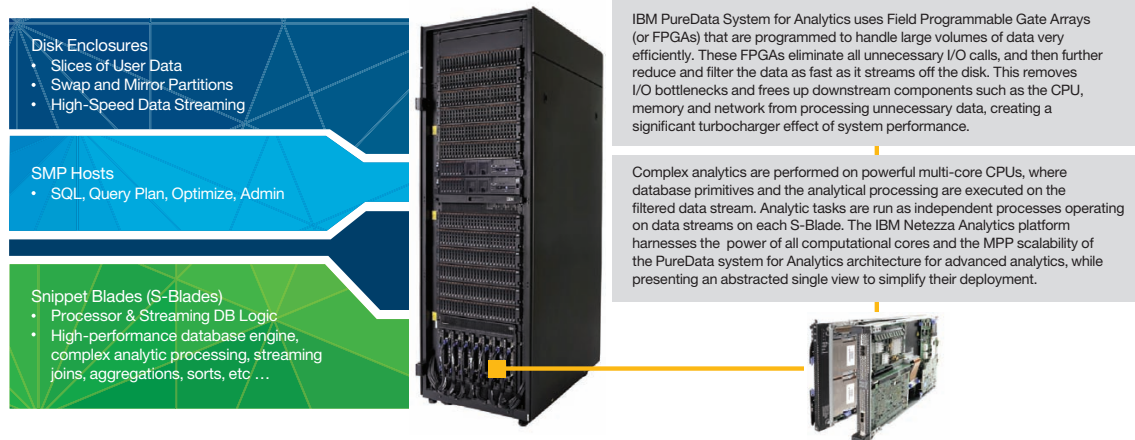


Figure 2. IBM PureData System for Analytics N2001

## How is this possible?

### Patented hardware acceleration

IBM PureData System for Analytics adheres to IBM's basic principle of moving processing to the data, not moving the data to the processing. Each IBM PureData System for Analytics contains multiple Snippet Blades or S-Blades, where SQL query code segments (or "snippets") and complex analytic processes are executed. The S-Blades are intelligent processing nodes that make up the massively parallel processing engine of the appliance. Each S-Blade is an independent server that contains powerful multi-core Intel CPUs, IBM's unique multi-engine FPGAs and gigabytes of RAM as well as dedicated storage devices—all balanced and working concurrently to deliver peak performance.

### About IBM PureData System for Analytics

The IBM PureData System for Analytics, powered by Netezza technology, integrates database, server and storage into a single, easy-to-manage appliance that requires minimal setup and ongoing administration while producing faster and more consistent analytic performance. The IBM PureData System for Analytics simplifies business analytics dramatically by consolidating all analytic activity in the appliance, right where the data resides, for industry-leading performance. Visit: [ibm.com/PureSystems](http://ibm.com/PureSystems) to see how our family of expert integrated systems eliminates complexity at every step and helps you drive true business value for your organization.

### About IBM Data Warehousing and Analytics Solutions

IBM provides the broadest and most comprehensive portfolio of data warehousing, information management and business analytic software, hardware and solutions to help clients maximize the value of their information assets and discover new insights to make better and faster decisions and optimize their business outcomes.

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### Software Specifications:

#### Database:

IBM Netezza Performance Server v7.0.2 or greater

#### Operating system:

Red Hat Enterprise Linux Server 6

#### Supported APIs:

SQL, OLE DB, ODBC 3.5, JDBC 3.0 Type 4

#### SQL standards:

SQL-92 compliant, with SQL-99 extensions

#### Programming languages:

Java, Python, R<sup>5</sup>, Fortran, C/C++, Perl, Lua

#### Netezza Analytics foundation:

In-Database Analytics, R<sup>5</sup>, Matrix, MapReduce, Geospatial Analytics with embedded Esri technology

#### High-speed load/unload:

Interoperable with ETL and EAI tools at rates up to 5 TB/hour

#### Backup and restore:

Interoperable with IBM® Tivoli®, EMC Legato and Symantec Netbackup, at rates higher than 4 TB/hour

#### Database portability:

From IBM DB2®, Informix®, Microsoft SQL Server, MySQL, Oracle Database, Red Brick, Sybase IQ, Teradata, EMC Greenplum, Postgres

#### Additional tools:

Windows and web-based DB Admin GUI; CLI and high-speed loading/unloading for AIX®, HP-UX, Linux, Solaris and Windows  
IBM InfoSphere® BigInsights™ 2.0 – starter edition – 5 users  
IBM InfoSphere Streams 2.0 – developer license – 2 users

The IBM PureData System for Analytics is supported by a wide range of market-leading business partners including: complementary technology partners, resellers, systems integrators, and service providers. For a complete list or to find out if a particular company or solution is part of our program, please contact your IBM representative.

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<b>Specifications</b>	<b>Single rack systems</b>		<b>Multiple rack systems</b>	
IBM PureData System for Analytics	IBM PureData System for Analytics N2001-005	IBM PureData System for Analytics N2001-010	IBM PureData System for Analytics N2001-020	IBM PureData System for Analytics N2001-040
<b>Racks</b>	1	1	2	4
<b>Active S-Blades</b>	4	7	14	28
<b>CPU cores</b>	64	112	224	448
<b>FPGA cores</b>	64	112	224	448
<b>User data in TB</b> (assumes 4X compression)	96	192	384	768
<b>Power/rack</b> (Watts maximum/rack)	4,200	7,500	7,500	7,500
<b>Cooling - BTU/hour</b>	15,500	27,000	54,000	108,000
<b>Weight/rack kg</b>	771.1	907.2	907.2	907.2
<b>Height/rack cm</b>	202	202	202	202
<b>Depth/rack cm</b>	101.6	101.6	101.6	101.6
<b>Width/rack cm</b>	64.8	64.8	64.8	64.8
Power	220-240 VAC, 50Hz/60 Hz (Single Phase), 24A	220-240/380-415 VAC, 50 Hz (EU models—3-Phase Wye), 16A  200-208 VAC, 60 Hz (NA models—3-Phase Delta), 24A  200-240 VAC, 50Hz/60 Hz (Single Phase), 48A	220-240/380-415 VAC, 50 Hz (EU models—3-Phase Wye), 16A  200-208 VAC, 60 Hz (NA models—3-Phase Delta), 24A  200-240 VAC, 50Hz/60 Hz (Single Phase), 48A	220-240/380-415 VAC, 50 Hz (EU models—3-Phase Wye), 16A  200-208 VAC, 60 Hz (NA models—3-Phase Delta), 24A  200-240 VAC, 50Hz/60 Hz (Single Phase), 48A
<b>Drops/rack</b>	2	2	2	2
<b>Safety</b>	US/CSA/EN60950			
<b>Emissions</b>	FCC Part 15, ICES-003, AUS/NZ C-Tick, VCCI and EN55022 Class A; European Immunity: EN55024			

## Why IBM?

IBM PureSystems™ offerings combine the flexibility of a general purpose system, the elasticity of cloud and the simplicity of an appliance. They are integrated by design and come with built in expertise gained from decades of experience to deliver a simplified IT experience. Members of the PureSystems family include: IBM PureFlex System, IBM PureApplication System, IBM PureData System for Transactions, IBM PureData System for Operational Analytics and IBM PureData System for Analytics.

The IBM PureData System for Analytics, powered by Netezza technology, integrates database, server and storage into a single, easy-to-manage appliance that requires minimal setup and ongoing administration while producing faster and more consistent analytic performance. The IBM PureData System for Analytics simplifies business analytics dramatically by consolidating all analytic activity in the appliance, right where the data resides, for industry-leading performance. Visit: [ibm.com/PureData](http://ibm.com/PureData) to see how our family of expert integrated systems eliminates complexity at every step and helps you drive true business value for your organization.

## For more information

Help IT make the shift to the strategic center of your business. Leverage proven expertise to take the lead. To learn more about IBM PureSystems and the PureData System for Analytics, contact your IBM representative or IBM Business Partner, or visit the following website: [ibm.com/PureSystems/PureData/](http://ibm.com/PureSystems/PureData/)

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<sup>1</sup> Based on a comparison of the IBM PureData System for Analytics N2001 to the IBM PureData System for Analytics N1001. The performance speed refers to the query times on both macro-analytic and mixed workload tests as conducted in IBM engineering lab benchmarks. The N2001 query times were an average of 3x faster than those of the N1001. Individual results may vary.

<sup>2</sup> 128 GB/sec scan rate assuming an average of 4X compression across the system. Individual results may vary.

<sup>3</sup> 50 percent greater capacity when compared to previous model PureData System for Analytics N1001. Power and cooling specifications within 97 percent of previous model PureData System for Analytics N1001.

<sup>4</sup> Based on reported results from IBM customers. "Traditional custom systems" refers to systems that are not professionally prebuilt, pretested, and optimized. Individual results may vary.

<sup>5</sup> With Revolution Analytics Enterprise R for IBM PureData System for Analytics



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