

## twinFin™ DATA SHEET

# Netezza TwinFin™: High-Performance Business Intelligence and Advanced Analytics for the Enterprise

Our approach to data analysis is patented and proven. Minimize data movement, while processing it at physics speed. Do this in parallel, on a massive scale. Inside an easy-to-use data warehouse appliance. Extremely fast. At a low cost. And let our customers run BI and advanced analytics that were previously impossible or impractical.

TwinFin is a purpose-built, standards-based data warehouse appliance that architecturally integrates database, server, storage and advanced analytic capabilities into a single, easy to manage system. The TwinFin appliance is designed for rapid and deep analysis of data volumes scaling into the petabytes, delivering 10-100x performance improvements at a fraction of the cost of other options available from traditional vendors.

## Big Data Meets Big Math

Deep, sophisticated analytics on volumes of historical data are the lifeblood of enterprises in an Intelligent Economy, giving them an edge over the competition. However, most organizations have to make a choice between data volume (Big Data) and analytic complexity (Big Math) due to the limitations of their technology infrastructure. Most analytics performed on large data are relatively simple. The infrastructure, based on traditional database and storage technology, gets easily overextended just keeping up with the growth in user and data volumes, leaving no room to accommodate the increasing analytic complexity. With TwinFin, organizations no longer have to make a choice between Big Data and Big Math. TwinFin is a scalable, massively

parallel analytic system that allows customers to crunch through enormous data volumes, with large numbers of users asking questions and performing analytics on the data that could not even be contemplated before.

## Performance, simplicity, value

TwinFin is designed specifically for running complex analytics on very large data volumes, orders of magnitude faster than competing solutions. It delivers the proven performance, value and simplicity organizations need to dive deep into their data.

### Performance

The Netezza TwinFin system's orders-of-magnitude performance advantage over other analytic options comes from its unique asymmetric massively parallel processing (AMPP™) architecture that combines open, blade-based servers and disk storage with Netezza's patented data filtering using Field Programmable Gate Arrays (FPGAs). This combination delivers blisteringly fast query performance on highly complex mixed workloads supporting tens of thousands of BI and data warehouse users, sophisticated analytics at the speed of thought, and modular scalability to petabytes of data.

### Netezza TwinFin Highlights:

- Powerful platform for unifying business intelligence and advanced analytics
- Scalable Performance – 10-100x complex analytics and BI performance at petascale
- Support for thousands of users and very complex mixed-workloads
- Flexible analytic environment – i-Class technology supports multiple languages (C/C++, Java, Python), frameworks (Hadoop) and tools (R, SAS)
- Simplified analytic development – out-of-the-box parallelized analytics and engines; No need for parallel programming
- Blade-based streaming architecture – commodity blades and storage combined with Netezza's patented data filtering using Field Programmable Gate Arrays (FPGAs)
- Appliance simplicity – Easy to deploy and manage; dramatically simplifies your data warehouse and analytics infrastructure
- Data compliance – Built-in compliance controls, reports and workflow
- Full compatibility with market-leading analytic and BI tools, applications and infrastructure
- Industry-standard interfaces (SQL, ODBC, JDBC, OLE DB)
- Enterprise-class reliability and availability – More than 99.99% uptime
- Green – Low power and cooling requirements in a compact footprint
- Fast load speeds – More than 2 TB/hour
- Fast backup rates – High-speed backup and restore at data rates of more than 4 TB/hour



TwinFin brings analytics to the data, so 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 and transformation. They can not only build their models using all the enterprise data, but also iterate through different models much faster to find and find the best fit. Once the model is developed, it is seamless to execute against the relevant data in the appliance. The prediction and scoring can be done right where the data resides, inline with other processing, on an as-needed basis. Users can get the results of prediction scores in near real-time, helping operationalize advanced analytics and making it available throughout the enterprise.

### **Simplicity**

The simplicity and ease of development and deployment is what truly sets Netezza TwinFin apart. TwinFin delivers high performance out of the box, 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 faster 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 all leading ETL, BI and analytic applications through standard ODBC, JDBC and OLE DB interfaces. TwinFin simplifies analytics dramatically by consolidating all analytic activity in the appliance, right where the data resides. Moving analytics to TwinFin is straightforward with Netezza's i-Class technology. The i-Class technology supports a breadth of analytic tools and programming languages, and offers powerful engines and analytic libraries that execute analytics in parallel while hiding the complexity of parallel programming from developers.

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

### **Value**

As a commodity based appliance, Netezza TwinFin is a low-cost analytic option. But its value goes beyond the initial low purchase price. The Netezza appliance requires minimal ongoing administration, both in internal resources as well as implementation costs, for an overall low total cost of ownership. There are no hidden costs. Netezza TwinFin also provides built-in compliance controls, reports and workflow that significantly reduce the costs necessary to satisfy mandatory compliance regulations (e.g. SOX, PCI, HIPAA, FISMA, Basel II).

Netezza offers your company fast time to value for important BI and analytic initiatives, which will have a positive impact on your bottom line. With Netezza on board, your organization is armed with the most accurate intelligence to react more 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 install system that runs blisteringly fast and analyzes petascale data makes a lot of sense.

## **How is this possible?**

### **Patented Streaming Architecture**

TwinFin leverages Netezza's AMPP architecture, built using commodity blade and storage technologies, and adheres to Netezza's basic principle of moving processing close to the data. Each TwinFin appliance 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, Netezza's unique multi-engine FPGAs and gigabytes of RAM – all balanced and working concurrently to deliver peak performance.



## Netezza TwinFin Data Warehouse Appliance

### DISK ENCLOSURES

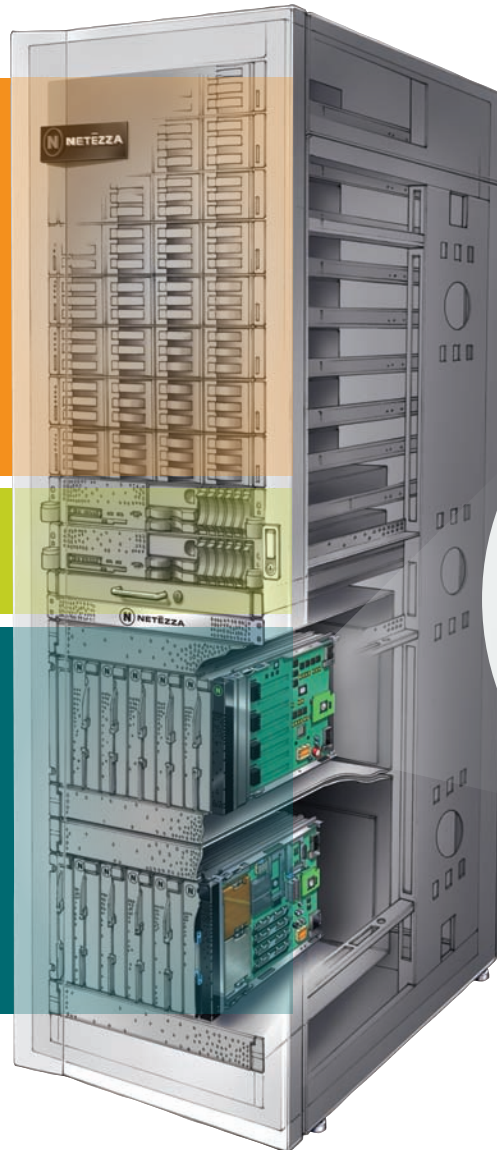
Slice of User Data  
Swap and Mirror Partitions  
High-Speed Data Streaming

### SMP HOSTS

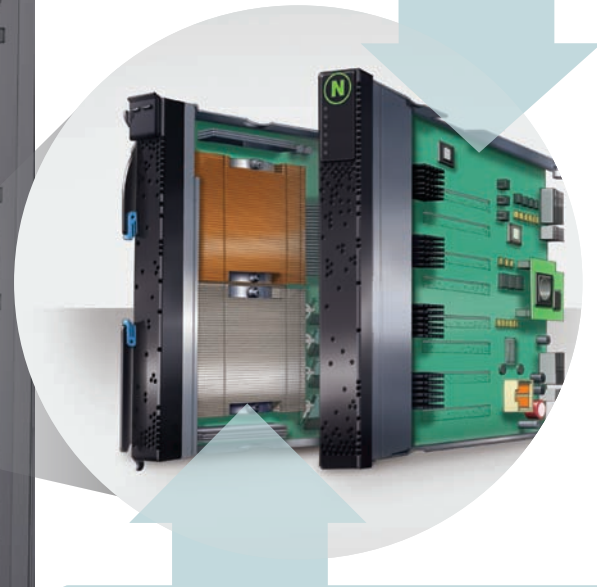
SQL, Query Plan, Optimize, Admin

### SNIPPET BLADES (S-BLADES)

Processor & Streaming DB logic  
High-performance database engine, complex analytic processing, streaming joins, aggregations, sorts, etc...



TwinFin uses Field Programmable Gate Arrays (or FPGAs) which have been programmed by Netezza specifically to handle **Big Data** very efficiently. These FPGAs filter out extraneous data as fast as it streams off the disk. This removes I/O bottlenecks and frees up downstream components such as the CPU, memory and network from processing unnecessary data, creating a significant turbocharger effect on system performance.



The **Big Math** on TwinFin is performed in powerful multicore CPUs, where database primitives and complex analytics are executed on the filtered data stream. Analytic tasks are run as independent processes operating on data streams on each S-Blade. Netezza's parallel analytic engines harness the power of all the computational cores in the appliance to offer significant performance and scalability for advanced analytics, while presenting an abstracted view to simplify their deployment.

## Netezza TwinFin<sup>®</sup> Specifications

## Single Rack Systems

## Multiple Rack Systems

Netezza TwinFin	TwinFin 3	TwinFin 6	TwinFin 12	2 Racks	3+ Racks
<b>Racks</b>	1	1	1	2	3-10
<b>S-Blades</b>	3	6	12	24	# Racks x 12
<b>CPU Cores</b>	24	48	96	192	# Racks x 96
<b>User Data in TB (Uncompressed)</b>	8	16	32	64	# Racks x 32
<b>Power/Rack (Watts maximum/rack)</b>	2,820	3,960	7,635	7,400	7,000
<b>Cooling/Rack - BTU/Hour</b>	9,600	13,500	26,100	25,500	24,000
<b>Weight/rack kg</b>	453.6	589.7	907.2	907.2	907.2
<b>Height/rack cm</b>	202	202	202	202	202
<b>Depth/rack cm</b>	101.6	101.6	101.6	101.6	101.6
<b>Width/rack cm</b>	64.8	64.8	64.8	64.8	64.8
<b>Power</b>	200-240VAC 50/60Hz, Single Phase 16 A	200-240VAC 50/60Hz, Single Phase 24 A	200-240VAC 50/60Hz, Single Phase 48 A 200-240VAC 50Hz, 3-Phase WYE 24A 200-208VAC 60Hz, 3-Phase Delta 32A	200-240VAC 50/60Hz, Single Phase 48 A 200-240VAC 50Hz, 3-Phase WYE 24A 200-208VAC 60Hz, 3-Phase Delta 32A	200-240VAC 50/60Hz, Single Phase 48 A 200-240VAC 50Hz, 3-Phase WYE 24A 200-208VAC 60Hz, 3-Phase Delta 32A
<b>Drops/Rack</b>	2	2	2	2	2
<b>Safety</b>	UL/CSA/EN60950				
<b>Emissions</b>	FCC Part 15, ICES-003, AUS/NZ C-Tick, VCCI and EN55022 Class A; European Immunity: EN55024				

Additional Netezza models include: TwinFin 18, TwinFin 24, TwinFin 30, TwinFin 36, TwinFin 48, TwinFin 72, TwinFin 84, TwinFin 96, TwinFin 120.  
The model number indicates the number of S-Blades in the appliance.

### Software

**Operating System:** Red Hat Linux Advanced Server 5.3  
**Supported APIs:** SQL, OLE DB, ODBC 3.5, JDBC V 3.0 Type 4  
**SQL Standards:** SQL-92 compliant, with SQL-99 extensions  
**Programming Languages:** Java, Python, R, Fortran and C/C++  
**Parallel Analytic Engines:** nzMatrix, nzEngine for R, nzEngine for Hadoop  
**In-Database Analytics:** nzAnalytics, R Analytics, Scientific Analytics  
**High-Speed Load/Unload:** Interoperability with ETL and EAI tools at rates of more than 2 TB/hour  
**Backup & Restore:** Interoperable with EMC Legato, IBM Tivoli and Veritas, at rates higher than 4 TB/hour  
**Database Portability:** from IBM DB2, Informix, Microsoft SQL Server, MySQL, Oracle, Red Brick, Sybase IQ, Teradata  
**Additional Tools:** Windows and web-based DB Admin GUI; CLI and high-speed loading/unloading for AIX, HP-UX, Linux, Solaris and Windows

### Third Party Applications

**Data Integration:** Ab Initio, Business Objects/SAP, Composite Software, DataFlux - a SAS company, Expressor Software, GoldenGate Software, Informatica, IBM Information Server, Oracle Sunopsis, WisdomForce  
**Data Analysis:** Business Objects/SAP, Kalido, KXEN, Qwest Software, SAS, SPSS  
**BI/Reporting:** Actuate, Business Objects/SAP, Cognos, an IBM Company, Information Builders, MicroStrategy, Oracle, QlikTech, Unica  
**Data Visualization:** BIS<sup>2</sup>, TIBCO Spotfire  
**In-Database Analytics:** Fuzzy Logix, SAS  
**Business Continuity/Compliance:** EMC, IBM Data Mirror, IBM Tivoli Storage Manager, Symantec Veritas



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#### About Netezza Corporation:

Netezza (NYSE: NZ) is the global leader in data warehouse appliances that dramatically simplify high-performance across an extended enterprise. Netezza's technology enables organizations to process enormous amounts of captured data at exceptional speed, providing a significant competitive and operational advantage in today's data-intensive industries including digital media, energy, financial services, government, health and life sciences, retail and telecommunications. Netezza is headquartered in Marlborough, Massachusetts and has offices in North America, Europe and the Asia Pacific region. For more information about Netezza, please visit [www.netezza.com](http://www.netezza.com).