



# JAPAN MEDICAL DATA CENTER

## NETEZZA IN ACTION

## Advanced Analytics Prove Indispensable for Medical Progress

### Japan Medical Data Center: Trusted Leader

At the core of Japan Medical Data Center Co., Ltd (JMDC)'s business is its unified, proprietary database that captures historical data from medical records across Japan. JMDC offers health insurance consumers, providers and pharmaceutical manufacturers access to its database, and each segment values JMDC's information as a single source of truth. JMDC's user-friendly database links patients directly with clinical practice, making it a highly regarded resource for both health insurance societies and pharmaceutical manufacturers.

Until JMDC came on the scene, there was no standard way of filling out medical practitioners' receipts for health insurance claims, and no master file or common dictionary for analyzing such information across multiple segments.

Shin'ya Kimura, president of JMDC, stated, "The computerization of medicine is still in its Stone Age. Not only is the absolute quantity of data insufficient, there has also been almost no progress on standardization. For example, all the pharmaceutical manufacturers have is data from their clinical trials. This is not accurate enough to use effectively in everyday medicine. We are trying to make a contribution to society by providing real medical data, on which we stake our credibility."

### The Start of Success

JMDC pioneered a new approach to these issues in 2003 when it began gathering medical data from one insurance provider. JMDC quickly expanded to combine historical patient information from ten different health insurance providers, resulting in a single, master database that acts as a cornerstone for advanced medical analyses across Japan. One key feature of JMDC's data management is that the master file is encoded using proprietary technologies to ensure that individuals cannot be identified. Although personal information is not included in the database, it is possible to perform computer-aided name identification via a special ID numbering scheme. Case histories can be tracked even as data is added without affecting consistency, thus ensuring data reliability. Yet even if the data were somehow to leak out, the individuals concerned would remain anonymous.

JMDC accumulates the healthcare data that it collects and puts it into the appropriate formats for clients, which they can then use to understand and optimize their business processes. Health insurance providers leverage the data to get an overview of their patients' healthcare, to gain an accurate view of medical expenses, to compare data between providers, and to plan health promotion activities. Pharmaceutical manufacturers use the information to plan sales promotion strategies for their own products based on real information about medical consultations.



Japan Medical Data Center.

### Company Profile:

- Japan Medical Data Center Co., Ltd: Data factory that classifies, analyzes and accumulates real, raw medical data for clients
- Primary Clients: Pharmaceutical manufacturers and health insurance providers
- Primary Shareholder: Olympus Corporation

### Business Challenges:

- Lack of medical data standardization
- Need to provide real medical data vs. relying on test results

### Application:

- Data factory that classifies, analyzes and accumulates raw medical data to advance medical progress

### Solution Benefits:

- High data processing ability, capable of coping with advanced analysis of medical data with complex data structures
- Ground-breaking performance without tuning for functionality
- Development man-hours reduced through rapid, smooth implementation and verification

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Shin'ya Kimura  
President  
Japan Medical Data Center Co., Ltd.

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### A Roadblock

Based on the high demand for its healthcare data, JMDC decided to go a step further and begin providing information as an application service provider (ASP). Its goal was to create a shared framework whereby anyone involved in the medical field would be able easily to gather, analyze and use ‘live’ medical data. But JMDC soon realized that to offer services as an ASP, it would have to build a new system infrastructure with advanced data processing capabilities. Until then, JMDC had been handling the data it gathered via another commercial database, but as the volume of data to be administered grew, its performance began to seriously decline. Also, to offer services as an ASP, JMDC needed an infrastructure that wouldn’t be restricted by any number of users.

“When trying to comprehend the situation regarding a given patient’s check-ups, you need to be able to manage a range of aspects such as the results of their diagnoses at various medical institutions, the names of their illnesses, the numbers and quantities of medicines administered and so on, all in chronological order,” said Kimura. “We take raw, rough data and polish it to create high quality information, arranged in a form suitable for analysis. That’s why we looked for a superior data warehouse system capable of accumulating such information and analyzing it with high performance.”

### The Solution: Netezza

In January 2007, JMDC launched a full-scale evaluation of data warehouse systems. When testing the performance of three traditional data warehouse solutions, none of them could meet JMDC’s requirements. And then there was Netezza.

Lin Zhe, manager of JMDC’s Information Marketing division, recalled, “In mid-January 2008 we spoke to Netezza and were quite impressed when they told us, in some surprise, ‘Currently your data volume is not really that high – but if you’d still like to use NPS...’ The volume of data we were trying to manage at that time was indeed no more than around 100 gigabytes, but the content of the data was divided by many different perspectives – society, illness name, drugs, and so on – and we needed to rapidly analyze it while maintaining focus on each of these aspects. Because of this, the data structures were exceptionally complex and the performance of general-purpose products was simply inadequate.”

JMDC asked Netezza to perform a proof of concept (POC), which was completed on an actual machine with real data in just one day. This proved that Netezza could offer high performance even without any tuning. Complex analyses ran on the Netezza appliance in just tens of seconds, whereas JMDC’s existing database had failed to deliver any results at all due to processing capacity issues.

“When we saw the overwhelming performance with our own eyes, we decided that Netezza was ideal for the new service we were going to launch,” stated Lin.

In March 2008, after a verification process lasting approximately two weeks, JMDC formally decided to adopt the Netezza appliance. When installing the new system, some SQL code for Oracle had to be converted so that it could be used in the Netezza environment, but this was accomplished without any problems using migration tools. Netezza uses standard ANSI SQL, so JMDC didn’t have to create new code in any special ‘dialect’ and development work on the data warehouse progressed smoothly.

Lin went on, “We realized that performance improved slightly if instead of creating new tables, we set up blank tables in advance and fed the required data into them. Also, we decided to construct a data mart inside Netezza to lower the load on the system, and managed to build a framework whereby all users can access the information they need at great speed.”

Data on over ten million receipts and hundreds of thousands of health diagnoses are presently stored in JMDC's Netezza system, which serves as an accurate data source enabling analyses from numerous different angles.

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That July, JMDC launched the ASP service, with a user interface developed with Adobe Flex. Many of JMDC's customers have praised the new framework's ease of use.


“One great benefit was the fact that we were able to set the Netezza up in just one week. If we'd spent a long time on development, it would have meant the launch of the service being pushed that much further into the future,” added Lin.

#### **Netezza Supports the Advance of Medical Science**

Data on over ten million receipts and hundreds of thousands of health diagnoses are presently stored in JMDC's Netezza system, which serves as an accurate data source enabling analyses from numerous different angles. With its data warehouse system, JMDC has developed a framework that can process medical data including health insurance receipts at high speed, and the system will easily scale as data volumes grow.

Lin added, “As an ASP, enabling users to quickly obtain the information they need was precisely what we were aiming to achieve. We needed to establish an infrastructure that could act as a solid base for this service, and to work continually on maintaining a high level of customer satisfaction. As part of this process, we are also looking at upgrading our Netezza system to the high-end model.”

In the near future, JMDC hopes to add health providers' diagnostics with matching capabilities to the Netezza appliance, meaning it needs to create a foundation that is capable of analyzing correlations between receipt data and check-up data. Meanwhile, JMDC will continue gathering a wide range of related medical data, potentially including information such as what people eat in their everyday lives.

Kimura said, “We are not merely an Internet Data Centre (IDC) gathering raw data; we are proud to be a ‘data factory’ that classifies, analyzes and accumulates the raw data we have gathered, to offer our customers medical data with added value. In the future, we would like to focus on building mechanisms for an infrastructure whereby all sorts of medical data are gathered automatically – rather than being a company that acts within the infrastructure to collect said data. Our mission at JMDC is to construct a society where all citizens can enjoy high quality medical services.” 



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#### **About Netezza**

Netezza (NYSE: NZ) is the global leader in data warehouse and analytic appliances that dramatically simplify high-performance analytics 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).**