MANAGING DATA WITH THE INTERNET OF THINGS

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THIS EXECUTIVE BRIEF IS A SUMMARY OF THE WEBINAR:

Key Data Management Requirements for the IoT

INTRODUCTION

- The Internet of Things is set to grow spectacularly. There is every indication that it is the next big thing - a self-propelled, self-fulfilling prophecy. It is projected that by 2020 the IoT will have 14 billion connected devices.

- The economic value-added created by the IoT is predicted by 2020 to be almost 2 trillion dollars.

- It is anticipated that the cost of connecting an IoT device sensor will be less than a dollar by 2020.

IMPORTANT FINDINGS

- The data created in the IoT can be fully utilized only with flexible databases and data management systems. Flexible data structures allow for continuous integration. Thus in dynamic databases, schema can be changed on the fly.

- With the use of a rich application that uses multiple data sources for a business environment, the way data is used is flexible and thus needs to be changeable on the fly. Fixed relational databases will necessarily be replaced by NoSQL databases allowing for flexible integrated single views in realtime.

KEY POINTS

- The growth of IoT and big data from a range of devices demands NoSQL databases that can deliver scaleable, flexible, analytics-ready data permitting unified views in realtime.

- Leveraging the IoT from a business perspective will be through the managing of the data collected and not in the selling of devices.

- Big data, and scaling it out, is not the first thing to look at when considering the IoT.

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KEY POINTS
(contd.)

- Before scaling out data it is necessary to look at different data models to deal with variety of sensor readings for example, multiple versions of the same device in the field.

- With the IoT it is necessary to devise a way of processing real time data and aggregating it to give a view that can be expanded.

- Considering the data delivered by the IoT, flexibility is of equal importance as scalability. Both are as critical for flexible analytics and the creation of unified views.

- A decision on whether data is important cannot be made without it being put into context. At the management backend, decisions about the significance of data require a platform for data management that provides scale and flexibility in analytics capabilities

- With the rise of super dense sensor networks, data accumulation is huge. Data storage is now inexpensive. This is a challenge to relational databases where in the past data was pre-filtered and pre-aggregated and only a small fraction of data was stored. Now all data can be stored.

- Non-relational databases are now required to store all data from super dense IoT networks because it can't predicted what is going to be required from this data and analytics will change. The challenge is to create a tool for storing this vast amount of data so that it allows for complete flexibility in use.

- Data from diverse sources - data centers, relational databases, mobile devices, and domestic and business devices - must be aggregated into a single view and available in realtime. This is the challenge for the creation of a tool for storing the vast amounts of data produced by the IoT.

- A high performance scalable data storage solution for the IoT must deliver in realtime as well as be secure and reliable.

- Rich applications in the IoT permit looking at real time data and linking it to get a comprehensive view of an entire supply chain or feedback from use of a sensor equipped item to a manufacturer.

KEY POINTS
(contd.)

- A rich modelling language is required to model data that will be used and manipulated in a rich appliction.

- For a rich application a non-relational database must maintain the hierarchy of data in storage.

- In a database appropriate to the IoT and its data production, a dynamic schema is employed allowing for multiple schemas coexist in the same database.

- Integrating legacy SQL databases into new NoSQL databases is important in aggregating data into a single view.

- In IoT, super dense networks of sensors produce data in realtime. A rich application will reveal what is happening in the present moment. Realtime operational insight permits realtime action to control business.

- Applications for IoT data, in particular a NoSQL database, must maintain security within existing and future authorization and authentication frameworks.

- A database for an IoT framework needs to take account of the fact that it may be unknown what data is to be collected and what it is going to be used for. Scaling and flexibility are essential to the modellling of a non-relational database.

TAKEAWAYS

- A NoSQL database of IoT produced data must be flexible so as to allow for changing analytics, changing data sets and realtime views.

- A non-relational database should have dynamic schema so that old and new applications can work with the same data.

- A flexible database can enrich data with new infomation. This supports modern business practices of continuous innovation and continuous change.

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