Abstract

This paper discusses grid computing as a very powerful resource for computing different files and bundles in an efficient manner where all the devices are linked like a disintegrated but still together working network called the internet of things. The hike in the complexities of computational problems in modern era of science and technology forced the engineers and scientists to cross the organizational boundaries to get desired data manipulation. The best logical solution to this issue is distribution of the problem set over multiple computational resources/nodes. Several solutions to grid computing have been developed and are still evolving, since the notion of Grid sprang up.

INTRODUCTION

One year after the past edition of the Clusterbook 2012 it can be clearly stated that the Internet of Things (IoT) has reached many different players and gained further recognition. Out of the potential Internet of Things application areas, Smart Cities (and regions), Smart Car and mobility, Smart Home and assisted living, Smart Industries, Public safety, Energy & environmental protection, Agriculture and Tourism as part of a future IoT Ecosystem have acquired high attention. In line with this development, the majority of the governments in Europe, in Asia, and in the Americas consider now the Internet of Things as an area of innovation and growth. Although larger players in some application areas still do not recognize the potential, many of them pay high attention or even accelerate the pace by coining new terms for the IoT and adding additional components to it. Moreover, end-users in the private and business domain have nowadays acquired a significant competence in dealing with smart devices and networked applications. As the Internet of Things continues to develop, further potential is estimated a combination with related technology approaches and concepts such as Cloud computing, Future Internet, Big Data, robotics and Semantic. The Internet of Things (IoT), sometimes referred to as the Internet of Objects, will change everything—including ourselves. This may seem like a bold statement, but consider the impact the Internet already has had on education, communication, business, science, government, and humanity. Clearly, the Internet is one of the most important and powerful creations in all of human history. Now consider that IoT represents the next evolution of the Internet, taking a huge leap in its ability to gather, analyze, and distribute data that we can turn into information, knowledge, and, ultimately, wisdom. In this context, IoT becomes immensely important. Already, IoT projects are under way that promise to close the gap between poor and rich, improve distribution of the world’s resources to those who need them most, and help us understand our planet so we can be more proactive and less reactive. Even so, several barriers exist that threaten to slow IoT development, including
the transition to IPv6, having a common set of standards, and developing energy sources for millions—even billions—of minute sensors. However, as businesses, governments, standards bodies, and academia work together to solve these challenges, IoT will continue to progress. The goal of this paper, therefore, is to educate you in plain and simple terms so you can be well versed in IoT and understand its potential to change everything we know to be true today. As with many new concepts, IoT’s roots can be traced back to the Massachusetts Institute of Technology (MIT), from work at the Auto-ID Center. Founded in 1999, this group was working in the field of networked radio frequency identification (RFID) and emerging sensing technologies. The labs consisted of seven research universities located across four continents. These institutions were chosen by the Auto-ID Center to design the architecture for IoT. Before we talk about the current state of IoT, it is important to agree on a definition. According to the Cisco Internet Business Solutions Group (IBSG), IoT is simply the point in time when more “things or objects” were connected to the Internet than people. Additionally, the number of connected devices per person may seem low. This is because the calculation is based on the entire world population, much of which is not yet connected to the Internet. By reducing the population sample to people actually connected to the Internet, the number of connected devices per person rises dramatically. For example, we know that approximately 2 billion people use the Internet today. Using this figure, the number of connected devices per person jumps to 6.25 in 2010, instead of 1.84. Of course, we know nothing remains static, especially when it comes to the Internet. Initiatives and advances, such as Cisco’s Planetary Skin, HP’s central nervous system for the earth (CeNSE), and smart dust, have the potential to add millions—even billions—of sensors to the Internet. As cows, water pipes, people, and even shoes, trees, and animals become connected to IoT, the world has the potential to become a better place. Depending on who you talk to, the Internet of Things (IoT) is defined in different ways, and it encompasses many aspects of life—from connected homes and cities to connected cars and roads (yes, roads) to devices that track an individual’s behavior and use the data collected for “push” services. Some mention one trillion Internet-connected devices by 2025 and define mobile phones as the “eyes and ears” of the applications connecting all of those connected “things.” Depending on the context, others give examples that are less phone-centric, speak of a class of devices that do not exist today or point to Google’s augmented-reality smart glasses as an indication of things to come. Everyone, however, thinks of the IoT as billions of connections (a sort of “universal global neural network” in the cloud) that will encompass every aspect of our lives. All of this public discussion suggests the IoT is finally becoming a hot topic within the mainstream media. Many recent articles point to the IoT as the interaction and exchange of data (lots of it) between machines and objects, and now there are product definitions reflecting the same concept. Hence, from a technology perspective, the IoT is being defined as smart machines interacting and communicating with other machines, objects, environments and infrastructures, resulting in volumes of data generated and processing of that data into useful actions that can “command and control” things and make life much easier for human beings … similar to the world envisioned in the 1970s cartoon The Jetsons, only better. Estimates of the future market size of the IoT cover a
broad range, but most pundits agree it will dwarf any other market. In mature markets today, the ultimate, pervasive consumer device is a mobile phone. Consider your own household, and count the number of mobile phones you currently have. Then count the number of windows, doors, electrical outlets, lights, appliances and heating and AC units you have.

LITERATURE SURVEY

Bhavani Thuraisingham [1] talks about the cyber security. Data mining techniques are being investigated to find out who the suspicious people are and who is capable of carrying out terrorist activities. Cyber security is involved with protecting the computer and network systems against corruption due to Trojan horses, worms and viruses. Data mining is also being applied to provide solutions such as intrusion detection and auditing. The first parts of the presentation will discuss on data mining for cyber security applications. This second part of the presentation will discuss the various types of threats to national security and describe data mining techniques for handling such threats. The third part of the presentation will discuss some of the research challenges. Data mining is also being applied for credit card fraud detection and biometrics related applications. While some progress has been made on topics such as stream data mining, there is still a lot of work to be done here. Another challenge is to mine multimedia data including surveillance video. Finally, we need to maintain the privacy of individuals.

Shen Bin, Liu Yuan, Wang Xiaoyi [2] In this paper, We purpose four data mining models for the Internet of Things, which are multi-layer data mining model, distributed data mining model, Grid based data mining model and data mining model from multitechnology integration perspective. Among them, multi-layer model includes four layers: 1) data collection layer, 2) data management layer, 3) event processing layer, and 4) data mining service layer. Distributed data mining model can solve problems from depositing data at different sites. Grid based data mining model allows Grid framework to realize the functions of data mining. Data mining model from multitechnology integration perspective describes the corresponding framework for the future Internet. Several key issues in data mining of IOT are also discussed.

Feng Bao, Xu He and F engzhi Zhao [3] this is discussed the petro physical and logging data, seismic data and geological data are made based on their features. The article uses different mining ways to process the corresponding data, and describes the results from the perspective of the functions of data mining. According to the data mining techniques, the petro physical data are applied to find the relations and forecast reservoirs; the logging data will be employed to evaluate the fuzzy reservoirs and recognize the effective reservoirs in complicated geological conditions; the space mining results of the 3D seismic data; the charts and text mining results of the geological data.

Fagen Li and Pan Xiong [4] we propose a heterogeneous online and offline signcryption scheme to secure communication between a sensor node and an Internet host. Our scheme has the following advantages. First, it achieves confidentiality, integrity, authentication, and non-repudiation in a logical single step. Second, it allows a sensor node in an identity-based cryptography to send a
message to an Internet host in a public key infrastructure. Third, it splits the signcryption into two phases: i) offline phase; and ii) online phase. In the offline phase, most heavy computations are done without the knowledge of a message. In the online phase, only light computations are done when a message is available. It allows a sensor node in the IBC to send a message to an Internet host in the PKI. Our scheme adopted both online/offline technique and IBC technique to greatly reduce the computational cost of sensor nodes. The scheme setups a secure channel between a sensor node and an Internet host that supports end-to-end confidentiality, integrity, authentication and non-repudiation services.

Lu-An Tang, Jiawei Han and Guofei Jiang [5] this discusses Building a general architecture for the IOT is hence a very complex task, mainly because of the extremely large variety of devices, link layer technologies, and services that may be involved in such a system. The paper will present and discuss the technical solutions and best-practice guidelines adopted in the Padova Smart City project, a proof-of-concept deployment of an IOT island in the city of Padova, Italy, performed in collaboration with the city municipality. The discussed technologies are close to being standardized, and industry players are already active in the production of devices that take advantage of these technologies to enable the applications of interest. In fact, while the range of design options for IOT systems is rather wide, the set of open and standardized protocols is significantly smaller. The enabling technologies, furthermore, have reached a level of maturity that allows for the practical realization of IOT solutions and services, starting from field trials that will hopefully help clear the uncertainty that still prevents a massive adoption of the IOT paradigm.

Burak Kantarci and Hussein T. Mouftah [6] This paper discusses the problems of mining sensor data in CPS: With a large number of wireless sensors deployed in a designated area, the task is real time detection of intruders that enter the area based on noisy sensor data. A method called IntruMine is proposed to detect and verify the intruders from untrustworthy sensor data. The system constructs the monitoring graph and estimates the intruder attributes with the link information. The information of reading difference is used to filter out the unreliable sensors and false positives. There are many interesting directions of future work in the line of cyber-physical data mining, such as combining CPS with social networks, developing novel mining functions on feature-rich movement data, and integrating the technology with real-world interdisciplinary applications.

MAJOR PROBLEMS IN GRID COMPUTING

1. **Load Balancing:** Load balancing a one of the key issues as the life and the efficiency of the system highly depends on the load balancing.

2. **Service availability:** Service availability is also one of the major issues as only a good service oriented network can operate in grid scenarios.

3. **Availability of Data:** The availability of the data from the all peers is important as the data processing which is decentralized will need the processing file from different peers.
4. **Grid application development**: The application development also plays an important role as the data on the grid is going to manage by the application which is controlling the whole data base as a common resource.

5. **Efficient algorithms and problem solving methods**: Algorithms used to run and judge the numeric and analytical opportunities are important to sense the gaps in the network devices to be utilized for common processing.

6. **Data collection from smart objects of IoT**: When data is collected from smart objects of IoT then special smart objects are required which leads to the transmission of data reduction and the use of sensor nodes are promoted.

7. **Data abstraction, compression, index, aggregation and multi-dimensional query**: IoT produces a large amount of data for smart objects, so it is necessary how to implement and manage it. Data for smarts objects have its various characteristics which vary according to the need and requirements.

8. **Event filtering, aggregation and detection**: Event filtering and complex event processing are used to process simple events in data and done in two steps. First, data is aggregated and primitive events are filtered, and valuable events are obtained. Then, these simple atomic events are integrated into complex events.

9. **Centralized data processing and mining VS. Distributed data processing and mining**: In different situations, centralized or distributed data processing and mining models can be adopted flexibility and example of it is distributed sensor networks.

10. **Research on data mining algorithms for IoT**: The main tasks of this is classification, forecasting, clustering, outlier detection, association analysis, spatial and temporal patterns mining for IoT.

11. **Data mining towards the next generation of Internet**: The future generation of Internet has many potential direction of development: IPV6 technology, ubiquitous networks, trusted network, semantic web, Grid service-oriented applications, optical transmission and cloud computing etc.
CONCLUSION

On one end of grid is high computation and optimized utilization of resources and at other the ability to manage distributed and heterogeneous systems. We need security with high availability of data and resources on demand and at the same time ease of access to implement these. On-demand provisioning of resources and more secure protocols for users and service providers to monitor and arrange payment is still a necessary requirement for commercial utilization of grid. No doubt grid computing is still evolving and better protocols and standards will be implemented in near future, culled from academia and business houses to speed up the grid evolution process. It will be of interest how various researchers would find new ways to improve grid and move along parallel paths. A
number of scientific and commercial applications have been started using grid

REFERENCES


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