Mphasis
The Next Applied

Intelligent Infrastructure Analytics

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NEXT labs

Introduction

A robust IT infrastructure is the backbone that drives business excellence in the digital world. Any brief interruptions in the network can result in revenue losses, dissatisfied customers, and decreased productivity. When a server is down, enterprises not only experience increased operational costs, they are faced with gaps in the security of their IT infrastructure and business applications. In addition, enterprises lose out on vital time to make informed strategic decisions, as key personnel are forced to spend it on routine network maintenance.

Enterprises can utilise advanced technologies, together with sophisticated analytical tools, to predict equipment failures and prevent unforeseen infrastructure breakdowns. These tools rely on data collection, modelling, and analysis to identify equipment that is likely to fail — thereby increasing reliability, reducing frequent manual maintenance, and decreasing unnecessary expenditure.

Enterprises have been increasingly collecting and storing detailed, accurate log and IoT data. This data has enormous potential to serve as a source of new knowledge, provided enterprises optimally utilise automated big data analysis techniques to extract relevant, valuable insights.

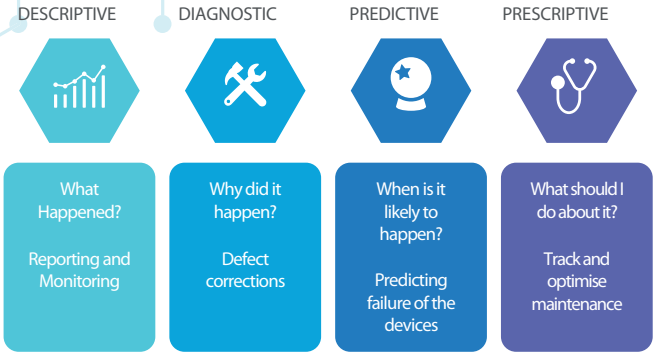
According to ABI Research, analytics technologies are set to generate $24.7 billion in revenue in 2019, from $9.1 billion in 2013 - driven by the adoption of predictive analytics and M2M connectivity.

Capturing Big Data

Each layer, node, and component within an information technology ecosystem, including Internet-of-Things endpoints, generate data every second. The sheer volume, velocities, and varieties of log data collected, however, is not utilised to its potential. This data can be useful for:

- Pre-empting the outage and failure of infrastructure via historical and real-time incidence and sensor data
- Generate root cause analysis of incidences, failure, performance, availability, errors and tickets
- Optimise maintenance cost, reduce down time and enhance end user experience

Lifecycle States



Lifecycle

Most enterprises use only descriptive and diagnostic analytics for reactive maintenance. However, predictive and perspective analytics has immense market potential. According to AIB Research, predictive and prescriptive analytics will contribute to 60 percent of all revenues from just 23%.

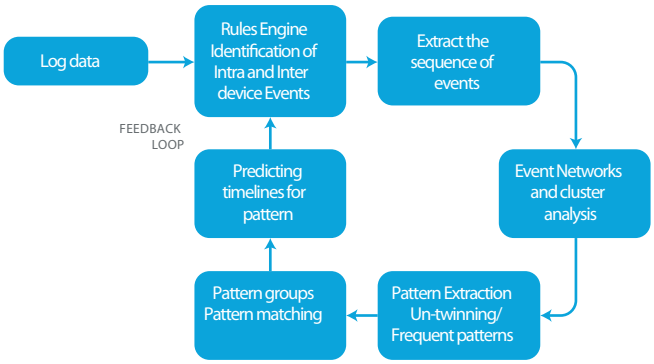
Real-time Predictions for Failure

Predictive maintenance helps asset-intensive organisations transform their maintenance operations. In fact, infrastructure, vehicles and industrial equipment can all benefit from these analytics:

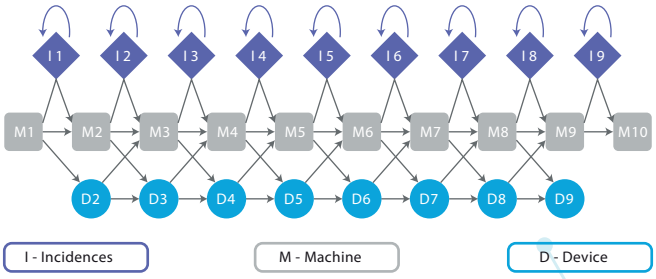
- Predictive maintenance carried out by intelligent infrastructure analytics provides insights to servers, network devices, M2M, IoT, vehicles, and industrial equipment
- Event correlation engines, based on machine learning algorithms, use log/events and sensor data files to generate insights - which eliminates waste and reduce costly downtime

Innovation-Driven Pattern Mining

Failure prediction is about assessing the risk of failure in the future. Failures are predicted by analysing special patterns of errors that have occurred in the system. This analysis is based on the fact that various components of the system are dependent on each other. Due to these dependencies, an error in any one component may lead to successive errors in other depending components. After training, the model is applied to the running system in order to carry out online predictions of upcoming failures.

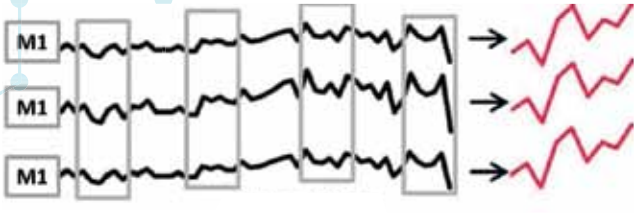


Event Log Mining - Algorithm Flow

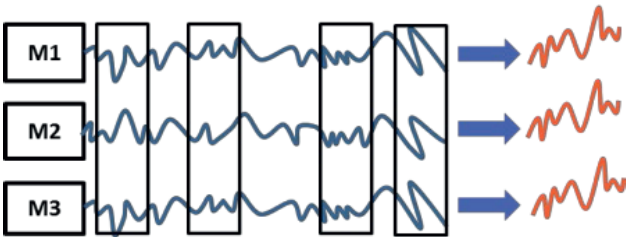


Logical Diagram

Furthermore, the system facilitates identification of patterns from network and cluster analysis.

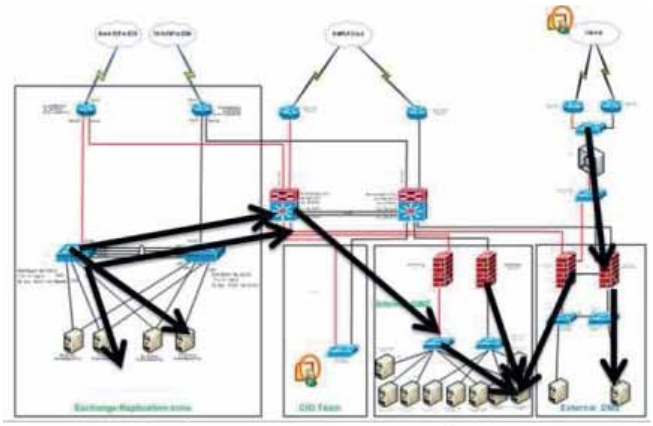


Pattern Mining - 1

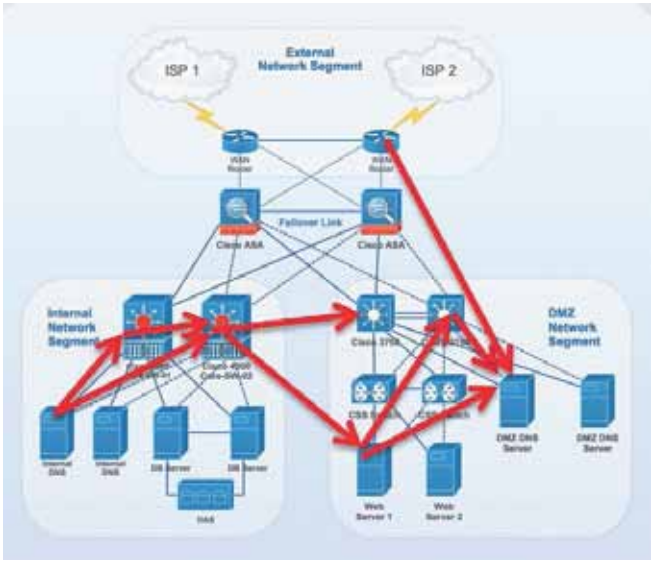


Pattern Mining - 2

It also ascertains the coalition matrix between incidences, machines, and devices.



Dependency Pattern



Final Dependency Pattern

Conclusion

Intelligence infrastructure saves direct dollars by running smarter analytics to manage IT infrastructure and support business operations. It also enhances customer experience by reducing device and system failures.

Dr. Shivani R Gupta

AVP and Lead – Mphasis Next Labs

Shivani is advanced analytics expert with Mphasis Next Labs, the innovation center of Mphasis. She has more than 15 years of experience in advanced analytics, statistical research, delivery, presales, consulting, and teaching. She has worked in all major verticals and holds a PhD in design of experiment from Indore University in association with Hiroshima University.

About Mphasis

Mphasis (BSE: 526299; NSE: MPHASIS) applies next-generation technology to help enterprises transform businesses globally. Customer centricity is foundational to Mphasis and is reflected in the Mphasis' Front2Back™ Transformation approach. Front2Back™ uses the exponential power of cloud and cognitive to provide hyper-personalized ($C = X2C^{2}_{TM} = 1$) digital experience to clients and their end customers. Mphasis' Service Transformation approach helps 'shrink the core' through the application of digital technologies across legacy environments within an enterprise, enabling businesses to stay ahead in a changing world. Mphasis' core reference architectures and tools, speed and innovation with domain expertise and specialization are key to building strong relationships with marquee clients. To know more, please visit www.mphasis.com