

**Birla Institute of Technology & Science, Pilani
Work-Integrated Learning Programmers Division
Second Semester 2018-2019**

BITS ZG628T: Dissertation Outline

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| STUDENT'S EMPLOYING ORGANIZATION & LOCATION | : Juniper Networks, Bangalore |
| SUPERVISOR'S NAME | : Arun G Menon |
| SUPERVISOR'S EMPLOYING ORGANIZATION & LOCATION | : Juniper Networks, Bangalore |
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| DISSERTATION TITLE | : Health Monitoring of VMs using Analytics |

Health Monitoring of VMs using Analytics

BITS ZG628T: Dissertation

By

Avijit Basu

(2017HT12184)

**Dissertation work carried out at
Juniper Networks, Bangalore**



**BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE
PILANI (RAJASTHAN)**

January 2019

Dissertation Details:

1. Proposed topic of Dissertation: Health Monitoring of VMs using Analytics

2. Broad Academic Area of Work: Virtualization, Analytics, Machine learning

3. **Background** (Relevance of the project):

Cloud and virtualizations are a growing trend for Juniper Networks. A lots of Juniper routers can be deployed and host on cloud environment viz vMX, vPTX.

Also lots of internal IT resources like build etc are being host in contrail VM.

Growth and expansion of virtualized platforms emphasis the health monitoring of these VM hosts and quick turn around with proactive corrections.

Analysis of health of VM/contrail involves understanding the correlation between various stats parameters like process profile, vm load, I/O operation stats.

Automation is the key for quick detection of anomalies and then quick turn around for corrective actions. Automation with static rules does not reap much benefit. The rules need to be made dynamic.

Monitoring software requires to be augmented with various statistical data mining tools and learning algorithms.

4. **Scope of work:**

Data collection from the VMs will be done using existing automation tools. This project does not intend to change any of that, unless some useful data require to be extracted.

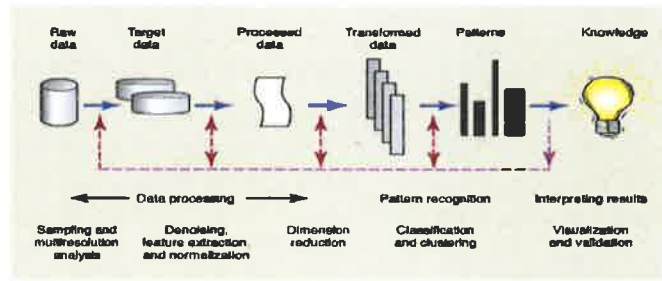
Scope of project is mining of useful information for collected data and use of learning algorithms to analysis of state of VMs.

For this project work one of appropriate algorithm will be chosen.

Corrective actions will be part of future extension work.



Overview of Role of Machine Learning



Work Flow of Logic for This Project

5. Objectives:

- Accuracy of analysis for Vm condition will be improved
- The analysis of stats will use efficient learning algorithms, instead of static rules. So any change in user profile will not need too much change to the automation scripts.
- This can be extended to monitor of any Juniper virtual router instances.

6. Plan of work:

| Date | Work Plan |
|------------------------|---|
| 11/01/2019- 01/02/2019 | Evaluation of the model for this software |
| 02/02/2019- 15/02/2019 | Design |
| 16/02/2019- 10/03/2019 | Implementation |
| 11/03/2019- 31/03/2019 | Testing, Final Report Submit |

7. References:

8. Particulars of the Supervisor and Additional Examiner:

- i. Supervisor: Arun G Menon, S/W Engineering Director, Juniper Networks
- ii. Additional Examiner: Ashish Kulshreshtha, S/W Engr Sr Mgr, Juniper Networks

9. Remarks of Supervisor:

Avijit Basu

Signature of Student

Name: AVIJIT BASU

Arun Menon

Signature of Supervisor

Name: Arun G. Menon

Ashish Kulshreshtha

Signature of Additional Examiner

Name: Ashish Kulshreshtha