

**CHRIST**(DEEMED TO BE UNIVERSITY)
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Notice for the PhD Viva-Voce Examination

Mr Vaheedbasha Shaik, Registration Number: 2072406, PhD Scholar at the Department of Computer Science and Engineering, School of Engineering and Technology, CHRIST (Deemed to be University), Bangalore will defend his PhD thesis at the public viva-voce examination on Saturday, 27 September 2025 at 09.30 am in the Conference Room, Block I, Bangalore Kengeri Campus, Bengaluru - 560074, Karnataka, India.

Title of the Thesis	:	Fortifying Conventional Data Centers with the Improved Performance to Adopt New Cloud Services
Discipline	:	Computer Science and Engineering
External Examiner - I	:	Dr Sanjeev Kumar Associate Professor and Associate Dean Department of CSE, ICFAI University Rajawala Road, Selaqui Central Hope Town Dehradun - 248197 Uttarakhand
External Examiner - II	:	Dr S Meenakshi Sundaram Professor and Head Department of CSE, NITTE Campus Nitte Meenakshi Institute of Technology BSF Campus, Yelahanka, Govindapura Bengaluru - 560064 Karnataka
Supervisor	:	Dr Natarajan K Associate Professor Department of Computer Science and Engineering School of Engineering and Technology Bangalore Kengeri Campus CHRIST (Deemed to be University) Bengaluru – 560074 Karnataka

The members of the Research Advisory Committee of the Scholar, the faculty members of the Department and the School, interested experts and research scholars of all the branches of research are cordially invited to attend this open viva-voce examination.

Registrar (Academics)**Place:** Bengaluru**Date:** 08 September 2025

ABSTRACT

Cloud provides computing resources on demand, such as computing power, database storage, a network, and applications, via the Internet. Several benefits can be derived from cloud computing, including cost savings, scalability, and agility. The existing methodologies show the presence of a vulnerability in the non-data file's privacy and security, which allows insiders to steal data. A cost-effective and reliable method of migrating highly transactional databases across continents is proving challenging. A lack of decision-making capabilities prevents the disaster recovery databases from proactively resolving lags. Cloud databases are experiencing vendor lock-in as dependencies increase. Therefore, consistent and cost-effective research is needed to address the improvement of existing methodologies. The proposed research identifies hidden areas with derived results and answers with sophisticated algorithms and methodologies. A new business model has been developed by combining conventional data centers with Cloud at Customer facilities to bring down cloud services to granular levels. The current research addresses data security, migrations of high transactional databases, and vendor lock-in cost-effectively. This research study aims to strengthen cloud computing design so that effective cloud services can be provided to suppliers. The results of the proposed NDE encryption method use only 1% of RAM, whereas the existing TDE used 90.46%, which was not desirable for highly transactional databases. Furthermore, the proposed Incremental Backup Management System operates effectively with a network speed range of 750 to 850 KiB/s lower than the 150 MB/s required by existing methods to create replicas in continents. The DDI methodology adds a decision-making capability to DR that automates synchronization, reducing manual effort and improving accuracy. The vendor lock-in resolution algorithm has been proposed to overcome lock-in issues in the database, saving 50% of license costs for end users. The various comparative analyses and performance evaluations of the proposed research work were carried out based on the latest research work done by the researchers in the respective areas, and it was found that the proposed research has shown better results.

Keywords: *TDE, Non-TDE, NDE, IBMS, DDI, Vendor Lock-in, DR, Out-of-Sync.*

Publications:

1. **Shaik, V.**, Natarajan, K., "Asynchronous Method of Oracle: A Cost-Effective and Reliable Model for Cloud Migration Using Incremental Backups", 2021 Springer Nature Data Science and Security. Lecture Notes in Networks and Systems, pp. 417-427, 2021, doi: https://doi.org/10.1007/978-981-16-4486-3_47.
2. Natarajan, K., and **Shaik, V.**, "Transparent Data Encryption: Comparative Analysis and Performance Evaluation of Oracle Databases", 2020 IEEE Fifth International Conference on Research in Computational Intelligence and Communication Networks (ICRCICN), pp. 137-142, 2020.
3. **Shaik, V.**, Natarajan, K., "Flexible and Cost-Effective Cryptographic Encryption Algorithm for Securing Unencrypted Database Files at Rest and in Transit", MethodsX, vol. 9, no. 101924, pp. 1-17, 2022.
4. **Shaik, V.**, Natarajan, K., "Assimilating sense into disaster recovery databases and judgement framing proceedings for the fastest recovery" International Journal of Electrical and Computer Engineering (IJECE), vol. 13, no. 4, pp. 4234-4245, 2023, doi: 10.11591/ijece.v13i4.pp4234-4245.
5. **Shaik, V.**, Natarajan, K., "A Compatible Hexadecimal Encryption-Booster Algorithm for Augmenting Security in the Advanced Encryption Standard", 2023 IEEE International Conference on Contemporary Computing and Communications (InC4), pp. 1-6, 2023, doi: 10.1109/InC457730.2023.10262922.
6. **Shaik, V.**, Natarajan, K., "Cloud databases: A resilient and robust framework to dissolve vendor lock-in ", Software Impacts, vol. 21, no. 100680, 2024, pp. 1-5, 2024, doi: 10.11591/ijece.v13i4.pp4234-4245.