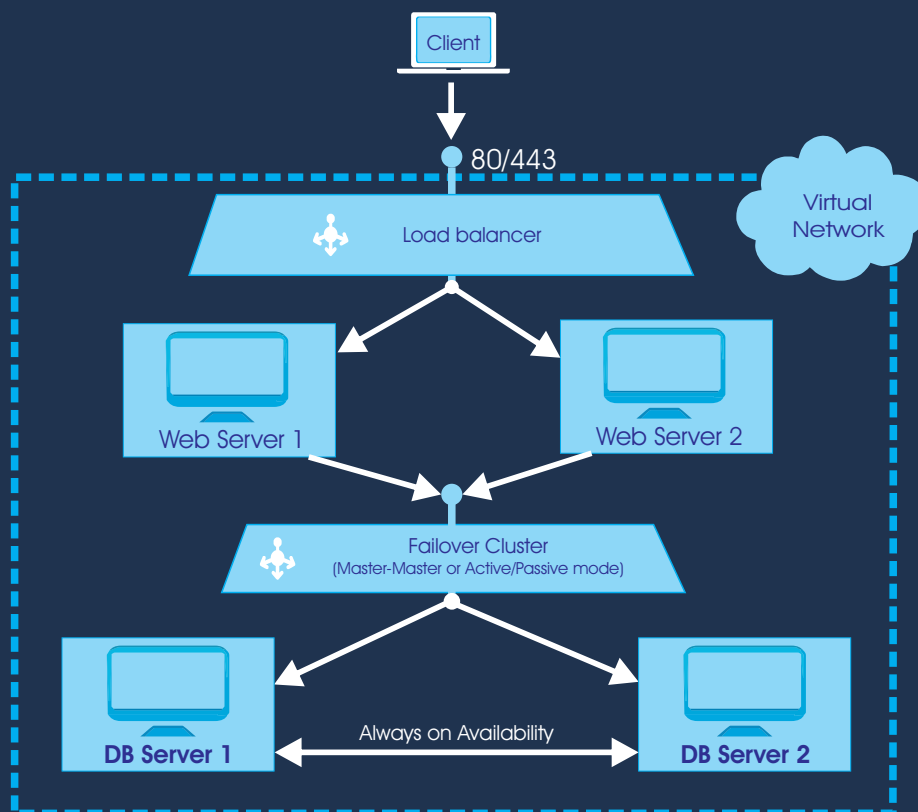




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Article

Ensuring High-Level System Availability of Computing Services

Yatrik Patel, Scientist D (CS) and Raja V, Scientist B (CS)

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From Director's Desk



The 2nd quarter of the year commenced with a positive note as the technical capabilities of the Centre were recognized by the MHRD and a project for development of website of SWAYAM-PRABHA and its hosting including archival videos for 32 channels was assigned to the INFLIBNET Centre. The SWAYAM-PRABHA is conceived as a group of 32 DTH channels completely devoted to telecasting of high-quality educational programmes on 24x7 basis using the (2) GSAT-15 transponders. Everyday new content for at least four hours would be telecasted which would be repeated 6 times in a day, allowing the students to choose his / her convenient time slot. The DTH Channels would cover education material for school education, higher education and curriculum-based courses that can meet the needs of life-long learners of students in India and abroad. The project provides for creation of requisite infrastructure for archiving of video contents for 32 channels and providing requisite support to BISAG for its live telecasting.

The INFLIBNET Centre has developed a Web-based platform in a record time of one week that provides for uploading of programme schedule, display of current, upcoming and archival videos, searching of e-content/videos using different kinds of filters such as - channel-wise and subject-wise search, using dashboard for MHRD and BISAG and admin view. The portal would also facilitate viewing of archival videos that have already been telecasted on 32 channels of SWAYAM-PRABHA.

During the quarter under report, three User Awareness Programme on Shodhganga and URKUND: a Plagiarism Detection Software was organized in Sri Padmavati Mahila Visvavidyalayam (Women's University), Tirupati, Periyar University, Salem (Tamil Nadu) and Central University of Kerala, Kasargod (Kerala).

The Centre continued its endeavour to train public library personnel under the National Mission on Libraries. Three Five-day National Workshop on Capacity Building Programme of National Mission on Libraries for Public Library Personnel were organized at INFLIBNET Centre, Gandhinagar, Anna University, Chennai (Tamil Nadu) and Pondicherry University, Puducherry (Tamil Nadu) during the period under report. Besides, four training programmes were organized on Creating and Managing Digital Libraries using E-Prints, Cloud Computing, Virtualization and Network Management and DSpace in various universities in India.

Training programmes were also organized for Paper Coordinators and Reviewers in the subject Library and Information Science under e-PG Pathshala during July 2016. A lecture on "Library Networking Organizations and the Emerging Priorities" by Prof. Madhan Muthu, IISc, Bangalore was organized at the INFLIBNET Centre.

The 7th Higher Education Forum, earlier known as UGC-Infonet University Forum was organized in collaboration with Elsevier Science in New Delhi on 14th September, 2016. The agenda for 2016 Higher Education Forum was built around the objective of “Leading the way in Institutional Ranking”. More than 80 participants from universities and Centrally-funded Technical Institutions (CFTIs) participated in the programme.

This issue of the Newsletter features an article entitled “Ensuring High Level System availability of Computing Services” by Mr. Yatrik Patel, Scientist D (CS) and Mr. Raja V, Scientist B (CS). DRUPAL Content Management System is discussed in this issue of newsletter in Open source Software for LIS column.

I am sure you would enjoy going through this article.



(Jagdish Arora)

Training Programme on SOUL 2.0, INFLIBNET Centre, Gandhinagar

The INFLIBNET Centre regularly conducts SOUL 2.0 Training Programmes to impart Training on Installation and Operation of SOUL Software for its users. The following two training programmes were organized at the INFLIBNET Centre, Gandhinagar during this quarter.

These programmes were coordinated by Mr. H G Hosamani, Scientist C (LS), INFLIBNET Centre. 42 participants attended these two training programmes as per the details given below:

Sl. No.	Name of the Programme	Date of the Programme	No. of Participants
1	127 th Training Programme on SOUL 2.0	1 st - 6 th August, 2016	25
2	128 th Training Programme on SOUL 2.0	26 th September - 01 st October 2016	17



Participants of 127th Training Programme on SOUL 2.0 with the Director and Technical Staff of the INFLIBNET Centre



Participants of 128th Training Programme on SOUL 2.0 with the Director and Technical Staff of the INFLIBNET Centre

User Awareness Programme on Shodhganga and URKUND: A Plagiarism Detection Tool

One-day User Awareness Programme on Shodhganga and URKUND: A Plagiarism Detection Tool, Sri Padmavati Mahila Visvavidyalayam (Women's University), Tirupati, 8th August, 2016

One-day User Awareness Programme on Shodhganga and URKUND: A Plagiarism Detection Tool was organized by Sri Padmavati Mahila Visvavidyalayam (Women's University), Tirupati in collaboration with INFLIBNET Centre, Gandhinagar on 8th August 2016 at Saaveri Seminar Hall, SPMVV, Tirupati. Dr. D. Prabhavathi, University Librarian coordinated the programme and welcomed the guests and participants. Prof. V. Durga Bhavani, Hon'ble Vice-Chancellor inaugurated the programme with lighting of traditional lamp along with Prof. P. Vijayalakshmi, Registrar, Dr. D. Prabhavathi, University Librarian and Mr. Manoj Kumar K, Scientist D (CS), INFLIBNET Centre. In her inaugural address, she stressed upon improvement of quality of research, how the research has become challenging in the current scenario and how important it is to use the plagiarism checkers for Ph.D. theses as well as for research papers/articles. Prof. P. Vijayalakshmi opined that such types of awareness-cum-demonstration not only guide the research community in right direction but also help in improving quality of research ultimately benefiting the society. Mr. Manoj Kumar spoke about the importance of Shodhganga, utilization of plagiarism detection software and participation of Indian Universities in Shodhganga. 150 participants including faculty members and research scholars from various departments of University attended the programme. Prof. S. Jyothi, Department of Computer Science and Dr. D. Prabhavathi, University Librarian extended a warm vote of thanks to INFLIBNET Centre, University authorities and all the participants.

One-day User Awareness Programme on Shodhganga and URKUND: A Plagiarism Detection Tool, Periyar University, Salem, 9th August, 2016

One-day User Awareness Programme on Shodhganga and URKUND: A Plagiarism Detection Tool was organized by Central University of Kerala in collaboration with the INFLIBNET Centre, Gandhinagar One-day User Awareness Programme on Shodhganga



Mr. Manoj Kumar K., Scientist D (CS), INFLIBNET Centre, Dr. Swaminathan, Hon'ble Vice-Chancellor, Dr. M. Manivannan, Registrar, Dr. S Leela, Controller of Examination and Dr. N. Subramanian, University Librarian, Periyar University during User Awareness programme on Shodhganga and URKUND at Periyar University, Salem

and URKUND: A Plagiarism Detection Tool was organized by Periyar University, Salem in collaboration with INFLIBNET Centre, Gandhinagar on 9th August 2016 at Periyar University, Salem. Prof Dr. M. Manivannan, Registrar welcomed guests and participants. Dr. Swaminathan, Hon'ble Vice-Chancellor inaugurated the programme in presence of Dr. M. Manivannan, Registrar, Dr. S Leela, Controller of Examination, Dr. N. Subramanian, University Librarian and Mr. Manoj Kumar K., Scientist D (CS), INFLIBNET Centre. In his inaugural address, he stated that Periyar

University is one of the prominent member of INFLIBNET Centre and contributed all theses into Shodhganga and established ETD Lab in the University Library and now the university is going to implement the URKUND software for plagiarism detection. Mr. Manoj Kumar delivered keynote address. During the technical session, he also made a presentation and live demonstration on URKUND: Plagiarism Detection Software. He discussed various features of the software and its importance and benefits to the academic community especially for the research supervisors to improve the quality of research work. More than 350 participants including faculty members and research scholars from various departments of University attended the programme. Dr. N. Subramanian, University Librarian coordinated the programme and extended a warm vote of thanks at the end of the programme.

One-day User Awareness Programme on Shodhganga and URKUND: A Plagiarism Detection Tool, Central University of Kerala, Kasaragod, 12th August, 2016

One-day User Awareness Programme on Shodhganga and URKUND: A Plagiarism Detection Tool was

organized by Central University of Kerala in collaboration with the INFLIBNET Centre, Gandhinagar on 12th August 2016 at Central University Auditorium, Central University of Kerala, Kasaragod. Dr. P. Senthilkumaran, Deputy Librarian welcomed the guests and participants, he spoke about the importance and purpose of this User Awareness Programme. Prof. (Dr.) G. Gopa Kumar, Vice Chancellor inaugurated the programme. In his inaugural address, he appreciated the initiatives taken by the library for organizing such kind of workshops jointly in collaboration with INFLIBNET Centre for the faculty members, research scholars, students and library professionals. He also emphasized the need of such programmes in the present changing scenario of digital era. He said that anti-plagiarism facility would raise the standard of research of the university. He added that anti-plagiarism monitoring could be extended to PG courses in future. Prof. (Dr.) K. P. Suresh, Registrar, appreciated the library team for organizing user awareness programme on shodhganga and anti-plagiarism software.



Manoj Kumar, K, Scientist D (CS), INFLIBNET Centre, delivered a lecture During User Awareness programme on Shodhganga and URKUND at Central University of Kerala, Kasaragod

Mr. Manoj Kumar K, Scientist D (CS), INFLIBNET Centre, made a detailed presentation on Shodhganga, Shodhgangotri and URKUND: a plagiarism detection tool. He demonstrated the process of uploading theses into Shodhganga and checking chapters of the thesis for plagiarism using URKUND. He pointed out Shodhgangotri host synopses or approved research proposals submitted to the universities in India by

research scholars for registering themselves for the Ph.D programme. He also presented statistical data on Shodhganga and requested the University to upload their thesis into Shodhganga. Dr. Shivarama Rao, K., Assistant Librarian, CUK concluded the session and extended a warm vote of thanks at the end of the programme. 120 participants took part in the

Specialized Training Programmes and National Workshops

8th Five-day National Workshop on Capacity Building Programme of National Mission on Libraries for Public Library Personnel, INFLIBNET Centre, Gandhinagar, 25th-29th July, 2016



Participants of 8th National Workshop on Capacity Building Programme of National Mission on Libraries for Public Library Personnel with the Director and Technical Staff of INFLIBNET Centre

8th Five-day National Workshop on Capacity Building Programme of National Mission on Libraries for Public Library Personnel was organized at INFLIBNET Centre, Gandhinagar from 25th to 29th July, 2016. Mr. H G Hosamani, Scientist C (LS), Mr. Kannan P, Scientist C (LS) and Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre coordinated the programme. Mr.

Manoj Kumar K, Scientist D (CS) inaugurated the programme. 30 participants attended the programme. The National Workshop covered theoretical and practical sessions on the following topics related to Capacity Building Programme:

Topics	Name of Expert and Institution
National Mission on Libraries : An Overview	Mr. Kannan P, Scientist C (LS), INFLIBNET Centre
Open Source Tools for Libraries	Mr. Abhishek Kumar, Scientist C (CS), INFLIBNET Centre
Library Automation: Overview	Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre
Library Automation : Acquisition-Koha	Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre
Emerging Trends for Libraries in Context of Public Libraries	Dr. K B Agadi, Assistant Librarian, Central University Gujarat, Gandhinagar
Understanding Modern Library Standards MARC and Dublin Core	Mr. Dinesh Pradhan, Scientist B (LS), INFLIBNET Centre
Library Automation : Cataloguing and OPAC-Koha	Mr. H G Hosamani, Scientist C (LS), INFLIBNET Centre
Changing Roles of Public Libraries	Dr. Nimesh Oza, Head, DLISC, S P University
Community Based Information Services	Dr. Nimesh Oza, Head, DLISC, S P University
Library Automation : Koha- Circulation	Mr. H G Hosamani, Scientist C (LS), INFLIBNET Centre
Multilingual Information Representation through Unicode for Indic scripts	Mr. Yatrik Patel, Scientist D (CS), INFLIBNET Centre
Introduction to e- Resources and Discovery Tools in public Library Context	Mr. Ashok Kumar Rai, Scientist D (CS), INFLIBNET Centre
Standards and Formats for Digitization	Mr. Manoj Kumar K, Scientist D (CS), INFLIBNET Centre
Effective Communication Skill	Dr. Lalitha Poluru, Librarian, Institute of Pharmacy, Nirma University
Digitization Process and Hands On Practice	Mr. Manoj Kumar K, Scientist D (CS), INFLIBNET Centre
Library Services for Specially-abled persons	Dr. Muttayya Koganuramath, Professor & Head, Central University Gujarat, Gandhinagar
Use of Social Media and other Web 2.0 Tools for Libraries	Ms. Kruti Trivedi, Scientist B (LS), INFLIBNET Centre

9th Five-day National Workshop on Capacity Building Programme of National Mission on Libraries for Public Library Personnel, Anna University, Chennai, 8th-12th August, 2016



Participants of 9th National Workshop on Capacity Building Programme of National Mission on Libraries for Public Library Personnel at Anna University, Chennai

9th Five-day National Workshop on Capacity Building Programme of National Mission on Libraries for Public Library Personnel was organized by Anna University, Chennai in collaboration with INFLIBNET Centre, Gandhinagar at Anna University, Chennai, from 8th to 12th August, 2016. Mr. H G Hosamani, Scientist C (LS), Mr. Kannan P, Scientist C (LS) and Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre coordinated the programme. Dr. S. Ganesan, Registrar, Anna

University inaugurated the Workshop. 32 participants attended the programme. Mr. Miteshkumar Pandya, Scientist B (LS) extended a warm vote of thanks at the end of the programme. The National Workshop covered theoretical and practical sessions on the following topics related to Capacity Building Programme:

Topics	Name of Expert and Institution
Integrated Library Management System: Anna University	Dr. G. Krishnamoorthy, Director, Anna University Library
National Mission on Libraries: An overview	Mr. H G Hosamani, Scientist C (LS) and Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre
Library Automation: Overview and Open Source Tools for Libraries	Dr. G. Rathinasabapathy, Librarian, Tamil Nadu Veterinary & Animal Science University, Chennai
Library Automation : Acquisition-Koha	Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre
Emerging Trends for Libraries in Context of Public Libraries	Dr. S. Gopalakrishnan, Former Librarian, Anna University
Understanding Modern Library Standards MARC and Dublin Core	Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre
Library Automation: Cataloguing and OPAC-Koha	Mr. H G Hosamani, Scientist C (LS), INFLIBNET Centre
Library Automation: Koha- Circulation	Mr. H G Hosamani, Scientist C (LS), INFLIBNET Centre
Introduction to e- Resources and Discovery Tools in public Library Context	Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre
Changing Roles of Public Libraries	Dr. Kamatchi S, Library and Information Officer, Anna Centenary Library
Community Based Information Services	Dr. K. Nityanandam, University Library, Anna University
Multilingual Information Representation through Unicode for Indic scripts	Prof. Kannan, Dept of Information Science and Technology, Anna University
Library Services for Specially abled persons	Dr. V. Chandrakumar, Associate Professor, DLISc, University of Madras
Digitization Process and Hands On Practice	Dr. N. Geetha, Assistant University Librarian, Anna University, Chennai
Standards and Formats for Digitization	Dr. G. Krishnamoorthy, Director, Anna University Library
Use of Social Media and other Web 2.0 Tools for Libraries	Dr. A Bhagvathy, Librarian, Tamil Nadu Dr. Ambedkar Law University, Chennai
Effective Communication Skills	Prof. B Ramesh Babu, Retd. Professor, DLISc, University of Madras

Three-day National Workshop on Creating and Managing Digital Libraries using E-Prints, INFLIBNET Centre, Gandhinagar, 10th -12th August, 2016

Three-day National Workshop on Creating and Managing Digital Libraries using E-Prints was organized at INFLIBNET Centre, Gandhinagar from 10th to 12th August, 2016. Mr. Raja V., Scientist B (CS) and Mrs.

Vaishali Shah, Scientist B (LS), INFLIBNET Centre coordinated the Workshop. Dr. Jagdish Arora, Director, INFLIBNET Centre inaugurated the Workshop. Mr. Raja, V briefed about Workshop and Mrs. Vaishali Shah extended a warm vote of thanks. 10 participants attended the Workshop. The National Workshop covered theoretical and practical sessions on the following topics related to E-Prints:

Topics	Name of Expert and Institution
INFLIBNET Activities and Services	Mr. Abhishek Kumar, Scientist C (CS), INFLIBNET Centre
Institutional Repositories: a Primer	Mr. Yatrik Patel, Scientist D (CS), INFLIBNET Centre
Metadata Standards and Institutional Repositories	Mrs. Vaishali Shah, Scientist B (LS), INFLIBNET Centre
Introduction to Linux and Understanding File System Layout, Creation Of User and Group, and Basic Commands	Mr. Divyakant Vaghela, Scientist B (CS), INFLIBNET Centre
Understanding E-Prints (Features, Statistics, Bazaar, Altmetrics, etc.)	Mr. Madhan M, IISc, Bangalore
Hands-On Session : Creation of IR using E-Prints and Installation	Mr. Raja V, Scientist B (CS), INFLIBNET Centre
Hands-On session : E-Prints Administration	Mr. Hitesh Solanki, Scientist B (CS), INFLIBNET Centre
Hands-On session : E-Prints Submission	Mrs. Vaishali Shah, Scientist B (LS), INFLIBNET Centre
Hands-On session : Advanced configuration	Mr. Raja V Scientist B (CS), INFLIBNET Centre and Mr. Madhan M, IISc, Bangalore
Hands-On Session : Maintenance, Backup and Restore	Mr. Swapnil Patel, Scientist-B (CS), INFLIBNET Centre



Participants of the National Workshop on Creating and Managing Digital Libraries using E-Prints at INFLIBNET Centre, Gandhinagar

10th Five-day National Workshop on Capacity Building Programme of National Mission on Libraries for Public Library Personnel, Pondicherry University, Pondicherry, 29th August- 2nd September, 2016

10th Five-day National Workshop on Capacity Building Programme of National Mission on Libraries for Public Library Personnel was organized by Pondicherry University, Pondicherry in collaboration with INFLIBNET Centre, Gandhinagar at Pondicherry University, Pondicherry, from 29th August to 2nd September, 2016. Mr. H G Hosamani, Scientist C (LS),

Mr. Kannan P, Scientist C (LS) and Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre coordinated the programme. Dr. R. Samyuktha, University Librarian, Pondicherry University welcomed the guests and participants. Dr. Jagdish Arora, Director, INFLIBNET Centre inaugurated the Workshop. 34 participants attended the programme. Mr. Z. Olirvel, Computer Information Scientist, Pondicherry University extended a warm vote of thanks at the end of the programme. The National Workshop covered theoretical and practical sessions on the following topics related to Capacity Building Programme:

Topics	Name of Expert and Institution
Integrated Library Management System: Ananda Rangapillai Library, Pondicherry University	Dr. R. Samyuktha, University Librarian, Pondicherry University
National Mission on Libraries: An overview	Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre
Library Automation: Overview and Open Source Tools for Libraries	Mr. Z. Olirvel, Computer Information Scientist, Pondicherry University
Library Automation : Acquisition-Koha	Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre
Emerging Trends for Libraries in Context of Public Libraries	Dr. Jagdish Arora, Director, INFLIBNET Centre
Understanding Modern Library Standards MARC and Dublin Core	Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre
Library Automation : Cataloguing and OPAC-Koha	Ms. Kruti Trivedi, Scientist B (LS), INFLIBNET Centre
Library Automation: Koha- Circulation	Mr. Miteshkumar Pandya, Scientist B (LS), INFLIBNET Centre
Introduction to e- Resources and Discovery Tools in public Library Context	Ms. Kruti Trivedi, Scientist B (LS), INFLIBNET Centre
Changing Roles of Public Libraries	Dr. R. Samyuktha, University Librarian, Pondicherry University
Community Based Information Services	Dr. U Nagalingam, Dy. Librarian, Pondicherry University
Multilingual Information Representation through Unicode for Indic scripts	Dr. V. Prasanna Venkatesan, Head, Dept. of Banking Technology, Pondicherry University
Library Services for Specially-abled Persons	Mr. K. M. Shibu, Assistant Librarian, Pondicherry University
Digitization Process and Hands On Practice	Dr. P. Vijayakumar, Assistant Librarian, Pondicherry University
Standards and Formats for Digitization	Dr. R. Sevukan, Head, DLISc, Pondicherry University
Use of Social Media and other Web 2.0 Tools for Libraries	Dr. Fazlunnisa. H, Assistant Professor, DLISc, University of Madras
Effective Communication Skills	Ms. Ranjani Karthekeyan, Ex Sr. Manager, Accenture India

Five-day National Workshop on Cloud Computing, Virtualization and Network Management, INFLIBNET Centre, Gandhinagar, 29th August- 2nd September, 2016

The INFLIBNET Centre organized three-day National Workshop on Cloud Computing, Virtualization and Network Management from 29th August to 2nd September, 2016. Mr. Manoj Kumar K, Scientist D (CS) and Mr. Gaurav Prakash, Scientist B (CS) coordinated

the Workshop. The purpose of the Workshop was to impart a better understanding of the network architecture, design, management, concept of virtualization, its benefits and uses, concept of cloud computing and its applications. It also provided a platform to gain “hands-on” experience on cloud computing and network management. Mr. Gaurav Prakash, Scientist B (CS) from INFLIBNET Centre served as resource person for the Workshop. 4 participants took part in the Workshop.

Three-day National Workshop-Cum-Training Programme on DSpace, Mizoram University, Mizoram, 6th-8th September, 2016



Participants of the National Workshop-Cum-Training Programme on DSpace at Mizoram University, Mizoram

Three-day National Workshop-Cum-Training Programme on Dspace organized by Mizoram University, Aizawl in collaboration with INFLIBNET Centre, Gandhinagar from 6th to 8th September, 2016 at Mizoram University, Aizawl. Prof. R. N. Mishra, Head, DLIS welcomed the guest and participants. Prof. R. Lalthantluanga, Vice-Chancellor inaugurated the programme in presence of Prof. Pravakar Rath, Dean, School of Economics, Management and Information Science, Prof. R. N. Mishra, Head, Prof. R. K. Ngurtinkhuma, & Dr. Manoj Kumar Verma, Assistant Professor, DLIS, Mizoram University and Mr. Swapnil Patel, Scientist B (CS), INFLIBNET Centre. In his

inaugural address, he stressed upon the organization of more training programme to make LIS professionals more advanced and capable. He also mentioned the major initiatives taken by the University for Academic Development and congratulated to the department for organization of such training programmes regularly. Prof. R. K. Ngurtinkhuma highlighted the initiatives taken by the Department for library professionals' development in the North-East Region as well as for country. Prof. Pravakar Rath pointed out the significance of digitization, digital library software and use of digital media in the LIS profession to serve user community in a better way. Mr. Swapnil Patel briefed about Dspace and

its use, benefits and usage of the software by various stakeholders. He also shared role of INFLIBNET Centre in the training and development of Institutional Repository using Dspace in India. Dr. Manoj Kumar Verma, Coordinator of the Workshop extended a warm vote of thanks at the end of the inaugural session. 35

participants attended the programme. Dr. Vinit Kumar, Assistant Professor, Dr. Ranganathan Institute of Library & Information Science, Bundelkhand University, Mr. Swapnil P Patel, Scientist B (CS) and Mr. Vijay Shrimali, STA (CS), INFLIBNET Centre were resource persons for theoretical and practical sessions.

Three-day National Workshop-Cum-Training Programme on DSpace, Gauhati University, Guwahati, 27th-29th September, 2016



Participants of the National Workshop-Cum-Training Programme on DSpace at Gauhati University, Guwahati

On the occasion of Golden Jubilee of DLIS, Gauhati University, three-day National Workshop-Cum-Training Programme on Dspace was organized by Department of Library and Information Science, Gauhati University, Guwahati in collaboration with INFLIBNET Centre, Gandhinagar from 27th to 29th September 2016 at Gauhati University, Guwahati. Prof. Sanjay Kumar Singh, Lecturer, DLIS and Coordinator of the programme, welcomed the guests and participants. Prof Hari Prasad Sarma, Rector, Gauhati University inaugurated the programme. In his inaugural speech, he complemented everyone in the Department for completion of 50 years of its existence in September 2016. Dr. Suresh Kumar Nath, Registrar discussed the use of library and activities of the INFLIBNET Centre. Prof. P.J Das, Director (I/c) of IDOL also discussed about the achievements of the departments during the last fifty

years. He mentioned that presently the department has a strong and dedicated team of teachers who can shoulder any responsibility assigned to them. Prof R K Barman, DLIS recalled how department has strived through the different limitation of infrastructure facilities in the past. Prof Narendra Lahkar spoke various issues and challenges the department had faced during the last 50 years. He requested the INFLIBNET Centre to set up a well-equipped computer lab for conducting such type of training programmes and workshop in Gauhati University to facilitate the services to the library professionals of the region. Dr Tilak Hazarika, DLIS extended a warm vote of thanks to all the dignitaries and the participants. Mr. Swapnil Patel & Mr. Hitesh Solanki, Scientists B (CS) and Mr. Vijay Shrimali, STA (CS), INFLIBNET Centre were resource persons for theoretical and practical sessions. 33 participants attended the programme.

E-Content Development / Meeting / Workshop under e-PG Pathshala

Meeting of Paper Coordinators and Reviewers under the subject Library and Information Science during 12-18th July, 2016, INFLIBNET Centre, Gandhinagar

The Information and Library Network Centre (INFLIBNET), Gandhinagar organized meeting of Reviewers and Paper Coordinators to review the modules and video recording of MOOCs Course of the papers under the subject Library and Information Science. The Director, INFLIBNET Centre briefed about the activities to be carried out by the reviewers and paper coordinators to convert the ePG Pathshala e-Content into MOOCs courses. E-text and self-assessment of seven papers reviewed by Prof. RSR Vara Lakshmi, Rtd Professor, Andhra University, Vishakhapatnam and Prof.

Sewa Singh, Ret. Professor, Guru Nanak Dev University, Amritsar. Prof K S Raghavan, Ret. Professor, DRTC and Paper Coordinator, Knowledge Society, Prof. Dinesh Gupta, Director (Research), Vardhaman Mahaveer Open University and Paper Coordinator, Management of Library and Information and Knowledge Centre and Prof. Devika P Madalli, Professor, DRTC and Paper Coordinator, Information Storage and Retrieval attended the meeting and incorporated the changes suggested by the reviewer in the respective paper. The video recording held at Bhaskaracharya Institute for Space Applications and Geo-Informatics and respective paper coordinators delivered the course introduction and weekly introduction lecture and recorded for the purpose of MOOCs.

Lecture on "Library Networking Organizations and the Emerging Priorities", INFLIBNET Centre, Gandhinagar, 12th August, 2016

The INFLIBNET Centre organized a lecture on " Library Networking Organizations and the Emerging Priorities" by Prof. Madhan Muthu, IISc, Bangalore at Training Lab-II, INFLIBNET Centre on 12th August, 2016. 55

participants including Scientists and Staff of INFLIBNET Centre and other universities of Gandhinagar and Ahmedabad attended the lecture. Mrs. Hema Cholin, STO (LS) coordinated the programme.

The 2016 Higher Education Forum, New Delhi, 14th September, 2016

The 2016 Higher Education Forum, earlier known as the UGC-Infonet University Forum, was organized by the INFLIBNET Centre in collaboration with the Elsevier Science at Radisson Blu Plaza Hotel, New Delhi on 14th

September 2016. This year, the formation of e-Shodh Sindhu Consortium has broadened the spectrum of this forum to include top universities, engineering and management institutes. The agenda of the 2016 Higher

Education Forum was built around the objective of “Leading the way in institutional ranking”. The forum commenced with the guest address from Dr. Jagdish Arora, Director INFLIBNET Centre. Dr. Arora highlighted the significance of this platform for getting together such a distinguished audience to discuss the important concerns of the day and the role of eSS in NIRF ranking analysis. He emphasized on the role of librarians in projecting their respective universities/institutes towards the road to excellence.

Mr. Lim Kok Keng, Managing Director, Asia Pacific, Elsevier shared his views on how Elsevier is working with the universities globally to support research, education & internationalization through various tools & services. Dr. Youngsuk “YS” Chi, Chairman, Elsevier shared his exciting view on institutional benchmarking simplified through example of Ms. Dipa Karmakar, who was ranked 4th in Gymnastics in 2016 Olympics. He mentioned that the example of Dipa Karmakar conveys that not only the top ranking colleges that are benefitted by the ranking but also it helps in setting goals for the others and creating the roadmap for the future. Dr. Chi mentioned that by 2025 India would be having the largest population of university going students, it would be best to start working towards providing a great base for them and Elsevier is committed to provide the best technological support for the same.

Dr. Prafulla Agnihotri, Director, IIM, Tiruchirappalli highlighted the significance of branding and how we can utilize the nuances to channelize our higher education rankings towards providing Indian alternatives to international education centres. Dr Charon Duermeijer, Senior Director, Academic Customer Engagement, Elsevier shared her views on the significance of rankings in the global scenario and how different countries are promoting internationalization of research through their policies to foster growth in the ranking lists.

Dr. Chuin Peng Sim, Senior Associate and University Librarian, NUS Library, Singapore presented the concept of embedded librarianship which NUS is successfully using towards providing better resources to

its researchers. Prof. W.N. Gade, Vice Chancellor, University of Pune made presentation on “strategies to improve institutional ranking. He raised some important concerns on the standardization of rankings and how the higher education centres should strive towards providing better human resources for tomorrow and thus bring about a social transformation in the country. Ms. Kylie Chiew, Regional Solution Sales Director- APAC, Research Management shared her insights on Indian research scenario using the SciVal tool. Dr. T. J. Dhilip Kumar, Associate Dean, In-charge of Institutional Ranking, IIT Ropar shared detailed information on NIRF and how IIT-Ropar, a relatively newer entrant to IIT group walked that path.

Dr. R.C Gaur, University Librarian, JNU shared his thoughts on role of academic libraries in institutional ranking. He brought a fresh perspective to the changing needs and roles of librarians with the advent of e-resources. He aptly showed that publishing output is directly linked to the usage pattern of an institute. Mr. Vinod Kaw, Regional Sales Manager South Asia, Elsevier shared with the audience how Elsevier has played a key role in the eSS landscape and provided the necessary tools in its drive towards excellence.

Prof. Valli Kumari, Department of Computer Science, Andhra University made a presentation on the impact of rankings and metrics on higher education centres and demonstrated how Scopus has helped members from her University assess their situation, plan, track their progress and measure their performance. Prof. S. Raisuddin, Director of Internal Quality Assurance Cell, Jamia Hamdard Pharmacy College shared his views on strategic planning and experience of his university for institution rankings. He opined that “research is universal and is for serving the community”, and therefore there is a need for responsible benchmarking.

SWAYAM-PRABHA

The INFLIBNET Centre was assigned the task of developing website of SWAYAM-PRABHA and its hosting including achieving of videos of all the channel. The platform provides for uploading of programme schedule by the channel coordinators, display of programme schedule (current, upcoming and archives), searching of e-content/videos using different kinds of filters such as channel-wise search and subject-wise search; and dashboard for MHRD, BISAG and admin view. The portal would also provide for playing of archival videos that have already been telecasted on the channels.

The SWAYAM-PRABHA, an MHRD project under NME-ICT, is conceived as a group of 32 DTH channels completely devoted to telecasting of high-quality educational programmes on 24X7 basis using the (2)GSAT-15 transponders. New content for at least four hours would be telecasted that would be repeated 6 times in a day, allowing the student to choose the time of

his convenience. Swayam-Prabha would cover the the following:

- a) Higher Education: Curriculum-based course contents at post-graduate and under-graduate level covering diverse disciplines such as arts, science, commerce, performing arts, social sciences and humanities, engineering, technology, law, medicine, agriculture, etc. All courses would be certification-ready in their detailed offering through SWAYAM, the platform being developed for offering MOOCs courses.
- b) School education (9-12 levels): modules for teacher's training as well as teaching and learning aids for children of India to help them understand the subjects better and also help them in preparing for competitive examinations for admissions to professional degree programmes.
- c) Curriculum-based courses that can meet the needs of life-long learners of citizens in India and abroad.

➤ Channels Details

Channel No.	Channel Name	Channel Route/Parent
Channels 01-10 are Managed by CEC, New Delhi		
1	Channel 01: CEC/UGC: Humanities- 1, Language and Literature	EMRC, EFLU, Hyderabad
2	Channel 02: CEC/UGC: Humanities- 2, Arts, History, Philosophy and related Subjects	CEC, New Delhi
3	Channel 03: CEC/UGC: Social Science -1, Sociology, Political Science and related subjects	CEC, New Delhi
4	Channel 04: CEC/UGC: Social Science - 2, Education, Psychology, Home Science and related subjects	CEC, New Delhi
5	Channel 05: CEC/UGC: Social Science - 3, Management, Library Science, Information Science and related subjects	EMRC / MCRC, Jamia Millia Islamia, New Delhi
6	Channel 06: CEC/UGC: Social Science - 4, Law, Legal Studies, Human Rights and related subjects	EMRC, Punjabi University, Patiala
7	Channel 07: CEC/UGC: Economics, Commerce and Finance	EMRC, Gujarat University, Ahmedabad
8	Channel 08: CEC/UGC: Physical sciences, Mathematics, Physics, Chemistry and related Subjects	EMRC, University of Calicut
9	Channel 09: CEC/UGC: Life Sciences, Botany, Zoology, Bio-Science and related subjects	EMRC, Kashmir University, Srinagar
10	Channel 10: CEC/UGC: Applied Sciences, Allied Physical and Chemical sciences and related subjects	EMRC, Anna University, Chennai

Channel No.	Channel Name	Channel Route/Parent
Channels 11 to 18 are Managed by NPTEL		
11	Channel 11: NPTEL: Chemical Engineering, Chemistry and related Subjects	IIT Kharagpur
12	Channel 12: NPTEL: Civil Engineering and related subjects	IIT Delhi
13	Channel 13: NPTEL: Computer Science and Engineering	IIT Kharagpur
14	Channel 14: NPTEL: Electrical engineering, Electronics and Communication Engineering and related subjects	IIT Delhi
15	Channel 15: NPTEL: Engineering Sciences and general subjects for engineering	IIT Madras
16	Channel 16: NPTEL: Humanities, Social Sciences and Management	IIT Kanpur
17	Channel 17: NPTEL: Mechanical Engineering and related subjects	IIT Kanpur
18	Channel 18: NPTEL: Mathematics, Physics, Metallurgy and related subjects	IIT Tirupati / IIT Madras
Channels 19 -22 are managed for high School students by IIT Delhi and is called IIT PAL		
19	Channel 19: IIT PAL: Biology	IIT PAL 1 IIT Delhi
20	Channel 20: IIT PAL: Chemistry	IIT PAL 2, IIT Delhi
21	Channel 21: IIT PAL: Mathematics	IIT PAL 3. IIT Delhi
22	Channel 22: IIT PAL: Physics	IIT PAL 4, IIT Delhi
Channels 23 to 26 are managed by IGNOU New Delhi		
23	Channel 23: IGNOU: Liberal Arts and Humanities	IGNOU, New Delhi
24	Channel 24: IGNOU: Agriculture, Vocational and Allied Sciences	IGNOU, New Delhi
25	Channel 25: IGNOU: Culture	IGNOU, New Delhi
26	Channel 26: IGNOU: State Open Universities' programs	IGNOU, New Delhi
Channels 27 and 28 are managed by the NIOS, New Delhi		
27	Channel 27: NIOS: Secondary School Education	NIOS, New Delhi
28	Channel 28: NIOS: Higher Secondary School Education	NIOS, New Delhi
Channels 29 and 30 are managed QEEE, IIT Madras		
29	Channel 29: QEEE: QEEE 1 (Live classes in Engineering and Technology)	IIT Madras
30	Channel 30: QEEE: QEEE 2 (Live Classes in Engineering and Technology)	IIT Madras
Channel 31 is managed by NCERT		
31	Channel 31: NCERT: School and Teacher Education	NCERT, New Delhi
Channel 32 is managed by IGNOU and NIOS jointly		
32	Channel 32: IGNOU and NIOS: Teacher Education	IGNOU and NIOS, New Delhi

Independence Day

The INFLIBNET Centre celebrated 70th Independence Day on Monday, 15th August 2016. The National Flag was hoisted by Dr. Jagdish Arora, Director, INFLIBNET Centre. Dr. Arora addressed the staff members and their

families regarding the activities of the Centre. A number of games organized for staff and their children during the event and prizes were distributed to the winners of the games.



70th Independence Day

Drupal: An Open Source Content Management System

Content Management System allows user to create and edit web content without knowing web scripting language and backend database. It support feature called “What You See is What You Get” (WYSIWYG), which means that the content which is displayed in the editor would have the same look and feel for the end-users interface. In most content management system WYSIWYG editor is available, which allows user to manage their content without having programming expertise.

Drupal is an open source software which is one of the most advanced content management systems. It is distributed under the terms of the GNU General Public License (GPL). It could be easily managed by the person with low technical background. A person having basic knowledge of HTML and CSS can also work efficiently on Drupal CMS. It is being used to create a professional portal/website with good look and feel without having operating knowledge of computer compared to other

CMS platforms. Every CMS has its own terminology to describe various functions knitted in a specific sequence.

It can easily be one of the best choices for creating integrated digital frameworks required for showcasing the libraries activities. One can extend it with different add-ons or modules which are available free of cost. It has the ability to change the theme based on the user's requirement. This will enable website creator to enhance the presentation of the website. Drupal distributions are bundles, one can use as kit for starting the developments and various components can be used to enhance Drupal's core abilities. It is also powerful, scalable and sophisticated CMS (Content Management System) for building and managing template based websites/portals. The web based and menu-driven interface allows users to create contents without any boundaries. Drupal allows user to create content in the form of articles and that can be assigned with a menus.

Drupal also has various modules which can be integrated with the core setup.

Users can create their content in the form of articles. The word “article” is used to describe the content of a unit that is created in Drupal. An article, however, could be a complete description of a concept, or just a single page of content. The articles used to encourage creation of smaller, more manageable units of electronic content/information, perhaps focused on a small number of sub-topics. These articles could be linked with various menus which are visible in the user interface/website.

Drupal, basically, deals with content that includes textual material, multimedia, presentations, etc.

Pre-requisites

Following pre-requisites software are required before installing Drupal:

- ❖ Windows or Linux OS
- ❖ HTTP Web Server (Apache Web server or IIS)
- ❖ PHP 5.0.4+
- ❖ MySQL - 4.1.10+

Technical Features

- ❖ Software is capable to develop web portals;
- ❖ It also facilitates version controlling using which you can retrieve the earlier version of the content whenever you want;
- ❖ It can be customized with dynamic themes available at no cost;
- ❖ Drupal uses Bootstrap 3 for creating responsive web portals;
- ❖ It uses PHP as scripting language, MySql as database and Apache as web server;
- ❖ Web based interface for in-house operations;
- ❖ It has extensive control panel/dashboard for creating and managing contents and menus;
- ❖ Components are available free of cost to enhance the core of Drupal;
- ❖ Supports Unicode standard for multi-lingual contents; and
- ❖ Flexibility of database structure.

Content Licensing - As stated above Drupal is released under GNU General Public License and Drupal's online documentation is compiled by individual contributors which are available in open domain with Creative Commons License, Attribution-ShareAlike 2.0.

Future Developments

Developers of the Drupal are committed to enhance its features and functionalities with the changing needs of the community. As when new development takes place in the field of website development, the software is being updated accordingly.

Drupal Themes - A theme manager is an integral part of the core instance of Drupal. It allows content authors to have control over the look and feel of the content that they create. There are many websites that provide version wise templates/themes for Drupal.

User Forum and Support

Drupal software is most widely used open source software for creating websites and portals. It offers solution to various problems occurred while using through community forum. User can register themselves and raise their questions to get possible solution of the query. One can register his email ID at to get email alerts from the active users.

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Ensuring High-Level System Availability of Computing Services

Yatrik Patel, Scientist D (CS) and Raja V Scientist B (CS)

Today number of institutes and their day-to-day activities are solely depended on IT. Almost every aspect of the institutional activity and services needs Internet connectivity and computing infrastructure to function. IT made the things faster, easier. At the same time, the responsibilities of implementer has increased multi-fold to ensure less downtime of applications and services. The cost of downtime is very high and may spoil the reputation of institution and its services. The best way to overcome the failure of the system or applications is setting up the high-level system availability. High-level system availability refers to a server or an application that ensures uninterrupted operational for a maximum possible time. In fact, a fault-free system or application that is expected to run without fail has to be well-designed and thoroughly tested before its deployment. Nowadays servers and underlying network have to manage a large volume of traffic to serve millions of clients. Perhaps, a single server may not sustain such a heavy load. In this computer era, it is very challenging task to achieve “100% Operational” or “never failing” of any computing environment. This can be achieved by implementing various redundancy mechanisms for hardware as well as software. Most of the organization prefers to deploy their applications on cloud so that the disaster recovery can be achieved with immediate effect without much complexity and safeguarding investments. High-level system availability can avoid having single point-of-failure. If failure occurs restoration can be performed in microseconds. This article attempts to give glimpses and technical highlights on achieving maximum uptime with minimal chances to failure of computing environment using presently available technologies.

Keywords—High-Level System Availability, Cloud Computing, Virtualization, Failover Cluster, Server Failover, Load Balancer, Virtual Network

1. Introduction

High Availability (HA) can be seen as the “holy grail” in the world of cloud computing[1]. Once high availability is ensured the requirement of disaster recovery can also be made part, so that end users will always expect uninterrupted service from the service providers without worrying about underlying server infrastructure. This can be achieved in many ways depending on the facility available with service providers as well as infrastructure. For cloud service providers, such as Azure, Google and Amazon Web Services, it is very easy to set it up by using their built-in tool(s). In case of any data centre maintained by the institution can also avail this infrastructure by using mechanisms like setting up high availability proxy such as HA proxy or mod_proxy(apache) which is open source and capable of running failover actions in case of

unplanned IT service outages[1]. High Availability Proxy is used to provides a better accessibility[1]. Let's have an popularly available approaches, tools and technologies to ensure a nearly failsafe computing infrastructure.

2. Virtualization Techniques

Virtualization is technique to create a virtual version of resources or server. It is applied for sharing the capabilities of physical computers by splitting the computing resources among Operating Systems[2]. Using this technique, one can create multiple number of operating systems within a single OS mainly based on the storage, CPU and memory availability. Main server will be the base of all other servers. These computing techniques includes storage virtualization, server virtualization, operating-system level virtualization, network virtualization and application virtualization. Predominantly, most of the data leading virtualization

companies like Microsoft Azure, Citrix, Oracle, Google, IBM, VM and Amazon are giving good services to the users. The most popular virtualization techniques are Full Virtualizations (main physical server to support applications and software to operate in a much similar way on virtualized divisions), Virtual Machines (VMs), Para-Virtualization and OS level Virtualization.

2.1. Cloud Computing

Cloud platforms provide geographically dispersed regions around the world[3]. It is a class of network-based computing. User may avail cloud computing on the basis of demand, resource pooling, elasticity, anywhere, anytime and anyplace. It has been classified as service models and deployment models, each service and deployment model offers different level of control and autonomy.

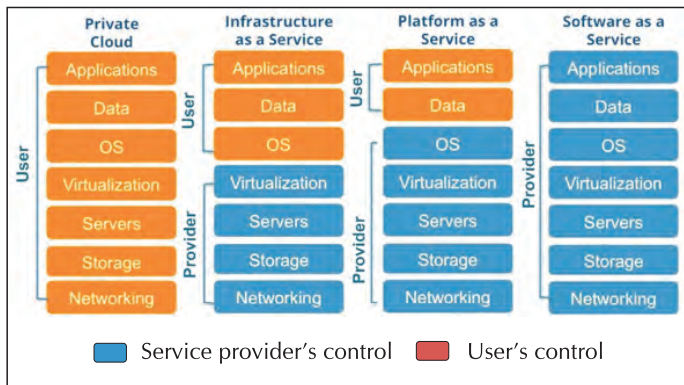


Fig. 1: Cloud Service Models and Controls Cloud Service

Cloud service models and controls Cloud service providers offer their services according to several fundamental models: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). There are four primary cloud deployment models (On premises/Private Cloud, Community cloud, Public cloud, and Hybrid cloud). Each deployment model necessarily exhibits the previously discussed essential characteristics. The basic differences lie in the scope and access of cloud services, as they are made available to end users.

2.2. Network Virtualization

All network resources can be deployed and managed as logical services. System administrator can easily improve network efficiency, minimize the capital and operation cost, scalable, highly secure and availability throughout the system design. It is possible to make from multiple physical networks into one virtual network. Partitions can be possible in this network as per computing needs. In virtual network, all networked system does not have any physical (wired or wireless) connection between themselves. These systems are linked using network virtualization. System administrator can fully control the IP address blocks, DNS settings, security policies, and route tables within this network[4]. There are some important advantages by creating virtual networks such as Isolation, access to the public Internet, access to Virtual Machines (VM) within the VNet, name resolution, security and connectivity[4].

2.3. Storage Virtualization

It is a process of collecting the physical storage from various network storage devices into a single storage device that can be centrally managed. It is also known as cloud storage. Management of storage and data is bit difficult and more time-consuming process. But, it helps addressing the problems, easy backup, archive and fast recovery. It can be implemented by using software applications or appliances[5]. There are some valid reasons behind for this storage virtualization such as better storage utilization, heterogeneous IT environment and estimation of down time with automated management. Storage Area Network(SAN) is divided into four main layers (i.e. Storage devices, Block aggregation layer, File/record layer and Application layer).

3. How the IT Scenario of Organization Change because of Virtualized Environment and Cloud?

Cloud computing is the recent and advanced technology where institutes may host their services on shared basis. It is used to give better and faster

performance to both the organizations and the users. Today's users are expecting speed, high reliability and safety from the service provider or institutions[6].

In early 1980s, users and institutes were fully dependent on IT department in case of any application development or IT operations. After 1990s, the scenario changed from IT Department to IT Support Services on base of user's demand. Now that the cloud computing is being made available to the users with user-friendly features, users have started using the applications and developing programs and applications on their own. Cloud makes it simple to maintain or handle the server. Now user can fix their stuff with more ease. Computing infrastructure is transparent, security breaches has declined, language barriers have diffused and everyone can bootstrap. It is very easy to have a high-level system infrastructure in cloud computing. There is no method to prevent failure in electronic component, at the same time we can have alternative solutions to overcome such failures using various tools available in open domain.

4. Tools available for High Availability Computing

The term "available" describes a system that provides a specific level of service as needed and "highly available" characterizes a system, which is designed to avoid the loss of service by reducing or managing failures as well as minimizing planned downtime for the system. Tools available for high-availability computing are described below:

4.1. High Availability Proxying

A proxy server is a kind of agent or intermediate hardware device that acts for another server. The main purpose of using proxy server is to provide better performance and consistency of a server environment by dispensing the workload to multiple servers (i.e. applications, web servers and databases). There are some open source proxying mechanism and tools like HA Proxy, NGINX, Dispatch-proxy or mod_proxy for apache are freely available. Predominantly, HA Proxy

and mod_proxy (apache) are widely used by several organization because configuration part is much simpler than other tools. Public clouds like AWS and Azure have their own tool available for proxying.

4.2. Load Balancer

The load balancer provides facility to setup high availability application by managing or distributing incoming traffic requests from multiple clients. It can be achieved in two ways i.e. Internet facing load balancer and Internal load balancer. For public cloud users, this can directly implemented by using their inbuilt load balancer tools for application deployment. Some of the important load balancing algorithms are as follows:

4.2.1 Round Robin(RR) - This algorithm is commonly used in most of the organizations. Each and every request from the client machine is distributed to different servers across the network. It also adjusts the request based on the current server load[7].

4.2.2 Static Round Robin - It is more or less similar to Round Robin, each server is used in turns per their weights. There are no design limitations in this server environment. When a server load is high, it will immediately reintroduce the new server once the full map is recomputed.

4.2.3 Least Connections – This algorithm is dynamic in nature just like Round Robin. The server with the less number of inputs receives the connection. This approach is useful where sessions are long such as LDAP, SQL, TSE, etc.[7].

Source, URI and URL parameters algorithms are used by default in static mode.

4.3. Database Replication

Data replication is an important concept when databases are deployed over cluster of servers. Implementation of replication should not affect the current production server performance. Because of this difficulty, one have to be very careful and need to give guarantee for server consistency. In order to overcome

the existing protocols, current data replication should be easier and incur less cost. Two approaches for database replication are as follows:

4.3.1 Master – Master

In RDBMS, one need to create failover mechanism using Master-Master replication method. It is also known as a mirror, which is by far the simplest technique one can use to increase the performance and the reliability of RDBMS server installation. In order to implement it one should have a secondary server[8]. Application can read the data from both master(s).

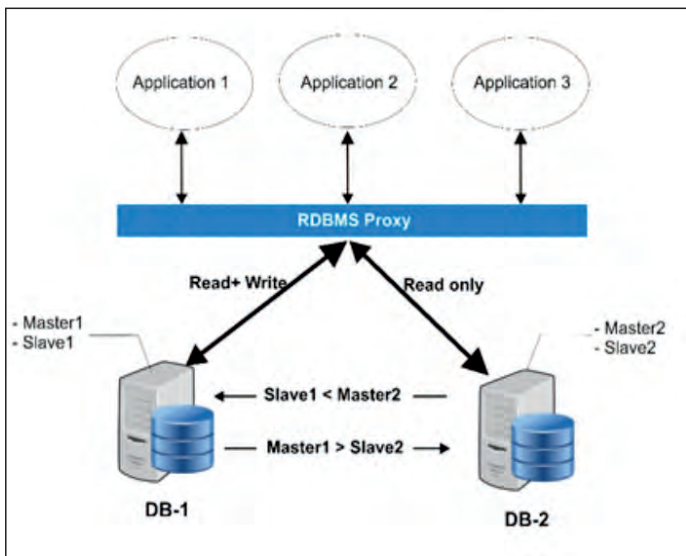


Fig 2: Multi Master Topologies

To setup a cluster environment one should have at least two servers or virtual machines (or hosting servers, each one providing an http web server (such as IIS or Apache) containing one or more web applications connected to a local RDBMS server instance on the same machine. Once a Master-Master replication mechanism between the two RDBMS instances has been established which basically means that a real-time web mirror has been setup, that can be used as a disaster recovery (see fig.2), and/or a 2-nodes web cluster managed by load-balancer – or any other balancing technique one might want to adopt[8].

4.3.2 Master-slave

It is a model of communication where the master will serve the data to slave. Application can read the data directly from slave(s) without impacting master server. Slave(s) can be taken offline and resync is possible without any downtime of master. But in case of failure a slave will take up the responsibility of master. Downtime and data loss may be possible when a master fails.

4.4. Failover Cluster

The Cluster is a group of similar hardware and other resources that acts as a single system. In the same way, failover cluster technology provides high availability and high throughput with low latency, while allowing for near linear scalability. High Availability cluster consists of at least two-nodes, since that is the minimum required to provide redundancy, but many clusters consist of many more nodes. Such configurations can sometimes be categorized into one of the following models.

4.4.1 Active/Active Cluster

Traffic intended for the failed node is either passed onto an existing node or load balanced across the remaining nodes. Each server will be configured with a specific application or service and provide redundancy for its relative server.

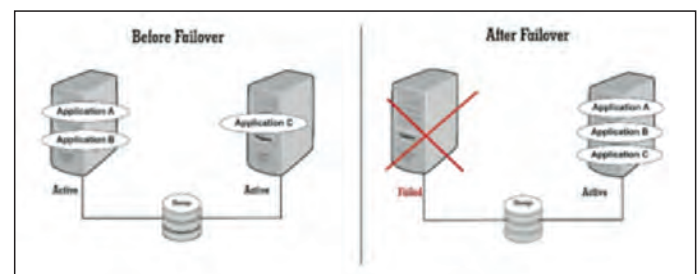


Fig. 3: Active/Active Cluster

4.4.2 Active/Passive Cluster

In an Active/Passive (or asymmetric) configuration, applications run on a primary, or master, server[9]. A dedicated redundant server is present to take over on any failure but apart from that it is not configured to perform any other functions.

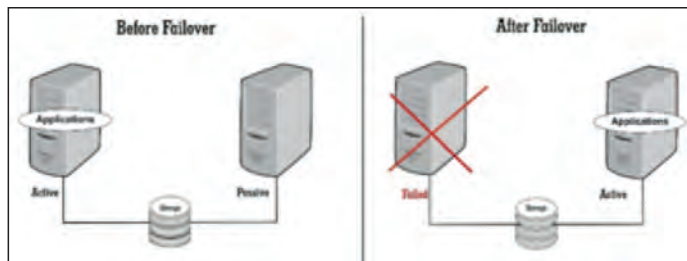


Fig. 4: Active/Passive Cluster

4.4.3 N-to-1 Cluster

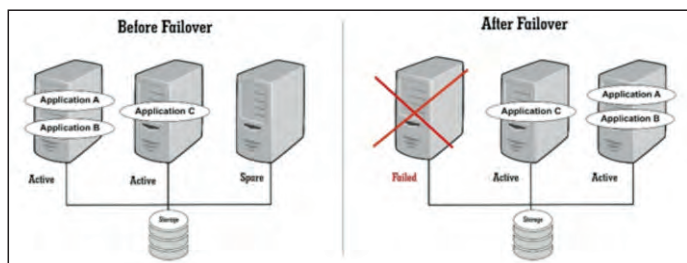


Fig. 5: N-to-1 Cluster

This configuration allows for the standby node to become the active one temporarily, until the original node can be restored and brought back online, at which point the services or instances must be failed-back to it in order to restore High Availability.

4.4.4 N + 1 Cluster

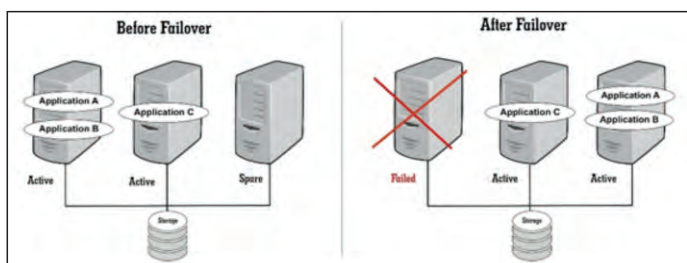


Fig. 6: N + 1 Cluster

This configuration provides a single extra node that is brought online to take over the role of the node that has failed. This normally refers to clusters which have multiple services running simultaneously; in the single service case, this configuration degenerates to Active/Passive. In advanced N + 1 configurations, an extra server in the cluster has spare capacity only[9].

4.4.5 N + M Cluster

In this case single cluster will be managed by many services. The drawback of this case would be having only one dedicated failover node and will not offer a quick redundancy. In such cases, more than one (M) standby servers are included and made available[9].

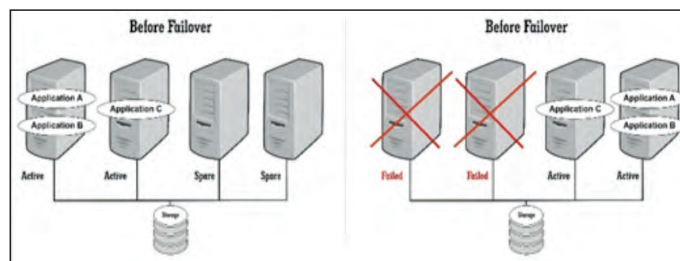


Fig. 7: N + M Cluster

4.4.6 N-to-N Cluster

It is a combination of Active/Active and N + M clusters. N-to-N clustering is the most complex of the failover configurations, and is typically used in a highly available architecture supporting multiple applications in a server consolidation environment[9].

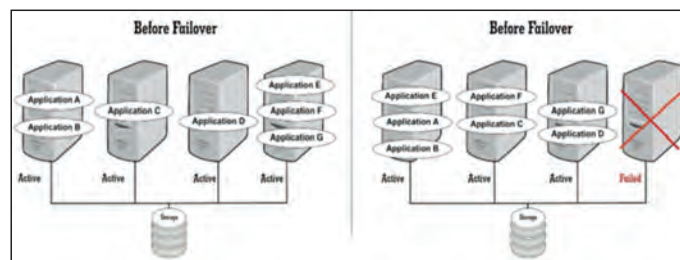


Fig. 8: N + N Cluster

This configuration is a logical evolution of N + 1 as it provides cluster standby capacity instead of a standby server in the cluster.

4.5. Load Testing

Load testing is the process of evaluating the capacity of a software system or computing device and measuring its response. It is performed to understand a system's conditions under both normal and anticipated peak load conditions. This performance testing is divided into four levels like performance test, load test, stress test and capacity test. Some of the additional concepts that are included in load testing are component test,

investigation, smoke test, unit test and validation test. Performance testing is a broad and complex activity that can take many forms, address many risks, and provide a wide range of value to an organization[10].

5. Summary

From the above discussion one can easily observe that assuring 100% up time, or to design a completely failure-proof system is almost impossible. However, in-depth analysis and study of tools available reveals that it requires a many fold approach to ensure the infrastructure reliability and computing capacity needs. A holistic approach has been depicted in following schematic to achieve maximum uptime.

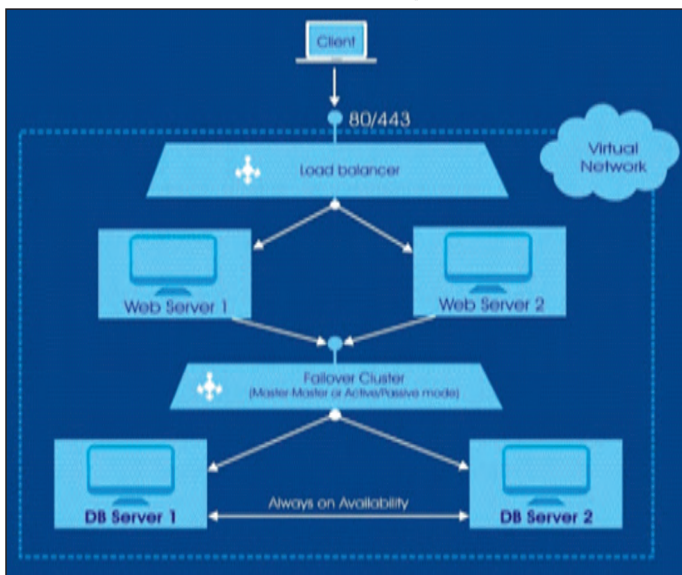


Fig. 9: High Level System Availability infrastructure

In above diagram, it has been assumed that the network is redundant (and virtual). The client facing web application can be made redundant by implementing high availability proxy and load balancing mechanism discussed earlier. The web application server can be clustered by taking any approach as discussed in topic “failover clusters” and database can be made redundant by deploying either of master-master or master-slave mechanism.

It should also be noted that before implementing fail-safe mechanism detailed requirement analysis considering multiple parameters e.g. services, expected availability, performance, cost, complexity should be carried out to choose the appropriate tool and approach for each segment.

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Visitors

Dr. Nimesh Oza, Head, DLISC, S P University

Dr. K B Agadi, Assistant Librarian, Central University Gujarat, Gandhinagar

Dr. Lalitha Poluru, Librarian, Institute of Pharmacy, Nirma University, Ahmedabad

Dr. Muttayya Koganuramath, Professor & Head, Central University Gujarat, Gandhinagar

Prof. Madhan Muthu, IISc, Bangalore

Staff News

Dr. Jagdish Arora, Director



Dr. Jagdish Arora delivered 31st Sarada Ranganathan Endowment Lecture on “Changing Roles of Libraries in Research and Innovation” and “Data Management and Libraries” organized by Sarada Ranganathan Endowment for Library Science (SRELS) and Ranganathan Centre for Information Studies, Bangalore on 31st August, 2016 in Anna University, Chennai.

He delivered an invited talk on “Information Sharing & Cloud Computing”, during “Recent Advances in Information Technology (READIT): National Conference on Information Access in Digital Era” organized from 13th to 14th July, 2016 at IGCAR, Kalpakkam. He was invited to deliver a talk on

“INFLIBNET Centre: Services for FSSAI” during Workshop on Scientific Cooperation Framework for Food Safety held on July 12th, 2016 at India Habitat Centre, Institutional Area, New Delhi. He delivered a talk on “Information Literacy Activities at the INFLIBNET Centre” during UNESCO-sponsored Workshop on Media and Information Literacy held on 24th August, 2016 in Central University of Himachal Pradesh, Dharamshala.

Mr. Manoj Kumar K., Scientist D (CS)

Mr. Manoj Kumar attended ETD 2016 “Data and Dissertations”, the 19th International Symposium on Electronic Theses and Dissertations, University of Lille-III in France during 11th to 13th July, 2016. He made a poster presentation on Shodhganga and its impact on Indian Universities. Apart from the conference, he visited few modern academic and public libraries in France and Belgium.

Mr. Abhishek Kumar, Scientist C (CS)

Mr. Abhishek Kumar attended the meeting on progress of MOOC at UGC, New Delhi on 18th July, 2016. He attended meeting on NIRF 2017 Framework at MHRD, New Delhi on 19th July, 2016. He also attended meeting of FSSAI for e-Learning Portal on Food Safety and Authority FDA, Delhi and attended Workshop on SWAYAM at IGNOU, New Delhi on 3rd August, 2016. He also attended Video Conferencing Meeting of FSSAI

for e-Learning Portal on Food Safety and Authority FDA, Delhi at NIC, Gandhinagar on 11th August, 2016. He made a presentation on Project bid of e-content Development of FSKAN at FSSAI, New Delhi on 12th August, 2016. He attended meeting of SWAYAM Prabha at Chennai on 26th August, 2016. He was invited to deliver a lecture on 'e-Learning & MOOC on 27th August, 2016 at HRD College, Hyderabad. He attended meeting of subcommittee, e-PG Pathshala held on 1st September, 2016 at University of Grants Commission, New Delhi. He also attended Meeting of National Institute of Ranking Framework (NIRF)-DCS requirement held on 8th September, 2016 at National Board of Accreditation, New Delhi.

Mr. Kannan P., Scientist C (LS)

Mr. Kanan P. attended Workshop on SWAYAM at IGNOU, New Delhi on 3rd August, 2016. He was invited to deliver a guest lecture on "Academic Identity: An Overview" organized by Nirma University for faculty members of Institute of Pharmacy on 15th September, 2016 at Institute of Pharmacy, Nirma University, Ahmedabad.

Ms. Kruti J. Trivedi, Scientist B (LS)

Ms. Kruti Trivedi attended Meeting of National Institute of Ranking Framework (NIRF)-DCS requirement held on 8th September, 2016 at National Board of Accreditation, New Delhi.

Mr. Hiteshkumar Solanki, Scientist B (CS)

Mr. Hiteshkumar Solanki attended two-day Workshop on Analytics using R Tool organized by CSI SIG-BDA & CSI Hyderabad Chapter, Secunderabad during 2nd to 3rd July, 2016. He also attended Meeting of National Institute of Ranking Framework (NIRF)-DCS requirement held on 8th September, 2016 at National Board of Accreditation, New Delhi.

Mr. Pallab Pradhan, Scientist B (LS)

Mr. Pallab Pradhan attended '3:AM Altmetrics Conference' organized by University of Medicine and Pharmacy Carol Davila, Bucharest during 28th to 29th September, 2016 at University Campus, Bucharest, Romania. Apart from the conference, he visited the University of Bucharest, National Library of Romania, National Museum of Art of Romania and Palace of the Parliament.

Mr. Dharmesh Shah, STA (CS)

Mr. Dharmesh Shah attended Meeting of National Institute of Ranking Framework (NIRF) DCS requirement held on 8th September, 2016 at National Board of Accreditation, New Delhi.

Staff Achievement

Mr. Harish Chandra, Administrative Officer

INFLIBNET Centre congratulates Mr. Harish Chandra, Administrative Officer for winning the first prize in Night Marathon Carnival organised by LS Sports, Ahmedabad at Sabarmati Riverfront, Paldi on 11th September, 2016. He was winner of the veteran category men (above 45 years of age) with the timing of 01 hour 31 minutes 39 secs for half marathon of 21.1 Km. He also won first prize in "PNB MetLife Satara Hill Marathon 2016" organised by Marathon Association, Satara on 18th September, 2016. He was winner of the veteran category men (above 45 years of age) with the timing of 01 hour 38 minutes 36 secs of 21.1 Km. He was also winner of the Surat City Half Marathon 2016 with the timing of 01 hour 31 minutes 39 secs of 21.1 Km on 25th September 2016. Centre takes pride in encouraging him to bring more laurels to the Centre. The Centre wishes him all the best in future events at national and international levels.



11th International

CALIBER 2017



August 2-4, 2017

Venue
Anna University, Chennai
Tamil Nadu

Convention Theme

Re-Envisioning Role of Libraries: Transforming Scholarly Communication

Sub-Theme

Open Education

Research Data and Knowledge Management

Role of LICs in the Assessment of Scientific Research

Re-Envisioning the Role of Libraries and Information Centres

Organised by :-



INFLIBNET Centre
Gandhinagar, Gujarat

in collaboration with :-



Anna University
Chennai, Tamil Nadu



<http://caliber.inflibnet.ac.in/>

Workshops/Training Programmes being offered in the Year 2017

SI No	Subject	No. of Day	Date
1	KOHA Installation and Operations	3	23-25 January
2	SOUL 2.0 Training Programme	6	30 January - 4 February
3	Open Journal Systems(OJS) for e-Publishing	2	27-28 February
4	Research Methodology & Academic Writing	2	8-10 March
5	SOUL 2.0 Training Programme	6	20-25 March
6	Ethical Issues & Use of Anti-Plagiarism for Research Integrity	2	6-7 April
7	SOUL 2.0 Training Programme	6	17-22 April
8	Creation and Management of Digital Collection using Dspace	5	24-28 April
9	Bibliometrics and Research Output Analysis	5	1-5 May
10	Research Data and Statistical Analysis using R Programming	3	17-19 May
11	SOUL 2.0 Training Programme	6	29 May - 3 June
12	Metadata Standards: Retrospective Conversion, Preservation, Harvesting and Migration	3	7-9 June
13	E-Resource Management	3	14-16 June
14	Workshop on Cyber/Web Security	3	21-23 June
15	Creating and Managing Digital Libraries using EPrints	3	5-7 July
16	Research Evaluation and Altmetrics	2	10 - 11 July
17	SOUL 2.0 Training Programme	6	17-22 July
18	CALIBER- 2017 at Anna University, Chennai (TN)	3	2-4 August
19	VIVO Profile Management System	3	16-18 August,
20	Institutional Ranking Methodology and Parameters	2	28-29 August
21	SOUL 2.0 Training Programme	6	4-9 September
22	Workshop on Cloud Computing	5	18-22 September
23	National Workshop on ETD	2	26-27 September
24	Advanced Training Programme on Configuration and Management of Digital Library using DSpace	3	4-6 October
25	Library and Big Data	3	11-13 October
26	e-Content & e-Learning using MOOCs	3	1-3 November
27	SOUL 2.0 Training Programme	6	6-11 November
28	KOHA Installation and Operations	5	13-17 November
29	Bibliometrics and Research Output Analysis	5	20-24 November
30	Capacity Building Programme on ICT for LIS (Hindi)	5	27 November- 1 December
31	Library on Cloud	5	4-8 December
32	Advanced Training Programme on Shodhganga	3	13-15 December
33	SOUL 2.0 Training Programme	6	18-23 December
34	Reference Management	3	27-29 December

AWARENESS ON SHODHGANGA HELD AT MAHILA VARSITY

DC CORRESPONDENT TIRUPATI, AUG. 8

Sri Padmavathi Mahila V... swavidyalayam has organ... ised an awareness pro... gramme on Shodhganga...

a platform for research scholars to present their Ph.D thesis through online mode and make it available to the entire scholarly community in open access. "The repository has the ability to capture, index,

He instructed th

Indian Express

Padmavathi Varsity organizes awareness on research

Tirupati: Sri Padmavathi Mahila University organised an awareness programme on Indian electronic theses and dissertations, in collaboration with Inflibnet Center, Gujarat, here on Monday. Indian Electronic Theses and Dissertations known as 'Shodhganga', is a platform for improving quality of research in Indian universities. Manoj Kumar, scientist-D addressed the scholars and faculty on the activity of research. Prof. V. Durga Bhavani, Vice-Chancellor highlighted the importance of ethics of a researcher like integrity, objectivity and unbiased nature as per the 'Rig Veda'. The librarian Dr. D



టెక్నాలజీతో పరిశోధనలు తేలిక

యానవర్షిత క్యాంపస్: సాంకేతిక రంగం అభివృద్ధితో పరిశోధనలు తేలికే నట్లు మహిళా వర్సిటీ వీసీ దుర్గాభవని అన్నారు. శ్రీపద్మావతి మహిళా విశ్వవిద్యాలయంలో సోమవారం 'ఇండియన్ ఎలెక్ట్రానిక్ థీసిస్ ఆండ్ డిజిటైజేషన్, ఎ-థీసిస్ షేర్ డిప్లూ మింగ్ క్యాంపస్ ఆఫ్ రీసెర్చ్' అనే అంశంపై డిక్ రోజు నడవ్వును ప్రారంభించారు. అనంతరం ఆమె మాట్లాడుతూ థీసిస్ రాయడంలో సాంకేతిక పరిజ్ఞానాన్ని ఉపయోగించుకోవాలన్నారు. రిజిస్టర్డ్ విజయలక్ష్మి మాట్లాడుతూ భిన్న విషయాలను కలుపుతూ పరిశోధనలు కొనసాగించాలని సూచించారు. ఔరంగాబాద్ కు చెందిన మనోజ్ కుమార్ మాట్లాడుతూ ఆన్ లైన్ జర్నల్స్ గురించి వివరించారు. థీసిస్ లోని కాపీయింగ్ ను గుర్తించే ప్లాగరిజం సాఫ్ట్ వేర్ పై అవగాహన కల్పించారు. మహిళా వర్సిటీ లైబ్రరీయన్ ప్రభావతి పాల్గొన్నారు.



పరిశోధనాపత్రాలను చూపుతున్న వర్సిటీ అధికారులు

DECCAN Chronicle

CUK to put PhD theses under lens

HARIGOVIND | DC KASARGOD, AUG. 12
TECH TOOL
The anti-plagiarism software will ensure a high standard of research in the Central University of Kerala (CUK). The software will monitor research work from the university before it is approved. Research scholars and faculty members will be speaking to this newspaper, CUK deputy librarian Dr P. Senthil Kumaran said that user awareness programme received a positive response from students. "The PhD courses which were introduced recently was received well by research scholars and faculty. This workshop will help them to better researchers to avoid duplication of research subject at a very early stage of research itself," he added. CUK vice-chancellor Dr G. Gopakumar said that the introduction of anti-plagiarism facilities would raise the standard of research from the university. He added that anti-plagiarism monitoring can be extended to PG



CENTRAL UNIVERSITY OF KERALA
കേരള കേന്ദ്രീയ വിശ്വവിద্যালം

മലയാള മനോരമ



കേരള സർവകലാശాలിൽ നടന്ന ആന്റി-പ్లాగరిజం, സോഫ്റ്റ്‌వെയർ ശിൽపശాల വൈബ് ചారిత్ర

ആന്റി-പ్లాగరిజం സോഫ്റ്റ്‌వെയർ ശിൽపശాల നടത്തി

పరిశోధన అభివృద్ధి కోసం అధికారికంగా అనుమతించిన పరిశోధనలను మాత్రమే ప్రచురించాలి. ఇతర పరిశోధనలను ప్రచురించేటప్పుడు అవి అనుమతించిన పరిశోధనలను ప్రభావితం చేయకూడదు. అందుకు అనుగుణంగా పరిశోధనలను ప్రచురించేటప్పుడు అవి అనుమతించిన పరిశోధనలను ప్రభావితం చేయకూడదు. అందుకు అనుగుణంగా పరిశోధనలను ప్రచురించేటప్పుడు అవి అనుమతించిన పరిశోధనలను ప్రభావితం చేయకూడదు.

INFLIBNET
in Regional News

డిపిక

శిల్పశాలా నడవ్వి

పరిశోధన అభివృద్ధి కోసం అధికారికంగా అనుమతించిన పరిశోధనలను మాత్రమే ప్రచురించాలి. ఇతర పరిశోధనలను ప్రచురించేటప్పుడు అవి అనుమతించిన పరిశోధనలను ప్రభావితం చేయకూడదు. అందుకు అనుగుణంగా పరిశోధనలను ప్రచురించేటప్పుడు అవి అనుమతించిన పరిశోధనలను ప్రభావితం చేయకూడదు.

పరిశోధనల్లో మూస విధానాన్ని వీడాలి

పరిశోధన అభివృద్ధి కోసం అధికారికంగా అనుమతించిన పరిశోధనలను మాత్రమే ప్రచురించాలి. ఇతర పరిశోధనలను ప్రచురించేటప్పుడు అవి అనుమతించిన పరిశోధనలను ప్రభావితం చేయకూడదు. అందుకు అనుగుణంగా పరిశోధనలను ప్రచురించేటప్పుడు అవి అనుమతించిన పరిశోధనలను ప్రభావితం చేయకూడదు.



పరిశోధనా పత్రాలను చూపుతున్న వర్సిటీ అధికారులు

సెంటిమెంట్ కు మించి, ఆస్తిని గుర్తించే అవకాశం ఉంది. అందుకు అనుగుణంగా పరిశోధనలను ప్రచురించేటప్పుడు అవి అనుమతించిన పరిశోధనలను ప్రభావితం చేయకూడదు.



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