# Kathmandu University

## **ISMS (Information System Management Section)**

Annual Report 2020/2021

Prepared on: June 2021

#### Introduction

ISMS (Information System Management Section) is located in Central Administration. Kathmandu University, Dhulikhel. This section is dedicated to:

- Development and Implementation of evolutionary University ICT Strategic Plans; Policies; Standards; Operational Plans; & Budgets; sensitive to emerging technologies and responding to changing needs and practices.
- Acquisition and Development of University ICT Network Infrastructure and Services
- Acquisition and Development of University Management Information Systems and Services
- Acquisition and Development of expanded Corporate Internet Services; especially Browsing (Research, Journals etc.) and E-mail (staffs & students)
- Aggressive and Continued Training on Basic and Intermediary ICT Skills for all Students and Staff
- Improve the use of technology to support teaching and learning.
- Improve access to information.
- Improve infrastructure and increase connectivity.
- Maximize benefits of investments in technology.
- Develop and integrate Information Management systems
- Design ISMS structure, develop specific TOR to assist on hiring Staffs
- Improve effectiveness of KU Information Technology operations.
- Promote use of open-source and genuine software and services

## Activities of ISMS

#### System and Services Administration/Management

- Installation and Maintenance of Systems/Servers (Web, Mail, VOIP Telephone, Learning Management Systems, DNS, Storage/Backup, Database, HRMS, Monitoring)
- Administration of installed Systems/Servers
- Upgradation of Systems and Servers

- Development of Content Management System (CMS) for websites (Central, Schools and Departments)
- Administration of Web/Mobile Application Software for websites
- Install, configure and manage Software and their functions according to specifications
- Ensure system/server security and run timely security audits
- Maintain proper technical (Installation, administration) documentations and user manuals
- Facilitate online journals and journal publications

#### **Network Administration/Management**

- Network Design and Setup
  - VLAN design
  - Video conference network design
  - Wireless hotspot network setup
  - Network equipment (Switch, router and Firewall) installation and maintenance
  - Bandwidth monitoring and management
  - Network monitoring and maintenance
  - Network setup and support to different schools, projects and others
- Network authentication
- Server Networking
- KUCAT CBT Network management
- CCTV Networking
- Attendance/Biometric Networking
- Security Access control, Automatic Door Locks and RFID Registration
- Point-To-Point Optical Fiber Installation and Maintenance (building)
- Ensure Network security and run timely security audits

## Support, Maintenance and Upgrade services

- Organize and schedule upgrades and maintenance without interfering work of others
- Perform troubleshooting to diagnose and resolve problems in a timely manner
- Upgrade the entire system to enable compatible software on all computers
- Perform tests and evaluation on new software and hardware
- Maintain records/logs or repairs and fixes
- E-Mail support and services (Central, SoE, SoS, SoA, SoL)
- Video conference support and maintenance
- Training and training resources preparation for Staff, Faculty and Students
- e-Learning (Moodle) LMS support for faculty, staff and students (SoS, SoE)
- KUCAT CBT System administration and support
- Accounting software support (MIDAS, FINMAN)
- Library software support (OPAC, SOUL)
- Departmental Computer lab support (School of Engineering, School of Science, School of Law)
- Assist in developing and maintaining local networks

- Online Admission for School of Science and School of Engineering
- Web hosting service to schools, departments, projects, clubs and others
- Assist in setting up workstations with computers and necessary peripheral devices
- News and notice, contents update in university webpage
- Operating System and software licensing
- PABX/VOIP support and maintenance
- Assist the users on how to operate software and computer equipment
- Provide and support dedicated internet services to faculty/staff and students (Central Administration, SoE, SoS, SoL, faculty/staff residence, students hostels, guest houses)
- Provide and support wireless internet services inside KU premises dhulikhel and SoL

## Facts & Figures

- 1. Current Internet Connection: Through Fiber optics link from WorldLink Communications P. Ltd., Jawalakhel, Lalitpur, Nepal
- 2.**Intranet Connection:** Nepal Research & Education Network (NREN) and its member/s (45 mbps connection with Educational Network); Canteen (5 Mbps from Dhulikhel to Balkumari and Hattiban)
- 3. Current Internet Bandwidth: 150 Mbps Symmetric

Year	Corrigo Ducyidou	Connectio	Mariah	Bandwidth (Kbps)	
	Service Provider	n	wionth	Downlink	Uplink
2001	BTN Access, Singapore	VSAT	November	256	128
2003	BTN Access, Singapore	VSAT	June	512	160
2004	SinGTel, Singapore (Mercantile)	VSAT	May	1024	384
2005	SinGTel, Singapore (Mercantile)	VSAT	May	1152	384
2006	SinGTel, Singapore (Mercantile)	VSAT	October	1536	512
2007	SinGTel, Singapore (Mercantile) VSAT May		1536	512	
2008	SinGTel, Singapore (Mercantile) VSAT May		1920	640	
2008	Websurfer, Naxal Fiber October		3072	3072	
2009	Websurfer, Naxal Fiber July		3584	3584	
2010	Websurfer, Naxal Fiber J		July	4096	4096
2010	Websurfer, Naxal	Websurfer, Naxal Fiber August		6144	6144
2011	Websurfer+Mercantile*	Fiber	July	11264	11264
2012	Websurfer+Mercantile* Fiber		June	13312	13312
2012	Websurfer+Mercantile* Fiber July		17408	17408	
2012	Websurfer+Mercantile*	Fiber	r July 17408		17408
2013	Websurfer+Mercantile*	Fiber	April	19456	19456
2013	Websurfer+Mercantile*	Websurfer+Mercantile* Fiber July		25600	25600
2014	Websurfer+Mercantile*	Fiber	August	35840	35840

#### Bandwidth Upgrade history

(1024 Kbps = 1 Mbps)

2015	Websurfer+Mercantile*	Fiber	August	38912	38912
2017	Websurfer+Mercantile*	Fiber	June	51200	51200
2017	Worldlink	Fiber	October	102400	102400
2020	Worldlink	Fiber	March	150000	150000

\*From Mercantile (5Mbps free)

- 4. Bandwidth utilization: 24 hours
- 5. **Fiber connection in KU:** Building to Building in dhulikhel premises, P2P connection to KUSMS and School of Law
- 6. Network Topologies: Star & Extended Star
- 7. Number of computers connected to wired Network: 1400+
- 8. Average number of internet users per day: 2500+ (affected by Lockdown Protocol)
- Intranet bandwidth: Local (1 Gbps & 100Mbps) inside KU premises, Canteen (5 Mbps) KU Dhulikhel to Kathmandu (Balkumari, Hattiban)
- 10. Annual Internet Bandwidth Consumption (June 2020 June 2021)



#### 11. KU Website upgrade history (new releases):

Web 1. 2002 November Web 2. 2003 July Web 3. 2006 January Web 4. 2009 April Web 5. 2012 October Web 6. 2019 June

#### 12. KU Website Infrastructure Management System (Centrally Managed CMS)

Start Date: 30 June 2019; Total Websites: 19

Status of Web Infrastructure	Management System
------------------------------	-------------------

S.No.	Website Name	Remarks
1	Kathmandu University ( <u>https://ku.edu.np</u> )	Deployed
2	School of Engineering ( <u>http://soe.ku.edu.np</u> )	Deployed

3	School of Science ( <u>http://sos.ku.edu.np</u> )	Deployed	
4	School of Law ( <u>http://sol.ku.edu.np</u> )	Deployed	
5	School of Education ( <u>http</u> )	Under Development	
6	School of Engineering (All six departments)	Deployed	
7	School of Science (All departments-5, except Life	Deployed	
	Sciences)		
8	School of Science (Department of Life Sciences)	Under Development	
9	School of Management (Department of Management	Deployed	
	Informatics and Communication)		
10	Office of the Controller of Examinations	Under Development	
	( <u>https://</u> )		

13. Other Websites (Units/Sections/Projects/Clubs/Programs/Events/Miscellaneous):

Total other websites: 84 [New/Migrated (48), Old (20)]

#### 14. Total number of public websites maintained by ISMS: 103

15. Total Server Resources in KU

S. No.	Server Location	No of Physical Servers	No of Virtual Servers	Total Servers	Total Memory	Total Storage
1	ISMS	26	27	53	578 GB	50.49 TB
2	EXAM	4	0	4	96 GB	4.55 TB
3	KUSOM	2	0	2	14 GB	1 TB
4	KUSOED	3	0	3	56 GB	5 TB
	Total	35	27	62	~744 GB	~61.04 TB

**Total number of Servers maintained by ISMS: 57** 

#### 16. Total number of registered subdomains (\*.ku.edu.np): 98

17. Email System: Google Workspace/Suite Free Educational License

i. @ku.edu.np: Total accounts: 1028; Storage Used: 12.34 TB

ii. @student.ku.edu.np: Total accounts: 4065; Storage Used: 16.1 TB

## Major highlights of 2020/2021

- Installation of 15KVA Solar Hybrid Power Backup system in Central Server room
- Installation of 5KVA Solar Hybrid Power Backup System in Exam (Block 14) Server Room (Used for off-site backup of ISMS Servers)
- Facilitate Online Teaching/Learning for Teachers and Students

#### **Future Plan and Recommendations**

- Deployment of New Website CMS to all Schools and Departments
- Underground of Currently Overhead Optical Fiber Cables
- Design and Implementation of IT Policies
- Implementation of User Authentication Services for application and wireless access
- Integration of all currently available database and Information Systems into single platform
- The whole internal network needs to be upgraded into 1 Gbps by replacing all the older devices and equipment.
- The internet dependency needs to be distributed into at least **two ISPs** for consistency and reliability.
- With respect to current demand of internet usage and increase in wireless access points around KU premises. The internet bandwidth (when normal activities resumes after lockdown) should be increased to **250 Mbps**.
- Design ISMS structure, develop specific TOR and hire Staffs

## **Proposed Human Resource Plan 2021**

Currently, we have **three** active people who are involved in different activities listed in the earlier section, but it is very difficult to carry all activities efficiently due to one person handling lots of activities, we require more people in order to efficiently handle the workload. The proposed new framework for ISMS is as follows:





Fig: Proposed Plan for Information System Management Section (ISMS) 2021