



Objective of this Note

This Note is targeted at capacity building institutions that are working with the Alliance or independently to address the major capacity challenges faced by the UbuntuNet Alliance membership region at the campus and NREN levels as well as at the RREN level. The Alliance recognizes that sustainable technical capacity is a concurrent requirement of NREN development if the full value of the networks is to be delivered to end-users.

The Note has been developed by the UbuntuNet Alliance for Research and Education Networking as part of a set of information documents to support the growth of REN activity in the continent with the intent of empowering and creating global equity for Africa-based educationists and researchers.¹

1. Introduction

It is generally agreed that one of the major challenges the UbuntuNet membership region faces at the campus, national, and regional levels is cutting edge expertise that is able to make the most of available resources; and to plan, implement and operate advanced data networks. This is due to a combination of shortage of institutions able to offer this kind of training; course content that does not match the needs of industry; and lack of an operating environment (advanced data networks) that would provide a good training bed for students and practitioners. The first step in addressing these gaps is a clear identification of capacity gaps based on experiential assessment of those working at the front line in universities as well as the emerging NRENs. This brief gives the findings of the Alliance that will be the starting point for addressing capacity gaps in sustainable manner. We use the word “sustainable” in the context of creating an environment where the dynamism of movement of professionals out of the NRENs is more than matched by the inflow of well trained people from colleges and universities.

2. Methodology

Opportunity was taken of a bandwidth management and optimisation workshop in Nairobi², attended by ICT Directors from various universities in the region, to solicit what were seen as key capacity building gaps. The list so generated was later circulated to the member NRENs, asking them to discuss the identified gaps and prioritise them using a Rickert scale of 1 – 5. This provided a means of validating the capacity building needs. NRENs were also given opportunity to identify other areas not on the original list, and these have also been captured as part of this brief after Table 1: Those that were obvious sub-sets of the main areas listed have not been included.

¹ We acknowledge with thanks and appreciation the role that has been played by Dr Duncan Martin, Dr Lishan Adam, Mr Victor Kyalo, and Dr F F Tusubira in the development of these notes. Note UA 203 was developed by Dr F F Tusubira.

² This workshop held during the last quarter of 2008 was jointly organised by INASP, UbuntuNet Alliance, and KENET.

The detailed returns from the NRENs are shown in Table 1. Priority areas were identified using the average weight for each identified area, and the averages were then grouped in steps of 0.5 to assign priority ratings. It should be noted that the modal ratings are another approach to identifying priority: there is no significant difference between the output using averages and using modal ratings (both were tested).

Capacity building needs were grouped into soft and hard skills – the former relating to people and organisational areas, and the latter to engineering areas.

3. Identified Capacity Building Priorities

Project management; Monitoring and Evaluation; and Costing and Business Planning for Sustainable Operations emerged as the top priorities among the soft skills. These were followed at priority 2 by Development/Evaluation of Institutional ICT Policy; Executive skills (Leadership and Management, including finance); and Management of Change. Not surprisingly, these are areas that most engineering and IT curricula do not address, and yet they are often the most critical in the pioneering stages of ICT implementation in any organisation. Surprisingly, Information Resource Management was not ranked as a top priority: we suspect this might have been more out of lack of information about what it is than deliberate low ranking.

Among the hard skills, the following were, not surprisingly, ranked as priority 1:

- i. Data Network Design and Implementation;
- ii. Network Administration;
- iii. Systems administration;
- iv. Database Administration;
- v. Email Systems Administration;
- vi. Network and Data Security;
- vii. Bandwidth Management and Optimisation.

Priority 2 hard skills included:

- i. Development and Management of Service Level Agreements;
- ii. Assessing IP address needs, IP address application, and renumbering;
- iii. Disaster Recovery implementation and management

Again, the ITIL Library was surprisingly not ranked among the top priorities, most likely pointing to a knowledge gap within the ICT leadership in the region.

4. Conclusion

The identification of capacity building needs is just the first step. The next step is the engagement of training institutions, national governments, regulators, and industry to create a holistic environment that links curriculum content, industry skills needs, internship opportunities, and sustainable funding to deliver a continuous supply (and possibly over-supply) of competent human resource. This is one of the strategic priorities of the Alliance.

TABLE 1: DETAILED RETURNS FROM NRENS PRIORITISING CAPACITY BUILDING NEEDS³
TRAINING NEEDS VALIDATION: 1=Not needed; 3=Neutral; 5=Critically needed

	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	Average	Priority Steps of 0.5
CAPACITY BUILDING AREA													
PART 1: Soft Skills													
Development/Evaluation of Institutional ICT													
Policy and Master Plans	5	4	3	5	5	4	5	5	1	4	3	4.0	2
Lobbying and Advocacy skills	5	5	4	3	5	2	5	4	3	4	1	3.7	3
Executive skills (Leadership and Management, including finance)													
Management of change	5	4	5	3	5	5	5	5	4	4	3	4.4	2
Communication skills	3	3	4	2	3	5	4	5	3	5	3	3.6	3
Social engineering skills	5	3	4	2	4	2	3	4	3	4	3	3.4	4
Project management	5	5	5	5	5	5	5	5	4	5	4	4.8	1
Monitoring and evaluation	5	3	5	5	5	5	4	5	4	5	4	4.5	1
Information Resource management	3	4	4	4	4	3	4	5	1	5	3	3.6	3
Development and administration of Acceptable Use policies													
Use policies	5	3	4	5	4	3	4	5	1	5	4	3.9	3
Costing and business planning for sustainable operations													
	5	4	5	5	5	5	5	5	4	5	5	4.8	1
PART 2: Hard Skills (Hands – on training in a production environment)													
Data network design and implementation	5	5	4	5	4	5	4	5	4	5	5	4.6	1

³ Highlighted entries are those not scored by the respondents: they were given a neutral score of 3.

TRAINING NEEDS VALIDATION: 1=Not needed; 3=Neutral; 5=Critically needed													
Network administration	5	5	5	3	4	5	4	5	3	5	5	4.5	1
Systems administration	5	5	5	3	4	5	4	5	3	5	5	4.5	1
Database administration	5	4	4	3	4	3	4	5	3	5	4	4.0	1
Email systems administration	3	4	4	3	4	5	4	5	3	5	4	4.0	1
Network and Data Security	5	5	5	4	5	5	5	5	3	5	5	4.7	1
Help Desk operations	3	3	4	3	4	4	5	5	3	5	4	3.9	3
Development and management of Service Level Agreements	5	3	4	5	4	4	5	5	4	4	5	4.4	2
Bandwidth management and optimisation	5	4	5	5	4	5	4	5	4	5	5	4.6	1
Assessing IP address needs, IP address application, and renumbering	5	5	4	5	5	4	4	5	3	5	3	4.4	2
The ITIL Library	3	3	3	3	5	5	5	4	4	4	3	3.8	3
Disaster Recovery implementation and management	5	5	3	3	5	4	4	5	4	5	4	4.3	2

Other Areas Identified

- Instructional design and technologies
- OS educational applications development
- Campus Network design and operation
- Content development at institution level
- Grid Computing