

Regional Activity to Promote Integration through  
Dialogue and Policy Implementation (RAPID)  
**REGIONAL MARKET INTEGRATION**



**SUPPORT FOR  
TRANSPORT AND TELECOMMUNICATION REFORM IN  
SOUTHERN AFRICA:  
PROTOCOL IMPLEMENTATION**

**TECHNICAL ASSESSMENT REPORT:**

**SATCC-TU Systems Audit / IT Status**

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## TABLE OF CONTENTS

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<b>LIST OF ACRONYMS .....</b>	<b>iii</b>
<b>SECTION I – INTRODUCTION .....</b>	<b>1</b>
1. Purpose of RAPID Task Order 2.1 .....	1
2. Objective of this Report .....	1
3. Organization of the Report .....	1
<b>SECTION II – ANALYSIS .....</b>	<b>2</b>
1. SATCC-TU Internal Computer Network.....	2
2. Desktop Computer Hardware.....	2
3. Desktop Computer Software .....	2
4. Server Computer Hardware.....	3
5. Server Computer Software .....	3
6. Connection to the Internet .....	3
7. SATCC Web Site .....	3
8. Personnel and Infrastructure Support.....	5
9. Training.....	5
<b>SECTION III – CONCLUSIONS.....</b>	<b>6</b>
1. The current setup does not enable SATCC-TU to fulfill its function or objectives. ....	6
<b>SECTION IV – RECOMMENDATIONS .....</b>	<b>7</b>
1. There is a clear need to setup Policies Procedures and Guidelines for the IT (and Other) functions of Technical Units.....	7
2. Training of end users and system administrators .....	7
3. Widen the scope of USAID delivery to ensure longer viability.....	7
4. There is a need to setup Help Desks .....	7
<b>ANNEX A – List of Computer Equipment at SATCC-TU .....</b>	<b>8</b>

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## LIST OF ACRONYMS

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bps	bits per second (transfer rate for communication lines)
BDC	Backup Domain Controller
DAT	Digital Audio Tape
ISP	Internet Service Provider
IT	Information Technology
kbps	kilobits per second
kB	kilobyte (1024 bytes) (sometimes 1000 bytes)
kilo	Thousand [in computer terms might mean 1024 (2 to the power 10)]
Mbps	Megabits per second
MB	Megabyte (1048576 bytes) (could also be 1000000 bytes)
MHz	Megahertz (Million Hertz)
Mega	Million [in computer terms might mean 1048576 (1024*1024 or 2 to the power 20)]
PDC	Primary Domain Controller
RAM	Random Access Memory
RAPID	Regional Activity to Promote Integration Through Dialogue and Policy Implementation
RCSA	Regional Center for Southern Africa
RTRP	Regional Telecommunications Restructuring Programme
RAS	Remote Access Server
SCSI	Small Computer System Interface
STEP/PAAS	SADC Transport Efficiency Project / Policy Analysis Assistance to the SATCC-TU
SATCC	Southern Africa Transport and Communications Commission
SATCC-TU	Southern Africa Transport and Communications Commission Technical Unit
SADC	Southern African Development Community
SOW	Statement of Work
SO	Strategic Objective
TO	Task Order
USAID	United States Agency for International Development



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## SECTION I – INTRODUCTION

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### **1. Purpose of RAPID Task Order 2.1**

The purpose of this task order is to provide technical support for the implementation of protocols for the reform of the transport and telecommunications sectors in Southern Africa. It responds to the urgent need to accelerate the pace of change in the SADC transport and telecommunications sectors.

### **2. Objective of this Report**

The objective of this report is to point out problem areas in the computer equipment used by the SATCC Technical Unit, based in Maputo, Mozambique, and to suggest possible solutions for these problems.

The SATCC-TU is the body providing technical, implementation and monitoring support with the implementation of the *SADC Protocol on Transport, Communications and Meteorology*. Problems in the SATCC-TU computer network will negatively affect the functioning of the Technical Unit. This would limit the effectiveness of the SATCC-TU in the SADC region.

### **3. Organization of the Report**

This report itemizes the conditions at the desktop and server operations at SATCC-TU and deals separately with the problems of the web server for which an interim solution has been found.

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## SECTION II – ANALYSIS

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### 1. SATCC-TU Internal Computer Network

The SATCC-TU office covers two floors in the building at 170 Avenida Martires de Inhaminga, Maputo. Currently, not all of the computers in the office are connected to the computer network. All machines on the third floor of the building and some machines on the second floor are networked. About ten machines on the second floor are not connected to the network. The network cabling has been installed for these ten machines and the process is in place to connect most machines to the network sometime in 2001. Some of the machines, however, are old with dated technology (486 processor) and capacity that may make it either impossible or impracticable to connect them to the network and therefore most of these are not used. The computers are used mostly for general office applications primarily word processing, although there are also some Microsoft Access databases in use by the Statistician.

The network speed is 10 Mbps. Currently the volume of traffic on the network is extremely low and does not require a faster network.

### 2. Desktop Computer Hardware

There are a variety of machines at the SATCC-TU. The bulk of the machines have Pentium II processors, while there is one new machine with a Pentium III processor. There are also a few machines with Pentium processors and nine machines with 486 processors. The machines with 486 processors are no longer in use.

Most of the newer machines have 32MB RAM, while the older machines have 8 or 16 MB RAM. The newer machines have 4GB hard drives installed, while the older machines have small drives (160MB, 245 MB, etc).

The old (486 processor) machines do not have the capacity to have modern software installed.

See Annex A for details.

### 3. Desktop Computer Software

#### 3.1 Operating Systems

The operating system on the workstations is mostly Windows 95, with three machines running Windows 98. There are also a few old machines with DOS/Windows 3.1.

#### 3.2 Word Processing and Spread Sheet Packages

Most of the machines have Microsoft Office 97 Professional installed (Microsoft Word, Excel, PowerPoint, Access). The older machines use WordPerfect 5.1 and Lotus 123 v 4.

#### 3.3 Anti-virus Software

There are two anti-virus packages installed on the machines, Norton Anti-virus and McAfee. The anti-virus software on all the machines was out of date due to expiry of licenses. With the exception of four machines, all the machines had viruses on them. Viruses found include Ethan, Groovie, and Pretty Park. A substantial amount of time was spent sorting out virus problems.

### **3.4 Other Software**

E-Mail is handled via Microsoft Outlook or Outlook Express. There are a few copies of Eudora Pro e-mail software available, but these are not used.

### **4. Server Computer Hardware**

The main server has a Pentium II 233 MHz processor, with 128 MB RAM and two 8.4GB hard drives. The second server has a Pentium Pro Processor, with 64 MB RAM and one 4GB hard drive. Each server has a 4mm DAT drive for backup purposes, but the capacities are different. No backups are being done.

See Annex A for details.

### **5. Server Computer Software**

Both servers use Windows NT 4.0 Server as the operating system. The machines are part of a domain, with the main server acting as the Primary Domain Controller (PDC) and the other server acting as Backup Domain Controller (BDC). Users are validated when logging onto the network, but user identities are shared so that there is no security benefit at the moment.

E-Mail server software is IMail Server for Windows NT, supplied and supported by Virconn.

### **6. Connection to the Internet**

Connection to the Internet is via 33600 bps analogue leased line (permanent connection) to Virtual Connection (Virconn), an Internet Service Provider in Maputo. The connection speed is typically 28800 bps. The connection is established via the RAS functionality on the one Windows NT server, with the modem connecting directly to the computer. Microsoft Proxy Server v2.0 software handles outgoing connections.

### **7. SATCC Web Site**

The purpose of this exercise was to determine why the SATCC Web site was not functioning and, if possible, rectify the problem.

The web site is hosted by Virtual Connection (Virconn), an internet service provider in Maputo. The machine is dedicated and belongs to SATCC-TU.

The complete machine, with the software and developed site was a deliverable of the RTRP project. The machine is rack-mountable, with a Pentium Pro processor. The operating system is Linux, while the web server software is Apache.

The first problem encountered was getting information about the web site. The only documentation found at the TU was the instructions on how to make changes to the site. None of the TU staff had any detailed technical understanding of the issues surrounding the site.

The second problem was to get in touch with the service provider to get more details from their end. A meeting was arranged but, upon arrival at their premises, none of the technical staff was available. Phone calls were made and messages left to arrange another meeting, with little success. Eventually another meeting was arranged. This time we managed to meet with a technical person, but there was

a language problem. He also didn't know anything about the SATCC web server. I managed to have a look at the machine and the software. Since Linux is an operating system I am not very familiar with, I could not do very much. The owner of the company is the only person who can speak English and he is also the only person who really knows anything about the web site.

Another meeting was arranged, with Helder Santos, the owner of the company. He explained that they do not have the knowledge to maintain the SATCC web server. They have good networking skills in his company, but they don't know much about Linux and Apache, the operating system and web server software on the machine. He explained that, after the site stopped functioning, they didn't have the knowledge to determine what the problem was or to fix it. Someone who does support on their router equipment had a look at the machine and determined that some files were missing, but they couldn't determine what they were or why they were missing.

I had another look at the machine, but even with the new background, couldn't determine the exact problem. The fundamental problem is the failure of the Expressroom 3<sup>rd</sup>-party web site software (supplied by Worldweb, Alexandria, VA, USA, Telephone +1 703 838 2000). There was a support contract but it has expired and there is nobody in Maputo to support the product.

### **7.1 The Options to get the web site up and running:**

There are five different options to resolve the situation.

- Keep the machine and stick with the existing software configuration. Get someone to reinstall all the software, including the Linux operating system, Apache web server software and Expressroom content management software. Reload the old web site, if a backup can be located, and then update it. However, unless SATCC-TU can renew the support contract with WorldWeb for Expressroom, this is not feasible, more so as support is from the East Coast of the USA (Alexandria, VA).
- Keep the machine and stick with Linux and Apache, but scrap Expressroom. The site will have to be completely redesigned. There is the risk of support problems.
- Keep the machine, but replace all the software with something that is known to the ISP staff, e.g. Microsoft Windows NT Server with Microsoft Internet Information Server. The cost of the Windows 2000 server software would be around US\$ 1000 equivalent, excluding time to install. Redevelop the site.
- Move the machine to a different location, even outside Mozambique. Any of the options above could be applied to this.
- Have the site hosted by a service provider on their hardware. This will also mean redeveloping the site. Reallocate the machine for other use – will require software purchases.

### **7.2 Recommendations to get the web site up and running**

- It is recommended that the web site be moved to another software platform, Microsoft 2000 server with Microsoft IIS, which is better supported in the region. The ultimate location of the site will have to be decided by SATCC. A further element of uncertainty is that the SADC Secretariat (HQ) is restructuring and it is possible that SATCC-TU will be moved to Gaborone, Botswana.
- Pending resolution of the situation, the SATCC web site will be hosted at Complete Software Solutions in Johannesburg, South Africa, as an interim measure. The server should not be left at the ISP in Maputo.

- Ultimately SATCC-TU and probably many other activities within SADC will need to address the issue of hosting and of providing in-house updates to their web sites. It is recommended that a suitable training course based on readily available software, e.g. Microsoft Front Page be held as soon as possible in a central location, probably Johannesburg.

## **8. Personnel and Infrastructure Support**

There is currently no IT staff at SATCC-TU. One staff member handles support on an informal basis. The lack of an IT resource has caused the deterioration of the network and computer systems. Very little or no housekeeping is done and many of the problems which crop up cannot easily be solved. This results in the inefficient utilization of available equipment and a staff that is unable to do their work.

No backups are being done. There is only one backup tape for each server. At least another two tapes will be needed for a minimum backup cycle to be implemented (preferably more). Backup tapes purchased should preferably be DDS2 and not DDS3, as the one tape drive has a smaller capacity than the other. If DDS3 tapes are used for the Dell Server, the data cannot be restored on the Acer server. Restores will have to be tested. The only backup software currently installed on the servers is the built-in software for Windows NT, the operating system. This software is not very flexible.

## **9. Training**

The SATCC-TU staff at the time of the STEP project received training in the use of the applications at their disposal, but there has been some staff turnover since then.

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### SECTION III – CONCLUSIONS

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**1. The current setup does not enable SATCC-TU to fulfill its function or objectives.**

There is no centralized knowledge management system or ethos of information sharing. Staff keep information on their own machines, as islands of data. Sharing of data is by exchange of diskettes. There is no individual or centralized backup of records. The system is fundamentally unreliable, because there are no support staff on hand. An expatriate support person has been identified and is due to start work March/April 2001, however, unless he has a budget he is unlikely to make significant progress.

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## SECTION IV – RECOMMENDATIONS

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**1. There is a clear need to setup Policies Procedures and Guidelines for the IT (and Other) functions of Technical Units**

IT operations do not function well without clear Policies Procedures and Guidelines (PPG). However creating such foundation work is time consuming and often ignored whilst the personnel “fight fires”. RAPID should consider providing useful standardized PPG to each Unit, ideally linked to a Document Management System.

**2. Training of end users and system administrators**

The frustration, slow progress and degradation of productivity arising from lack of IT training are a major impediment to the objectives of SO2. RAPID should consider a SADC-wide study to assess training required and options available and to recommend optimal methods of delivering such training.

**3. Widen the scope of USAID delivery to ensure longer viability**

Despite the initial product being of high quality from Worldweb, problems with the web server arose because the scope of delivery did not provide enough post-delivery support to the end users. It appears that the original offer was to provide three years hosting and support but linked to an offshore web site whereas the SATCC-TU felt that it should be hosted locally, which meant that the support period was shorter. Local support was also not available.

A similar issue has arisen with other software, such as the anti-virus software. Donation of a product without provisions for updates for extended periods passes an increased cost of ownership onto the recipient country, which probably will fail to pay for such maintenance.

**4. There is a need to setup Help Desks**

Each SADC body, indeed many SADC governments, probably suffer from the lack of institutional “Help Desk” systems. A common system could be acquired at a good price, which could build up a knowledge base of FAQ’s and generally share scarce skills in an efficient manner.

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**ANNEX A – List of Computer Equipment at SATCC-TU**

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No	Location	Brand / Model	CPU	RAM	HDD	CD-Rom Drive	Zip Drive	Comment
1	Computer Room	Dell PowerEdge 2200 (Server)	233 MHz Pentium II	128 MB	2 x 8.4 GB SCSI	Yes	No	DAT Drive (Sony SDT-9000 12/24 GB DDS3)
2	Computer Room	Acer Altos 9000 Pro (Server)	200 MHz Pentium Pro	64 MB	1 x 4GB SCSI (Seagate ST34572W)	Yes	No	Built-in Adaptec SCSI Controller AIC7880U/UW. DPT PM3334UW SCSI controller (not used). DAT Drive (HP C1533A 4/8GB DDS2)
3	Computer Room	Dell XPS D266	266 MHz Pentium II	64 MB	4 GB IDE	Yes	Yes	HP6100 Scanner
4	Computer Room	Dell XPS D266	266 MHz Pentium II	32 MB	4 GB IDE	Yes (Faulty)	Yes (Faulty)	
5	Computer Room	AcerPower 6500	300 MHz Pentium II	32 MB	4 GB IDE	Yes	No	
6	Computer Room	AcerPower 6500	300 MHz Pentium II	32 MB	4 GB IDE	Yes	Yes External	
7	Training Room	Dell XPS D233	233 MHz Pentium II	32 MB	4 GB IDE	Yes	No	
8	Training Room	Dell Dimension P75t	75 MHz Pentium	16 MB	850 MB IDE	Yes (Faulty)	No	
9	Training Room	Dell XPS P133c	133 MHz Pentium	16 MB	1 GB IDE	Yes	No	

No	Location	Brand / Model	CPU	RAM	HDD	CD-Rom Drive	Zip Drive	Comment
10	Training Room	Dell Dimension P75t	75 MHz Pentium	16 MB	1 GB IDE	Yes	No	
11	Training Room	Gateway 2000 DX2-66V	486 DX2-66	8 MB	320 MB IDE	Yes	No	Screen Faulty VGA card Faulty
12	Training Room	Gateway 2000 DX2-50V	486 DX2-50	8 MB	320 MB IDE	No	No	Screen Faulty 1.2 MB Floppy
13	Project Office	Dell Dimension XPS D233	233 MHz Pentium II	32 MB	4 GB IDE	Yes	Yes	
14	Project Office	Dell Dimension XPS D233	233 MHz Pentium II	32 MB	4 GB IDE	Yes	Yes	
15	Project Office	Dell Dimension XPS D233	233 MHz Pentium II	32 MB	4 GB IDE	Yes	Yes	
16	Project Office	Dell Dimension XPS D233	233 MHz Pentium II	32 MB	4 GB IDE	Yes	Yes	
17	Project Office	AcerPower 6500	300 MHz Pentium II	32 MB	4 GB IDE	Yes	No	
18	Railway Specialist	Dell Dimension XPS D233	233 MHz Pentium II	32 MB	4 GB IDE	Yes	Yes	
19	Roads Specialist	Dell Dimension XPS D233	233 MHz Pentium II	32 MB	4 GB IDE	Yes	Yes	
20	Ports Specialist	Dell Dimension XPS D233	233 MHz Pentium II	32 MB	4 GB IDE	Yes	Yes	
21	Civil Aviation Specialist	AcerPower 6500	300 MHz Pentium II	32 MB	4 GB IDE	Yes	Yes	
22	Planning Coordinator	Dell Dimension XPS D233	233 MHz Pentium II	32 MB	4 GB IDE	Yes (Faulty)	Yes (Faulty)	
23	Documentalist	IBM Valuepoint 433DX/D	486 DX 33 MHz	16 MB	245 MB	No	No	BIOS Problem – probably battery
24	Typist	IBM Valuepoint 433DX	486 DX 33 MHz	8 MB	163 MB	No	No	

No	Location	Brand / Model	CPU	RAM	HDD	CD-Rom Drive	Zip Drive	Comment
25	Typist	Gateway 2000 4DX2-66V	486 DX2-66	8 MB	325 MB	No	No	
26	Rail Training Officer	Bytes&Pieces	500 MHz Pentium III	64 MB	8 GB IDE	Yes	No	No Network Card Modem (56k Acorp)
27	Fin Office	IBM ValuePoint	486	8 MB		No	No	
28	Fin Office	Dell p75	75 MHz Pentium			Yes	No	
29	Director's Secretary	Gateway 2000 4DX2-66V	486DX2-66	8MB	320 MB	No	No	
30	Computer Room	Dell	Pentium					Faulty/Incomplete – used for spares
31	Computer Room	Gateway 2000	486 DX2-50					Faulty/Incomplete – used for spares
32	Computer Room	Dell Dimension XPS D233	-	-	-	No	No	Faulty/Incomplete – used for spares
33	Rail Training Officer	Toshiba Satellite 110CS Laptop	486	8 MB	800 MB	No	No	No Network Card Faulty (BIOS Battery faulty at least)
34	Computer Room	3Com 24-port SuperStack II Hub	N/A	N/A	N/A	N/A	N/A	
35	Training Room	Accton 8-port Hub	N/A	N/A	N/A	N/A	N/A	Connects Training room machines to rest of network.
36	Computer Room	US Robotics Courier V.everything 56K Modem	N/A	N/A	N/A	N/A	N/A	Internet connection.

Two laptop computers were out of the office and not available for inspection.