



LIT Report

Project: IT Operations Restructuring

Southend-on-Sea YMCA



Introduction

The Southend YMCA is a vibrant organisation, proactively engaged in helping vulnerable young people and disadvantaged communities to build their future. We have a broad vision 'seeking to stand in the gap' by offering services which address the needs of our beneficiaries. We are responsive, developing high quality, demand and need led provision, which optimizes life chances and helps to build cohesive communities. This is in accord with our charitable objects: the advancement of education, housing and recreation and the amelioration of conditions of need and distress.

The LIT project we undertook was to restructure the IT operations of the Southend YMCA. Firstly, by implementing Microsoft Terminal Services accompanied by Thin Client machines, adopting effective SBC (Server Based Computing) improving management, performance, access & security. The main cause for this change is that current workstations are unreliable, unproductive, insecure and will soon be needing an overhaul of hardware (due to outdated hardware) and software (due to the release of Windows 7). By utilizing SBC we will effectively be performing all of our computer processing via a centralised data centre. All upgrade, maintenance and management can then be controlled via this centralised data centre. We are also rapidly expanding into other sites with more staff forced to work remotely and our current remote system is struggling to cope with the current load. By implementing a new terminal service we can also greatly improve our remote working provisions.

In addition to this students currently struggle to fully use our Mac computers, which we hope to solve by implementing dual booting, giving them the option of Mac or Windows environment. Thus improving user experience of Apple Macs by utilizing Windows 7 OS.



Methodology

Planning

The first part of this project was to develop and implement a Server Based Computing (SBC) system. The initial step for this was research. I used the internet to look into what solutions were available and two prominent applications seemed to be the market leaders in SBC solutions, Virtualisation and Terminal Service. At first virtualisation seemed like a great way of implementing SBC. But after doing some research we realised that Virtualisation was quite immature technology that is still in its early adoption days and would also be very expensive to implement. We did some more digging and realised that Microsoft's Terminal Server can effectively give you the same benefits of virtualisation but at a much lower cost and utilising a mature and well developed technology.

The only downside we could identify of implementing a Terminal Server over Virtualisation was the fact that virtualisation can help with software compatibility as it allows you to run multiple operating systems. This isn't necessarily a good thing though, as the management issues increase when running multiple operating systems.

We decided to go with Terminal Service simply because it is a simpler, well defined and well established solution. It is also the only solution that was within the project budget.

We then enlisted the help of our IT Manager James at our external IT support company to help us build up a list of requirements for the project. James identified a number of hardware and software components which would be required, he did this by firstly looking at how many users would be using the system as well as trying to forecast how many additional users may be required over the next year or two. This was to ensure that the system is future proof and would support the SYMCA over the coming years. Once we had an idea of user capacity we had to look at what software would be required, the only explicit requirement for this was Microsoft Office. We currently run an environment of Office 2003 and 2007 but as these versions are no longer available to purchase we decided to upgrade everyone to Office 2010 if the budget allowed it.

The resulting list comprised of a new HP server, upgrade RAM for the old server and different software licenses including; Windows Server, Office 2010 and Remote Desktop licenses. Once we had a list of required hardware and software James helped me to source the required parts. We went to a couple of different suppliers requesting quotes so that we had a number of different options to compare. Most of the hardware quotes were very similar, so we went with the cheapest reputable supplier. When it came to sourcing software deciding on a supplier was a pretty easy choice. There is a company Charity Technology Exchange (CTX) which supplies software and hardware to the Third Sector. CTX gets IT equipment donated to it by different manufacturers such as Microsoft, Cisco and SAP. They then pass this donated software and hardware onto different charities for free! The only cost is a small administration charge per user license which is only a fraction of the retail cost.

Planning for the Mac OS Boot Camp installation was pretty simple. I first tested the system by installing Boot Camp and a spare copy of Windows XP onto one of our iMac machines. The installation went smoothly and I was happy with the results. Unfortunately Windows XP is no longer



available for retail purchase so we decided to purchase new Windows 7 licences through CTX. I was happy with purchasing Windows 7 as I had personally had experience with using it and was confident that it would be an appropriate and high-quality operating system.

Installation & Setup

Installing the SBC solution was pretty strait forward. James came down onsite to give us a hand with the whole installation process, which was of great benefit. We first started by upgrading the old server, we installed 4GB of additional RAM which should greatly improve its performance and upgraded the OS from Windows Server 2008 to 2008 R2 and Office 2007 to Office 2010. This should bring the efficiency and performance of our old server up to par with our new server. Upgrading the old OS was key as having one server running and old version of Windows Server would mean that the new server would be reduced to the function level of the old server.

We then installed and configured the new server to be integrated with our current servers and network. The physical setup was pretty simple and just a case of screwing the server in place and plugging in all the appropriate wires. Installing the software and configuring the server is what took the time and it took me and James a whole day to have the server functioning how it we wanted.

This was basically it for setting up the SBC solution. The only additional task I had to perform was systematically going work all of the work computers and ensuring they where configured to allow users quite and easy access to the server. I did this by setting up a Remote Desktop connection and saving it as a shortcut on everyone's desktops.

Installation and setup of Windows 7 on the iMac machines was definitely not as strait forward as it first seemed. After a failed attempt at trying to install Windows 7 on one of the Macs and receiving numerous error codes and started to do some internet research into why I was receiving these errors. It was highlighted on the office Apple Forum that Windows 7 was only compatible if you had the latest version of iOS installed (v10.6) and we are currently running v10.5. I then started to look into upgrading the OS which seemed like a pretty cheap and easy solution but during this research I identified another problem. Currently all of our Macs have Adobe Photoshop CS2 installed, which is in constant use by many of our students. The problem with this is Photoshop CS2 is not supported by the new iOS v10.6. Here we've hit a real snag as we could not install Windows 7 and we are running an old version of iOS and we could not upgrade iOS because we simply could not afford to upgrade our version of Photoshop to CS4, which costs roughly £250 per licence.

Luckily though there was a simple solution to the above problem. As we have just installed the new Terminal server we could setup Remote Desktop (RD) connections on all of the Macs. This would allow any Mac user to RD into the Windows powered server and have access to a fully functional Windows environment from the Mac computers. Another bonus being that because we had also just upgraded our servers to Server 2008 R2, which is built upon Windows 7 they would have all of the features of a normal Windows 7 machine.

Knowledge Dissemination

The next step was to imbed the knowledge of the new system, including promoting the new system, how to access it and how to use it appropriately. I did this firstly raising awareness of the new



system. During the planning phase I presented the theories of SBC to the SYMCA Board and all members of staff through a number of different meetings. I also sent out emails to staff members letting them know what was happening and what/when changes were set to take place.

Next, I produced a couple of different documents. Firstly, an instruction guide which explains how the system works and details how to connect and use the system. While writing this particular document I tried to explain things in simple terms and tried to put it into words that anyone could understand. I also used diagrams and screen shots to help users visualise what I had written.

The next document I produced was a policies agreement. Instead of producing a whole new document I decided to instead modify our current IT usage policy to include and new policies I believed were suitable. I also took this opportunity to update the document to make it more relevant for current staff. Every member of staff is expected to read and sign this policy agreement.

Both the two above documents have been read and agreed by senior management. They were then distributed to all current members of staff and will also form for of any new staff inductions. I am also planning on holding future workshops to help any members of staff who may still be struggling to use the new system.

Results

I believe this project has been very successful. So far the SBC system has met all of our expectations. We have had little time with actually using the new system and the majority of the benefits will come over time. So far though, it has been much better for managing software rollouts. From now on if a new piece of software is required or a software update it only has to be applied or installed once and then everyone has access to it. As people become more accustomed to using the new system we believe all of the other objectives will be met, such as increased security, cost and time savings.

Giving students and staff the choice of interfaces on the iMacs has gone down extremely well. Everyone is much happier with having the option of using a Windows OS if they aren't familiar with Mac OS. I believe implementing this or a similar solution in other companies where they also operate Apple Mac machines could be extremely beneficial. It seems to have brought a whole new life to our Macs. Before this project began staff and student were both sick of having to feel their way around the Mac interface and this had results in many people just avoiding having to use them. Now everyone is happy to use them, it has made them multi-functional machines and means that everyone gets the best of both worlds. Considering the time and cost of implementing this change I will definitely be recommending this solution to other people and companies. It is a shame we could utilise Boot Camp to give us the dual boot option as this would have made the solution a lot more smooth and user friendly but the slightly different solution we implemented has given us brilliant results as it is.

Savings

So far the clearest and most measurable saving has been staff time. When looking at staff time spent trying to operate the Mac OS compared to staff time using a Windows OS there have been great results. From interviewing staff they estimated that they spent around 30% of their time trying to find simple features and functions on the Apple Macs, now that time has been reduced to almost zero! Staff and students have both shown an increase in satisfaction when using the Macs now which inevitably will lead to better productivity.

Regarding the SBC system the real savings are yet to be seen. So far the only savings have been my time as I have not had to spend so long installing software on different computers, this has actually been a very big time saving as a single software install could sometimes take me hours if it has to be rolled out to all computers. Now the same install literally takes minutes.

One saving we hope to see very shortly is a cost saving. Through the LISI LIT Capital Grant we are purchasing 20 Thin Client machines. These machines are roughly 50% of the cost of an office grade PC and have an unknown life span. Theoretically, if they don't break they could last forever as we would only ever need to upgrade/replace the server powering them. They are also a lot less prone to breakdowns as they have a great deal less components than a traditional PC. The direct cost savings are obvious, but the indirect savings may be less obvious. Firstly, according to Legend Ware (http://www.legendware.co.uk/images/energy_study.pdf) Thin Clients use roughly a third of the electricity used by traditional PC. This will, in the long run save us a huge amount in electricity bills and also greatly reduce our carbon footprint, which is a key objective of our new business strategy. In addition to this Thin Client machines take up a lot less space than a PC meaning we can make much better use of office space, which is one thing the YMCA is really lacking right now.

Lessons

One big lesson I will take from this project is regarding software installs/updates. Always check and double check compatibility! This could have really messed up a great deal of planning, luckily it worked out for us this time but in the future I will always make sure software is compatible and not just assume. Just the small changes in the Mac OS from v10.5 to v10.6 made such a huge difference to what we originally planned for this project and could have ended up costing us a substantial amount of money.

Another lesson I think the whole organisation will take from this is the ability to have multiple operating systems on a single computer. This is something I knew about before this project but had never actually implemented. Now there are many students and staff who have learned this lesson and are aware of the options and opportunities available through different software solutions. I would recommend this solution to anyone who has installed Mac computers in favour of Windows machines.

I plan to continue learning from our SBC solution and believe with time we will be able to show very clear benefits and be able to show exactly what this type of system can achieve.



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Quote

Please feel free to use all of/part of the following quote.

“Through the use of the LISI LIT grant we have been able to totally change the ways in which users access computers. We have had the opportunity to explore and experiment with technologies unfamiliar to the Third Sector and bring about a great deal of benefits utilising small amount of money and resources. The saving and benefits we have gained through the LIT grant have exceeded expectations and for this we say thanks.”



Appendices



APPENDIX A

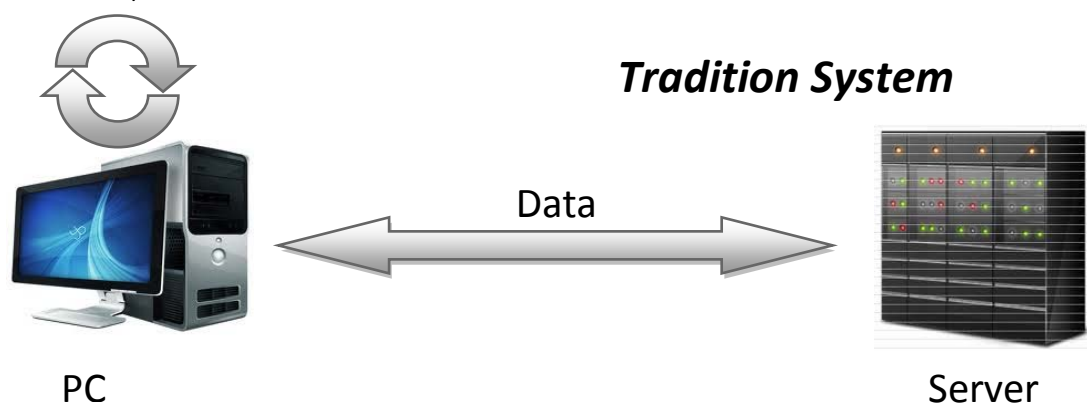
SBC Instruction Manual

Southend-on-Sea YMCA

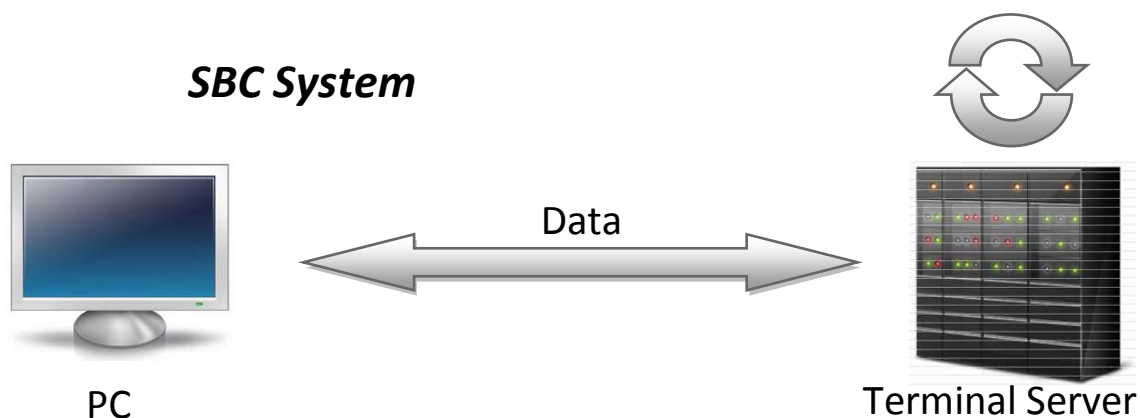
Introduction

This manual is being written to guide staff members on how to use the new Server Based Computing (SBC) System installed at the Southend YMCA. This system unlike traditional computing systems utilises server technology and resources instead of relying on a user's PC.

To better explain how this works, when you use traditional computer and server based network environment the server is used normally for storing data. The user's computer is then responsible for processing this data and performing most of the tasks required by the user such as; word processing, printing, photo editing etc. This process is highlighted in the diagram below in which you can see the main data processing is handled by the personal computer (represented by the 360 degree arrows).



In our new environment all of the storage of data as well as the processing is done by the server itself. This means that the user's computer is literally a window for seeing into the server and the tasks it is performing. The results of this being; there is no data stored on anyone's computers, the computers do not need to be of high specifications, do not need to be managed and can be very easily distributed. The below diagram shows how a SBC system works in simple terms.



Ultimately what does this mean for you as a user? Well it means a number of things. All of your software applications such as Word, Excel, Outlook are all installed on and run directly from the server. There is no need to ever install applications on your computer or run updates. These are installed once on the server and everyone has access to the latest software. It also means no data is ever stored on your local computer (data is always kept on the server) making a much more secure environment. Finally,

Instructions: Getting Connected

To use the SBC system correctly you have to establish a connection with the server. This connection is handled via an application called Remote Desktop Connection (RD), which is automatically installed on all Windows computers. Most of the computers at the Southend YMCA will already be configured with a desktop shortcut which will launch the RD with the correct setting already in place. The shortcut will look similar to the one shown in *figure 1*.



Figure 1

If you are using a computer with the above shortcut you can double click this, click 'connect' and then enter your network login.

Connecting to the YMCA's network and server via this method can be done on any Windows computer from any location as long as you've got an internet connection. To setup a new RD connection on a computer please follow the following steps.

Setting Up a New Connection

You will first need to identify whether you are using Windows XP, Vista or 7. This is quite simple process.

1. Look in the bottom left hand corner of your screen.
2. If you see a button with the words 'Start' on it you are using Windows XP or bellow.
3. If you see a round button with the Windows logo you are using Windows Vista or 7.



Windows XP



Vista/7

Depending on your version of Windows Follow the bellow steps to setup your connection.

Windows XP:

1. Click **Start**
2. Click **Run...**
3. Type **mstsc**
4. Click **OK**
5. **Figure 2** will be displayed

6. Follow further instructions below “Establish a Connection”

Windows Vista:

1. Click **Start**
2. Type **mstsc**
3. Hit **Return** on the keyboard
4. **Figure 2** should be displayed
5. Follow further instructions below “Establish a Connection”

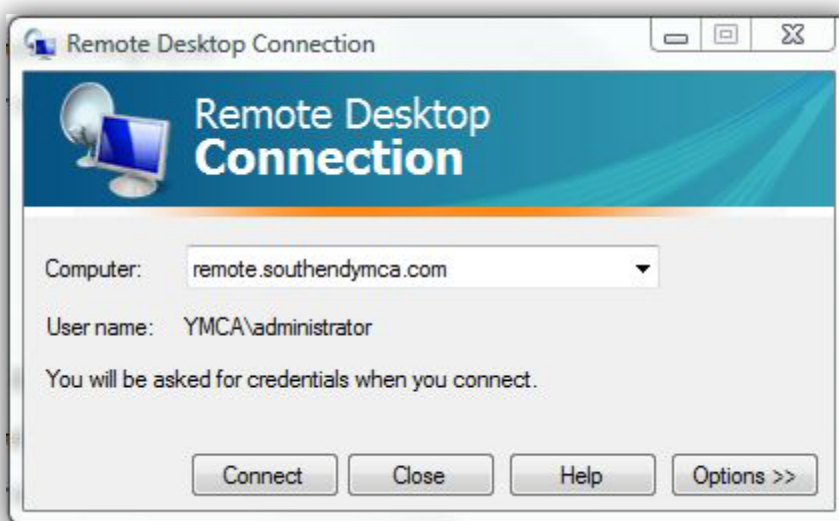


Figure 2

Establish a Connection

1. Enter **remote.southendymca.com** and click Connect
2. You will be prompted to enter your username and password. Your username needs to be entered in the following format:
 - i. **ymca\firstnamelastname**
3. As a security precaution, **do not** tell the software to remember your credentials

Mac User

Any Mac users can setup a RD connection the same as above but you will first need to download and install the RD software as this does not come preinstalled on and Mac computers.

The appropriate software can be downloaded from the following link:

http://download.microsoft.com/download/6/c/0/6c01c76e-fef9-4a59-9fe1-84b1a307ad26/RDC200_ALL.dmg



Troubleshooting a Failed Connection

If you encounter problems connecting, please check the following:

- Confirm that you are connected to the internet
- Make sure you have typed the correct name: **remote.southendymca.com** when trying to connect
- Check your username and password
- Check that you have correctly input the username : **ymca\firstnamelastname**
- Passwords are case-sensitive. Please ensure you type in the correct case
- Make sure you have the latest version of **Remote Desktop** software installed

Connected. What Now?

Once you have successfully connected to the server you will be presented with a whole new desktop within a new window. You can think of it as exactly that, a 'window' for seeing into the server. This new desktop can be full screened and you have full control as if you were sat right next to the server itself.

This new desktop acts just like the desktop of any computer, but here you can check your emails, access your documents and files stored on the shared drives. Also by taking the RD out of full screen mode so you can see your own computer and RD at the same time, you can simply drag and drop files between the two computers. This will transfer files between the server and your own computer.

NOTE: You should never copy sensitive information from the YMCA network onto your own computer. This violates our usage policy and can result in disciplinary action.

Disconnecting

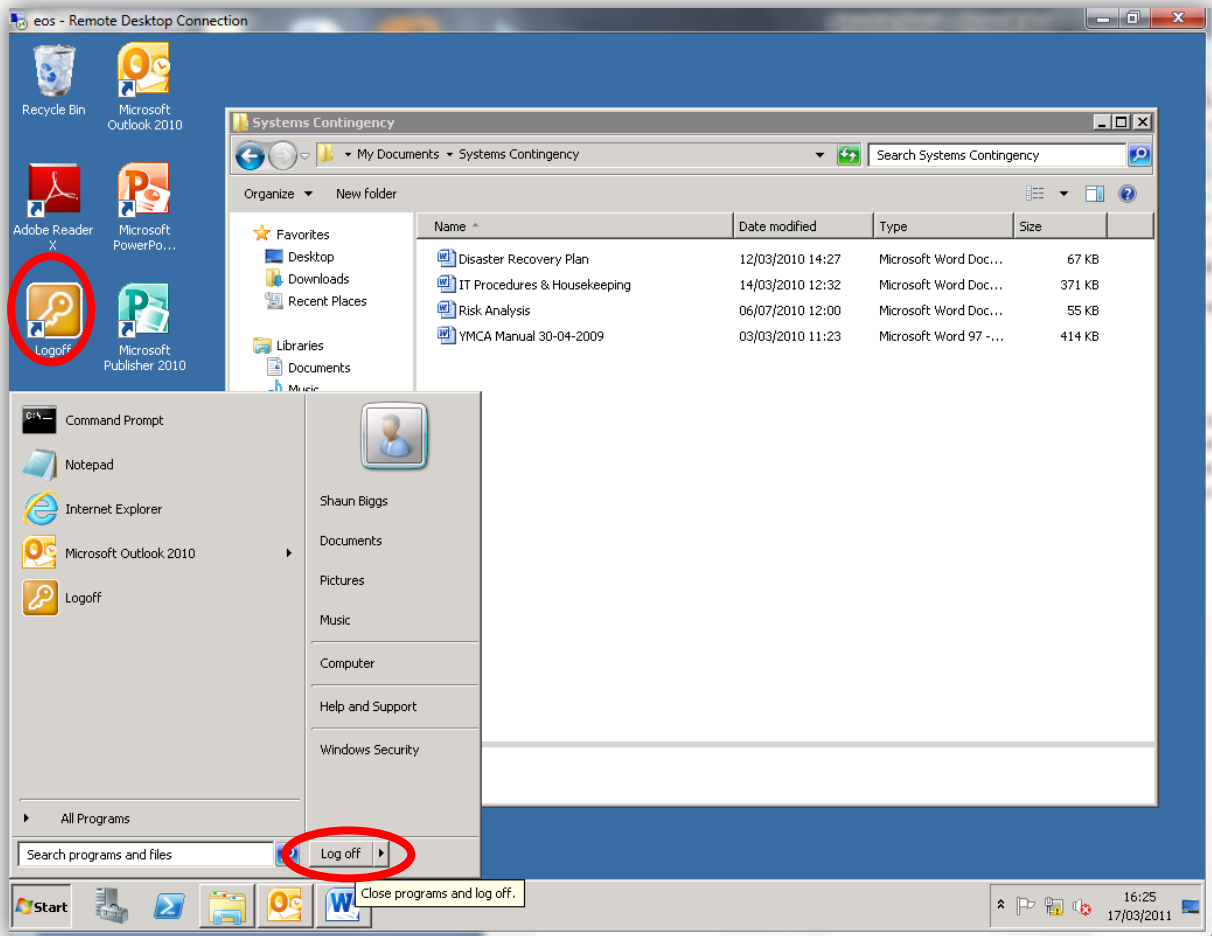
When disconnecting from the server you need to make sure that you Log Off correctly. Some people will simply click the X in the top right of the window. This is not correct. Clicking the X will simply close the window itself, the connection to the server will still remain open and you will still be logged on. It is important that you actually log off the server in order to free up the connection for other users.

To do this either...

1. Click **Start**
2. Click **Log off**

Or

1. Click the **Log off** short cut on the desktop.





Appendix B

SOUTHEND-ON-SEA YMCA

AGREEMENT FOR SOUTHEND-ON-SEA YMCA STAFF MEMBERS

Staff members may use the Southend-on-Sea's computer system to enhance their professional activities including training, research, assessment, communication, administration and management.

This agreement has been drawn up to protect learners, SYMCA staff and members of the public. All staff requiring access to the internet will be asked to sign a copy and return it to a member of the SYMCA Senior Management Team prior to utilising the SYMCA's facilities.

PART 1: RESPONSIBLE USE OF THE INTERNET AND EMAIL

- The SYMCA reserves the right to monitor any internet sites visited or e-mails exchanged
- All internet activity will be appropriate to the staff member's professional use
- Access will be made via the authorised account and password assigned to the staff member, which will not be changed or made available to any other person unless authorised by a member of the SYMCA Senior Management Team
- Staff members will be responsible for all e-mails sent and received and will be vigilant about the risk of virus infection from files attached to e-mails.



SYMCA's e-mail must not be used for sending private or personal messages and anonymous messages and chain letters must not be forwarded.

- The same professional and business standards of communications applied to letters and other media will also apply to the contents of e-mails, including the language used.
- Staff members will not use the internet for personal financial gain, gambling, political purposes, advertising or any other use deemed as not conducive to business practise. The use of the SYMCA's network to knowingly access inappropriate materials such as pornographic, racist or offensive material is strictly forbidden.
- Copyright of materials must be respected.

I understand that the use of the SYMCA's internet and email is granted to me as a privilege in return for my acceptance of the above agreement. Any misuse on my part may result in loss of that privilege and other sanctions being taken.

Name: _____

Signed: _____

Date:



PART 2: RESPONSIBLE USE OF THE COMPUTERS AND NETWORK

- The SYMCA reserves the right to examine or delete any files that may be held on its computer system
- Staff members must not wilfully make any changes to computer settings, delete any software or interfere with another person's work files unless authorised by a member of the SYMCA Senior Management Team
- Staff members must obtain authorisation from a member of the SYMCA Senior Management Team before any software is installed or downloaded from the internet.
- Personal or recreational use of the Computer Network is only allowed after the Staff Member's working hours. However, this can be refused if a working staff member needs to use the computer equipment for coursework, scholarly research, or YMCA administration.
- No sensitive files or information should be copied from the network onto a personal computer either via Remote Desktop or removable media (such as USB flash drive or memory cards)
- All uses should Log off any Remote Desktop connections not just close the window.
- No computer equipment to be taken off site with the authorisation of the SYMCA Senior Management Team.
- Never connect to the SYMCA network via Remote Desktop on a public computer such as in an Internet Cafe or Library.
- Always treat computer equipment with respect and never intentionally damage or vandalize and SYMCA property.

I understand that the use of the SYMCA's internet and email is granted to me as a privilege in return for my acceptance of the above agreement. Any misuse on my part may result in loss of that privilege and other sanctions being taken.

Name: _____

Signed: _____

Date:

