

Education Market Overview: The Case for Networking and Remote Access

A Perle Systems White Paper



The IT requirements of an Educational Institution, be it a University, Primary or Secondary School, are as complex and diverse as that of a small city, with stringent requirements such as advanced security features, high data transfer speeds and 24 hour uptime and network support.

Thousands of IT applications are monitored and managed by a dedicated team of IT experts throughout the campus. Some of the most common applications found in an educational institution are:

- Secure access to buildings such as the Library and Halls of Residence
- Point of Sale requirements for photocopiers and print rooms
- Email account for every student
- Secure email access for staff
- Intranet set up and functionality
- Online examination management and results posting
- Storage and management of sensitive data
- Secure intra-departmental data transfer

Within this complex IT infrastructure, the team of System Administrators have to maneuver and manage numerous different hardware technologies, such as servers, routers, cabling, switches, as well as the various software applications.

The Background

The number of students attending Universities has increased drastically in the last 20 years. There are currently 2.3 million students at the 168 UK Universities (Germany has 1.9 million students, USA has 14.5 million students, France has 2.1 million students.)

The challenges for the Network support teams are numerous, including primarily:

- Minimising network downtime
- Monitoring uptime
- Keeping service costs under control
- Secure remote access to server rooms and on-site data centres
- Recovery of remote systems and peripherals
- Maximum security levels preventing hacker attacks, and enabling secure login and sensitive information transfer
- Enabling faster connection speeds throughout the network
- Improving web and mail services

This paper focuses on three common applications and solutions found in the campus environment:

1. Campus Expansion – Scalability and console management
2. Reliable Data Transfer – Network enable existing equipment
3. Secure Data Flow – Payment terminals and door entry systems

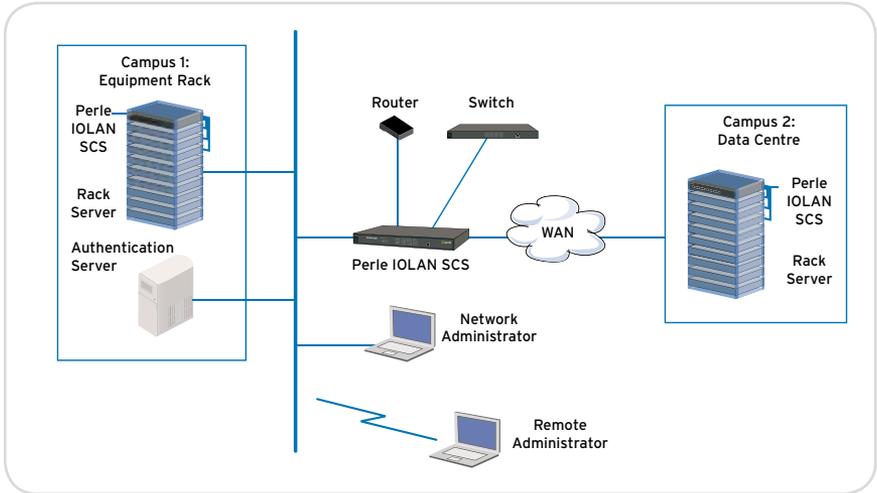
The rapid growth of Universities and the implications for Network Management - Scalability

With the increased growth of the number of students at educational institutions, Network Administrators are constantly under pressure to increase the number of PC's and network facilities to accommodate all students and staff. The backend consequence of the increase in terminals, is an inevitable increase in the number of servers. Since these servers are the backbone of the University Network, it is paramount that they are consistently reliable. Network downtime means an interruption of essential services. The server rooms are therefore closely guarded and monitored – often a “lights out” environment. Administrators need to be able to access and manage the servers remotely, from the next room, or a separate geographical location.

Console Servers provide secure remote access to Unix, Linux, Windows Servers and any device on the network with a console port. Network Administrators are able to perform secure remote system management and out-of-band management of their IT Systems from anywhere in the world. The team is able to remotely control, monitor, diagnose and troubleshoot equipment over the network or the internet.

Up to 48 applications can be connected to each Perle IOLAN SCS Console Server, enabling Administrators to have access to a Systems console from anywhere on the local network, or via dialup connections, as if they were locally connected through a direct serial console port connection.

Authentication (RADIUS, TACACS+, LDAP, Kerberos, NIS and RSA Security's SecurID tokens) and encryption (Secure Shell (SSH) and Secure Sockets Layer (SSL)) protect vital and sensitive information on the school's network. Many problems can be resolved remotely without sending a technician on-site, thereby saving costs and resources.

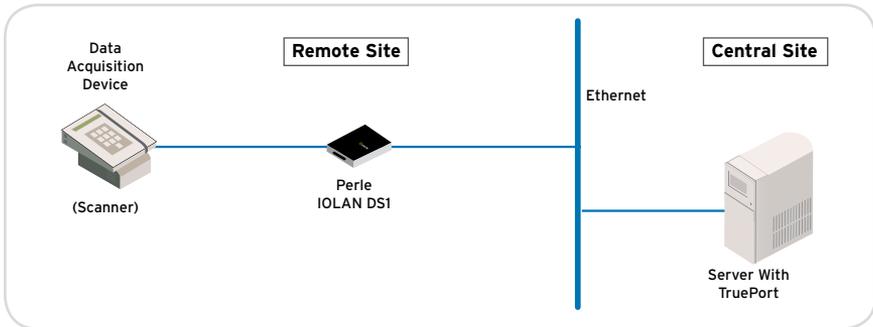


Reliable Data Transfer - Network Enable Equipment

Budget constraints at Universities often mean that IT Managers need to somewhat improvise or upgrade rather than replace older IT equipment. Existing items in use such as scanners, printers, laboratory equipment, library and video equipment, etc are often serial based and not network enabled. Generally they have not reached the end of their useful life and replacement is cost prohibitive. These serial based devices can be easily network enabled using Perle technology.

By connecting the non-networked serial equipment to a Perle IOLAN DS Device Server, students and staff are able to access the equipment over Ethernet in order to pull research data from the labs etc. The Network administrator has a simple solution which is cost effective and easy to install – and more importantly can do so without replacing existing equipment thereby leveraging the initial investment.

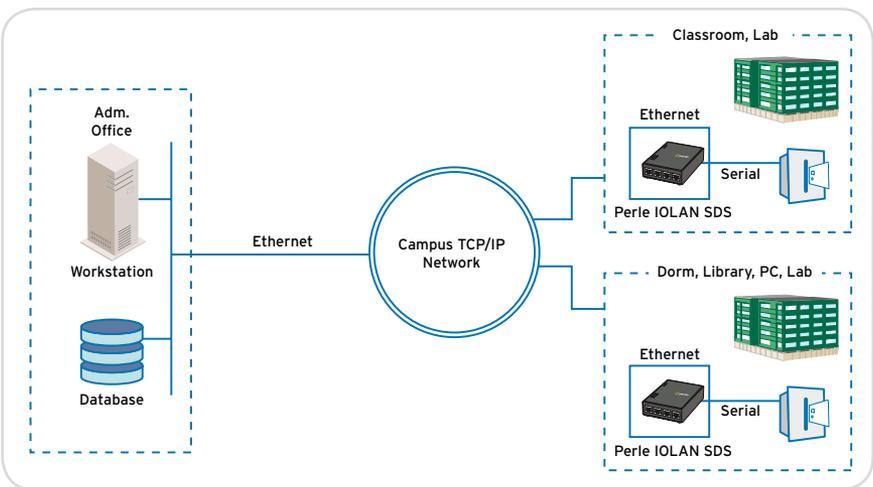
The IOLAN DS1 Device Server is the best choice for simple serial to Ethernet connectivity applications. Delivering a cost effective solution in a compact size, the IOLAN DS1 offers flexibility and advanced IP technology making it ideal for applications that require an efficient way of communicating with serial devices over a network.



Secure Data Transfer

Every University campus requires some type of access control to restricted areas, and must provide round-the-clock security. This is a daunting task when you consider the complex permissions – for example granting certain students access to particular labs and computer rooms, maintenance personnel need access to specific air-conditioning systems, staff access etc.

Card Readers, which are installed at most main passages of entry at University buildings allow access to authorised students and staff. The card readers, when swiped, collect information about the cardholder and verify that he/she is authorised to access the given area. In order for the collected data to be analysed, for Health and Safety records for example or to ascertain which areas of the campus are most heavily used, or to monitor how many students attend what classes, this information needs to be transferred via the network, securely to the IT department. Most existing card readers are not IP enabled. By connecting a Perle IOLAN SDS Secure Device Server to the card reader, this can be achieved.



The IOLAN SDS enables administrators to securely access remote serial console ports on equipment such as door entry systems, servers, routers, network storage equipment and security appliances through an IP network. Sensitive data such as security access information is protected through standard encryption tools such as Secure Shell (SSH) and Secure Sockets Layer (SSL). Access by authorised users is assured via authentication schemes such as RADIUS, TACACS+, LDAP, Kerberos, NIS and RSA Security's SecurID tokens.

By using encryption technologies, an IOLAN can protect sensitive and confidential data from a serial device such as a door access reader before being sent across a corporate Intranet or public Internet. For compatibility with peer encryption devices, all of the major encryption ciphers such as AES, 3DES, RC4, RC2 and CAST128 are fully supported.

Similarly, photocopiers and printers, can be connected to the network via an IOLAN SDS Device Server to transmit payment information securely for printouts and copies.

A Wise Choice

It is crucial to work with a Manufacturer who is willing to provide both pre and post sales support to your technical support staff. Perle Systems has a pre sales support team who can anticipate possible implementation issues depending on the network devices and their various configurations such as:

- How can devices be hot swapped?
- How can I avoid downtime?
- How can devices be detected when connected and disconnected from the network?
- Does security meet regulation/compliance?
- How can data from 10, 100 or 1000 devices be merged, depending on the Universities' requirements?
- How should data from different devices be collected when various communication protocols are used (serial protocol, TCP/IP, USB, wireless)?
- Are there speed or reliability issues?
- What unique challenges exist for the University environment?

About Perle Systems

Perle Systems offers the most secure and reliable connectivity solutions for a wide range of applications and businesses including many University Networks. Perle products are currently used with confidence in more than 100 educational institutions worldwide.

Perle Systems has over 30 years of experience delivering the quality and dependability to support critical systems.

We offer a Lifetime Warranty on most of our products and a commitment to continue developing feature-rich products that offer flexibility, performance, competitive pricing and ease of implementation.



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