



WHITE PAPER

Cloud Computing for School MIS:

Applying the utility computing to software applications.

Bromcom bringing you Cloud Computing

Bromcom

Introduction

Bromcom has issued this document to act as guidance for those wondering what Cloud Computing could mean to them and in particular the provision of their Management Information System. It is written in a non-technical language although some understanding of computer hardware and software is assumed. This paper provides an overview of this emerging technological revolution. Whilst based on technologies available today and concepts that in the computing world have parallels with services of the past, the provision of computing using standards and resources over the Internet in the way of Cloud Computing is expected to make many of today's local servers and application installations a relic of the past in future years.

It won't change overnight and will take time for the momentum of change to take hold and then software providers are expected to quickly follow the demands of their user base, to such an extent that many of today's locally installed software applications will for the majority only be available from the Cloud.

What is Cloud Computing

Cloud Computing is the computing utility of the future. It is the green option and the flexible option to meet the changing needs of your computing requirements.

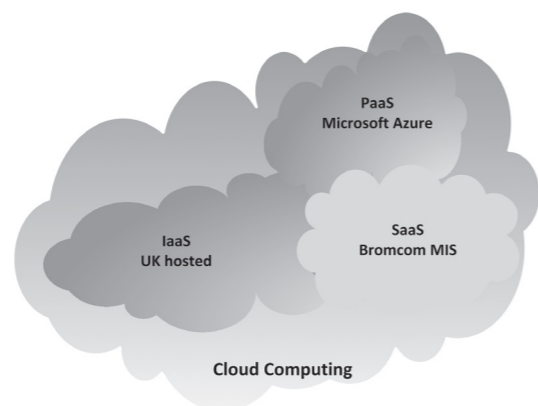
Gone will be the days when users concern themselves with such technicalities as processors, RAM and hard disks to ensure that they can operate their software applications; installing and maintaining those applications and ensuring that they have backups of their data. Instead the norm will be using devices with web access where crucially the software applications that you need will reside and be available to you on demand.

Users will have a multitude of devices giving them access to their applications of choice from anywhere and at any time.

This is when computing becomes a utility just as we have the utility of electricity and water today. Before the national grid of standardised electrical power, businesses would generate their own electricity, and that quickly died out once all they needed to do was connect to the grid: Generation became someone else's problem and they could use as much or as little as they wanted. Cloud computing is the name of the utility providing computing power that you need on demand, with the delivery your applications software needs. You select your applications of choice; they run in the Cloud; you pay for what you use and when you use it, and you no longer concern yourself with today's constantly growing need of generating more and more computing power on devices to run applications, managing the deployment and maintenance of those applications, and managing ever increasing and distributed data.

How is this achieved?

- Infrastructure as a service (IaaS)
- Platform as a service (PaaS)
- Software as a service (SaaS)



With IaaS, virtualisation is the key word. Your software service does not sit on physical servers dedicated to you, where you pay whether or not they are used and which take power 24 hours per day, 365 days per year. Instead you connect to virtualised servers, which are shared between many. The infrastructure can increase and decrease computing power on demand. As a school, you will have different computing power usage to a typical business for example. Perhaps at 2am on Sunday morning or at many times during school holidays your computing requirements are zero, so why pay for the hardware and power when not used? Perhaps each academic day during registration, you want more computing power for a few minutes to give quicker access; power that the traditional route would have meant investment in expensive servers that for much of the time would remain idle. Pay for what you need when you need it.

PaaS in simplistic terms defines the compatibility of your software service with the infrastructure service, and therein determines how the software application that runs behind the service you use is developed. Bromcom is committed to the Microsoft Azure platform, which is set to become a leading Cloud Computing solution.

SaaS is simply buying into a service that provides the software and operational facilities that you need, available when you want them, and removing concerns about the software installations, upgrades, hardware or infrastructure. Often SaaS is paid for on use, and as Cloud Computing solution provider, Bromcom will give you one bill to cover your use of the software service and infrastructure.

Why have Cloud Computing?

Cloud Computing will lower the total cost of ownership (TCO) of your software application services and enhance the services that your applications of choice can provide your institution.

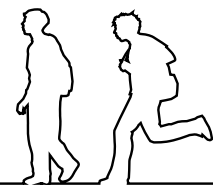
Lower TCO

- ✓ Zero deployment costs of software application both within school and for outside access.
 - No software to install on PCs
 - No software to upgrade on PCs
 - No software to install to enable external access
- ✓ Prolong the use of PCs
 - Greatly reduce the constant drive to upgrade PCs just so they run processor and memory consuming software
 - Gives a new lease of life to what were previously seen as end of life PCs
- ✓ Reduce power consumption
 - Take advantage of low power, low spec PCs
 - No servers at school required to host the service
 - The resources of the cloud are utilised 24/7 [cooperate and support a greener profile]. There is not a server just for you
- ✓ Take away much of the administrative burden of managing the MIS
 - Regular backups carried out automatically and kept in secure and safe locations
 - Very high protection against fire and theft
 - Data safeguarded
 - Local authorities and third parties offer bureau services, especially to smaller establishments, to carry out key tasks on their behalf

Enhanced services

- ✓ Anywhere, anytime access
 - All you need is a modern Web browser with an internet connection, and that includes using the mobile network
 - Access key facilities via smart phones and similar devices including iPod touches, iPhones, iPads and various Android devices
 - Teachers have access from home, school trips, etc
 - Removes barriers for granting access to other potential users such as Educational Welfare Offices, local businesses and colleges providing work experience and educational courses etc
- ✓ Improved performance
 - High power multi-tiered server and infrastructure available to your users
 - On-demand call upon greater computing resources for your work than would otherwise be economically viable to the school with a local server

¹ this assumes that the users have access to the Internet for the Bromcom MIS, access to a compatible web browser.



- ✓ Improved reliability
 - Much greater redundancy of computing resources hosting your MIS than would otherwise be economically viable
 - A service performance backed by SLAs
- ✓ Safety
 - Fire drill accessible without need for paper copies or relying on servers that are often switched off in event of real fire – instead access your live data from any mobile network device such as smart phone
 - Up-to-date data available online and shared by all who need to know
- ✓ Online Support
 - Local authority and other parties can efficiently offer support and services through their access to your Cloud
 - They can see what you see and easily offer guidance and support
 - Reduce travelling
- ✓ Parent access
 - Very simple to add on enhanced services such as the MyChildAtSchool.com parent portal server

Shared services

- ✓ Share services with neighbouring schools and the ability to support each other
 - Such as assessment collection templates, report designs, dual registered. The data is together and can be shared through security permissions rather than moving data around

Background to Bromcom Computers Plc

Since the late 1980s Bromcom has been a pioneer in the education market. The initial entry of Bromcom into the education market was through the 1988 Education Act where schools had been delegated local management and hence required their own “administration system”. Working with local authorities, Bromcom addressed the need to provide multiple user, secure and easy access to the school administrations applications, thereby enabling school staff to simultaneously use their new management information system. Whichever the MIS used, Bromcom offered an integrated turnkey solution and helped local authorities exploit its use within schools. Not content with facilitating administrative and school management access to their MIS, Bromcom developed facilities for teachers, and in 1992 became the world leaders in the provision of computerised systems for capturing classroom data. Today the wireless network is a standard that we all know and love, but in 1992, it was the future that Bromcom predicted. Bromcom has worked with local authorities, numerous schools and colleges over the years to ensure it developed hardware and software to meet their ever changing needs. Integration is the common theme and whilst Bromcom can nowadays offer the complete school MIS package, it has remained committed to provide products with seamless integration with third party products and services, thus providing customers with the best possible complete solution. Cloud Computing will facilitate closer integration.

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