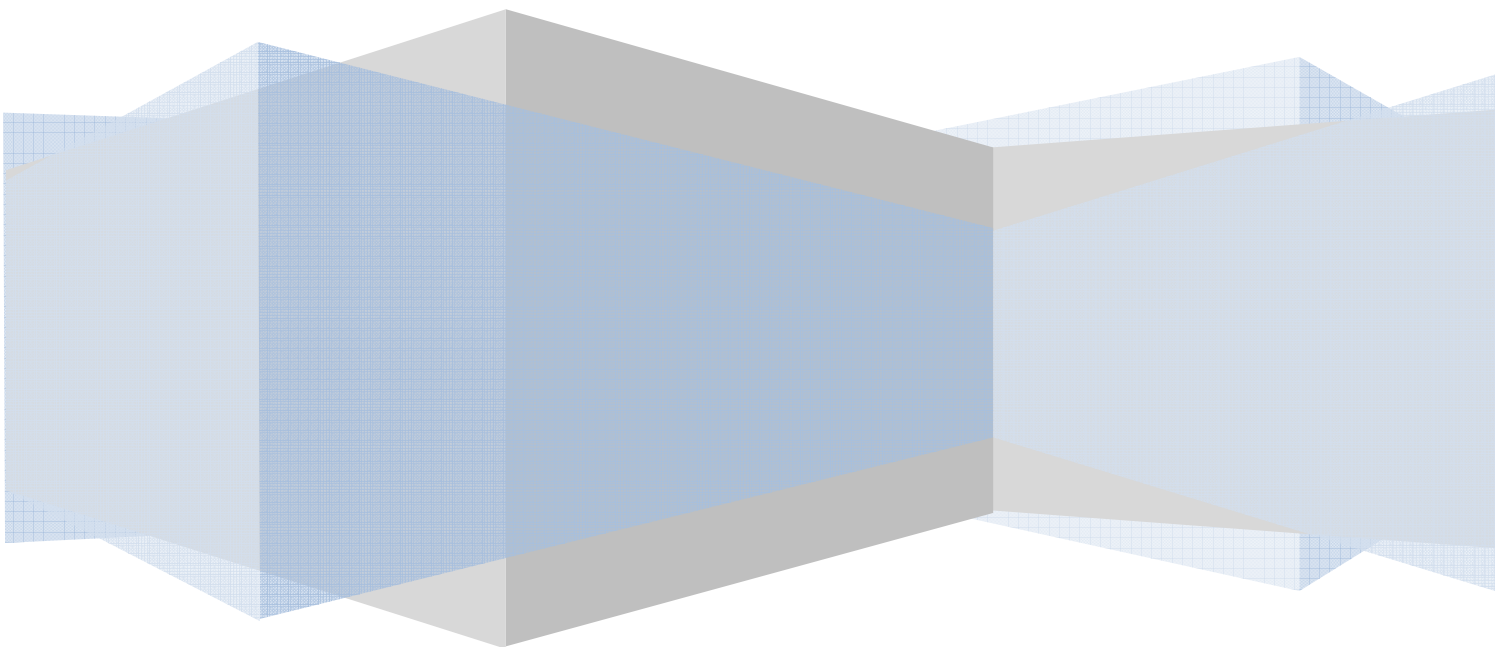


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# Blueicon Technologies - Milestone 4

Research Questions and Answers

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## Question 1:

*Write a 3 – 4 page research report on the significance of being able to run mobile applications consistently (without fragmentation) on all devices including budget mobile phones and high end smart phones like iPhone or Android.*

*Consider the following in your report:*

- *Advantages / Disadvantages of a portable mobile technology like Blueicon's over high-end mature but device limited Smartphone approach like the iPhone.*
- *Evolution of mobile sector in the last 5 years*

## Mobile Evolution:

Mobile phone architectures have developed significantly within the last 5 years. Their capabilities have increased at an exponential rate from enough processing power to load a tiny colour screen and a low quality camera to the new A5 Dual Core chip that iPhone 4S [4] will be using to run HD videos, thousands of apps, music, web browsing, HD camera and voice recognition software (Siri). These are just a few comparisons that can be made to articulate the evolution that the mobile phone industry is undergoing. Another good example would be an increase in screen size, which is arguably one of the most important features a customer looks for in today's society as Smartphone's such as iPhones and Android technologies' have crushed benchmarks as what actually can be seen on phones. HD videos, playing games and web browsing can be done much more easily and efficiently due to the huge screens that are available on phones today. Browsing the web for example, isn't a new possibility as this was available on much older phones architectures. What's remarkable is how it is done now with the currently technology spanning from cheaper or budget phones to Smartphone's such as HTC or iPhones. Webpages can be viewed much more efficiently as the screen sizes of today's era are in some cases twice as big or bigger as they were 5 years ago.

Touch scrolling [1] as opposed to key scrolling has also made web browsing on phones a much easier experience. With older technologies, a user would press the up or down key repeatedly to view a webpage in an entirety. This process was horrible in the sense of waiting for pages to load, scrolling down them, clicking the next button to show the remaining part of the webpage would take an eternity. Since many webpages didn't have mobile only versions which are more compacted and can be easily navigated through, web browsing was difficult. With the implementation of the touch screen, web browsing on a mobile phone has become more powerful than ever. A user can flick a finger down their screen which will quickly scroll down to the end of a webpage and then flick it back up to go to the beginning, zooming in and out can be done by simply expanding the space between two fingers on the screen to show a zoomed webpage which doesn't lack in quality (as what would have been the case before).

Not only has the way in which webpages are browsed on mobile phones changed, but the actual webpages have also changed. New mobile only versions of websites have been created which still display webpages but in a more condensed form. This contours for both budget phones and high end phones as key scrolling and touch scrolling times will decrease due to the webpage been smaller but still containing the important information that is needed without the adds or visual media for example (unless requested). With web browsing on a high end phone, webpage size can be alerted easily as opposed to a budget phone that may

not have that option. By having webpages that can contour to screen size, this becomes a very lucrative option for users with budget phones as they too are able to view webpages more efficiently (since budget phone screens have also increased).

### Fragmentation vs Portable Applications:

As mentioned above, the mobile phone industry has undergone tremendous change ranging from increased screen size to memory to processing power. This has resulted in phones such as Android and iPhone being able to run programmes and applications that weren't possible before (Such as HD Videos and 3D Gaming).

With increased internal/external memory for phones (up to 64 Gigabytes) and other advances discussed above, mobile applications that require fragmentation can perform better than before.

Fragmentation can be defined as *“the inability to write once, run anywhere and to develop an application against a reference operating context”*. An operating context is *“the external environment that that influences operations”* [2]. The operating context for mobile applications covers hardware/software environments.

Fragmentation is caused by the variety in operating context factors that can affect mobile applications. Examples are:

- Hardware diversities such as screen size parameters (color, size), processing power, memory size, connectivity options (Bluetooth, 3G) etc.
  - Software diversities such as different platforms (Symbian, Android, Apple), screen orientation (Full screen support), multimedia support (Codec's for applications) etc.
  - User preference diversities such as languages, styles etc.
  - Feature variations such as light versions (cut down applications) vs. full versions
- Source [2]

Taking these factors into consideration when developing a mobile phone application, fragmentation poses a barrier to develop applications that can run on all phones (e.g budget vs high end phones).

Portable mobile technologies' such as the Slideshow Viewer that Blueicon has been working on helps against the problems that fragmentation poses. Portable mobile applications are either not or minimally affected by fragmentation, resulting in applications been device independent. Portable mobile technologies' are very beneficial as they allow applications to run on more various types of phones such as budget and high end devices taking into consideration hardware and software diversities that are connected to fragmentation.

Portable applications differ to traditional native applications that are installed and run over the phone. Portable applications are run over the internet hence also being known as 'mobile web applications'. Mobile web applications run over the internet on a dedicated server having the mobile phone only act as a browser or client. This is very useful for budget phones as it empowers them by allowing them to run applications that due to hardware and software restrictions may have not allowed similar applications to run due to problems with processor speed or memory size. With Portable applications, the phone works as an I/O device only, just displaying what is running on the server. For example, having remote

access to a server works by using the computer screen for display and having the mouse and keyboard as input while all the processing and running of selected applications is done on the actual server.

Portable applications also don't take up any phone memory which is perfect for budget mobile phones that don't have much internal memory and usually aren't equipped with slots for external memory.

Portable applications have their advantages and disadvantages also. With iPhones and Android mobiles, portable applications may not be as sought after as with budget phones since these high end phones have the capability to run high end applications, due to having powerful hardware and software components. On the other hand, iPhone applications have to be purchased from iTunes which may be inconvenient from users making portable applications the better option. With budget phones that do not have these components and are only made for light web-browsing, then portable applications like E-buddy (portable instant messenger) is of use, whereas users with iPhones can install instant messengers due to the huge amount of memory that they have. Another disadvantage of having portable applications is that you need to be connected to the internet to use them. This may be costly if the user doesn't have a monthly web plan, but in some countries like in India where it is extremely cheap to use the internet over mobile phones, it won't affect users too much.

The biggest advantage in regards to portable applications is their ability to run consistently. Updates on iPhone iOS for example may cause problems with older applications, or when new applications are released on older software may restrict their quality. Since portable applications run off the internet, they reduce the chance of compatibility issues that can be present with software updates in regards to native applications. Updates to applications are done on the server side, so users don't have to worry about installing patches or other updates on their phones.

In conclusion, mobile phone technologies have greatly evolved within the last 5 years and it's hard to keep up with it all. Portable applications will continue to grow in reputation as they become more and more utilized on both budget and high end phones. Businesses such as Blueicon Technologies which are pioneering secure mobile web applications will continue to expand and gain a reputation in the work that they're achieving with their mobile applications.

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## Question 2

*Write a 3 – 4 page research report on the significance of pre-emptive loading to create illusion of instant access*

*Consider the following in your report:*

- *The potential impact in 2G, 2.5 G networks in emerging economies or 3G in rural areas.*

This report covers the significance of pre-emptive loading to create the illusion of instant access and the potential impact this will have in 2G, 2.5 G networks in emerging economies or 3G in rural areas. It highlights the different types of mobile networks and how the Blueicon Media Viewer works with these to provide a service that downloads and displays media in a seamless fashion.

### Mobile Networks:

Wireless mobile phone technologies have improved vastly in past decades. These have evolved from 1G, 2G, 3G and is moving onwards to 4G.

2G signals evolved from its predecessor, the 1G signal. The main difference here is that 2G signals are more reliable as they are encrypted and data such as voice is transmitted digitally as opposed to the analogue transmission that 1G provides. 2G has a data rate of 9.6kbps which isn't ideal in this day and age. 2G networks were built primarily for voice traffic and can be used for voice calls and text messaging [Communications Consumer Panel, 2009].

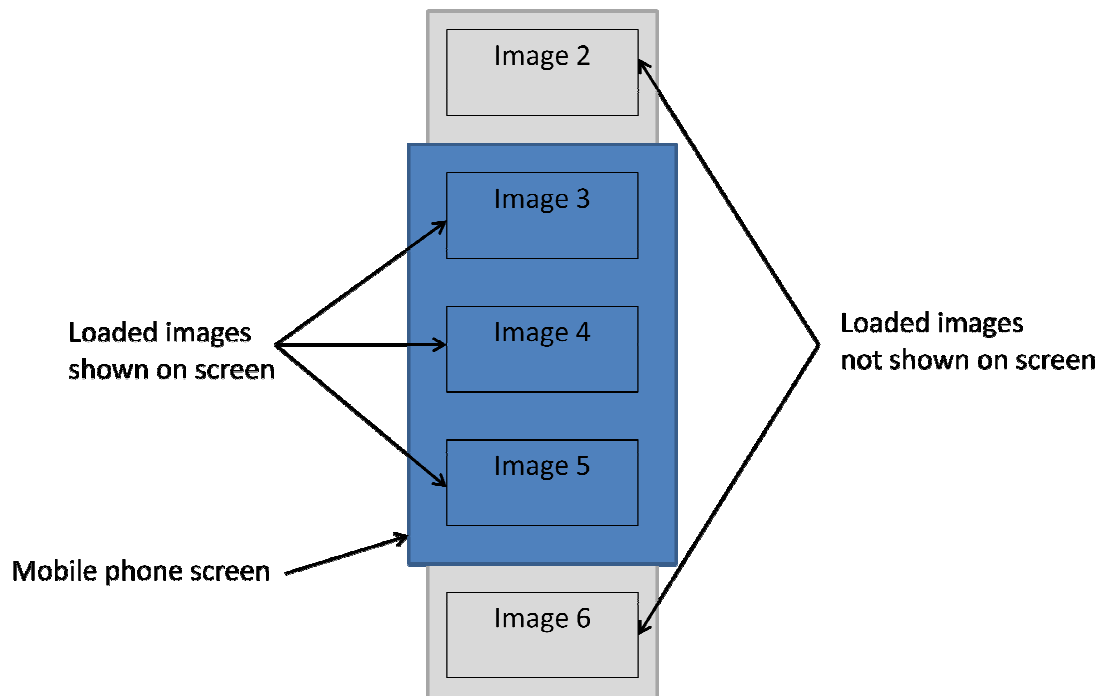
The 2.5G network was built mainly for voice and slow data transmission – therefore, for users of low-end mobile phones from emerging economies such as India, pre-emptive loading is ideal as it uses a very small amount of data to connect to the server and all viewable media is loaded without the user's knowledge of it so it can be efficiently browsed through with a seemingly zero download time. This is ideal as it is extremely cheap for users in emerging economies to browse through media on their mobile phones via the internet [Bhatia, Anurag – 2011].

In 3G networks the application services include wide-area wireless voice telephone for communicating all over the world, mobile Internet access, video calls, mobile television, video on demand, all in a mobile environment [Communications Consumer Panel, 2009]. 3G has a data rate of up to 2Mbps which is significantly faster than the 2 and 2.5G networks and allows for all of these applications to run sufficiently.

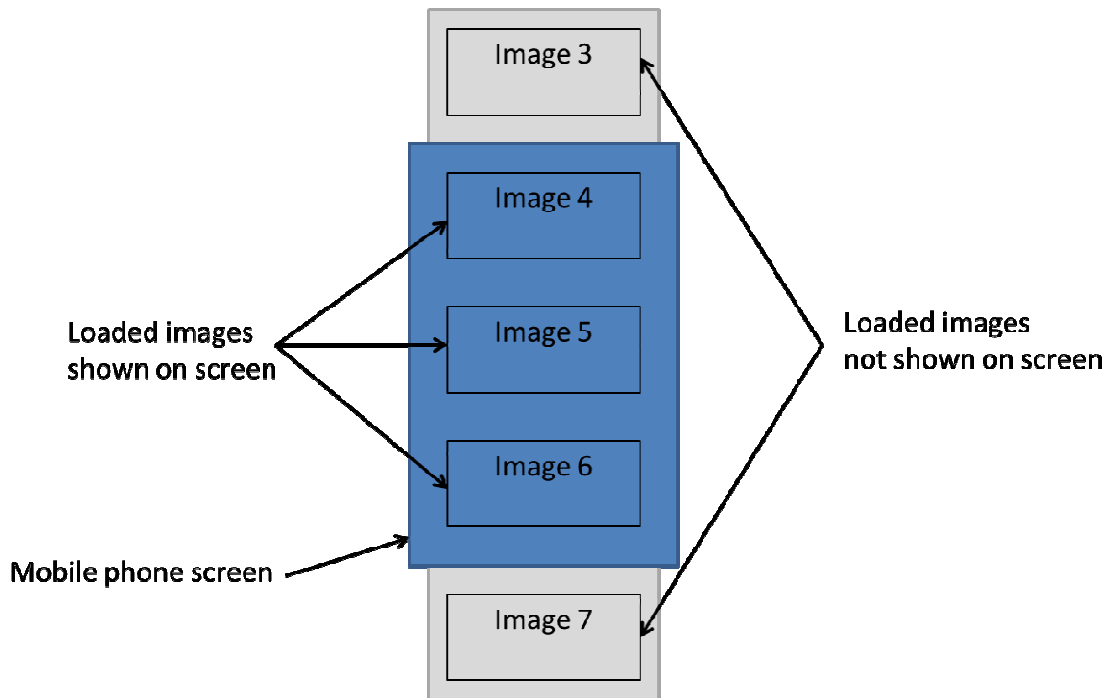
Newer, high end phones such as Apple's iPhone that operate on this network are able to connect to and browse the internet with relative ease, which makes the browsing of media on the Blueicon Media Viewer even better. "3G's strengths, particularly when deployed on a lower spectrum, are perfectly suited to rural areas -- signals remain strong over long distances, with the lower user density mitigating the reduced throughput" [Morisy, Michael – 2008]. This indicates that the smaller amount of users in rural areas will make up for any distance related issues with a mobile device connecting to the internet, so 3G devices would still perform well in rural areas and internet browsing will be uninterrupted.

## The Blueicon Media Viewer:

The illusion of instant access that the Blueicon Media Viewer prides itself on is achieved by pre-loading the post and prior media that is currently shown on screen (in this case they are images) as shown in the example in *Diagram 1*, so they appear to load instantly whilst being scrolled through as shown in the example *Diagram 2*. All media is stored on a secure server in an indexed set and is iterated through as the user scrolls up and down.



*Diagram 1 – Pre-emptive loading*



**Diagram 2 – Pre-emptive loading whilst scrolling**

Blueicon’s Media Viewer operates on any type of data connection over the air as long as the device has at least 2G capabilities and a web browser. Media is pre-emptively loaded in order to allow the content to be viewed when requested without any significant download delays which would otherwise be required. This is ideal as it creates the illusion of instant access which proves a convenient and efficient way of viewing media quickly with a zero download time.

A zero download time for poor bandwidth/mobile coverage areas is significant as users will be able to browse through the media without waiting for it to download first which sets the Blueicon Media Viewer’s performance above the user’s expectations.

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Bhatia, Anurag – Potential of 3G in India

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[http://searchtelecom.techtarget.com/news/1303577/3G-still-has-the-potential-to-thrive?ShortReg=1&mboxConv=searchTelecom\\_RegActivate\\_Submit&](http://searchtelecom.techtarget.com/news/1303577/3G-still-has-the-potential-to-thrive?ShortReg=1&mboxConv=searchTelecom_RegActivate_Submit&)

### Question 3:

Write a 3 – 4 page research report on the significance of developing network centric apps VS stand alone apps

Consider the following in your report:

- How the Blueicon-CDN (when completed) will address these needs

#### Stand alone applications:

A standalone or thick client is an application running typically on a desktop environment such as Windows operating system, with GUI being developed by Apple in the 80's it's made it a lot easier for desktop users to interact with applications without memorizing a lot of commands.

However there are some drawbacks, one of the major issues when it comes to standalone and thick client is deployment, for instance it may be somewhat okay to update a single desktop or a small network up to ten desktops, but imagine deploying a large network, and this will no longer be efficient

Another issue with standalone applications is that it has a platform dependency, for example certain applications may only run on a windows platform or a Mac platform, which limits its flexibility.

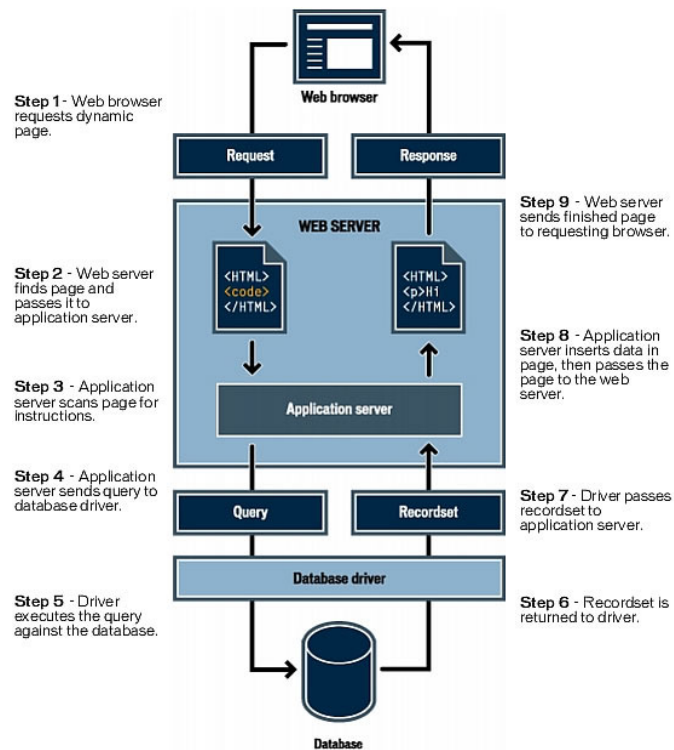
These drawbacks balance with the ability of the application being able to run offline, but due to limited or no connection, data being used or transferred is limited to the machine or computer the application is running off, however because standalone applications run offline and communicate mainly with the machine its being run of, the processing speed is a lot quicker especially if not many clients are communicating with server.

#### Network-web based applications:

To run resources in a form of a program the common Gateway Interface (CGI) was invented. This CGI pushed websites on another level, as these resources were being executed on a web server, that now we call web application which brought a lot more logic then simple HTML could manage.

The development of dynamic web pages led to what we call "application server". before with HTML pages written by designers once a user or client requests a static page from the server, the server response with the required page. Dynamic web pages operate a little differently, when the web server receives a request from the client it passes the page to the application server, finishing the page according to the instructions in the code, the page still remains static when its sent back from the application server back to the web server and its sent out back to the client or requested user.

The main privilege of network based applications is that they are centralized, referring back to the deployment example, with network based application its very efficient to deploy data within a large network, simple requirement such as internet connection is required and deployment is under way, the other major advantage of network based applications is that they have no platform indecency, simply because applications are running on the server and servers are likely to be more powerful than standard client machines.



## Security of network based applications:

the most common and first issue in regards to security is user input, user input is the first step in communicating with an application, thus for hackers its first option to attack a server.

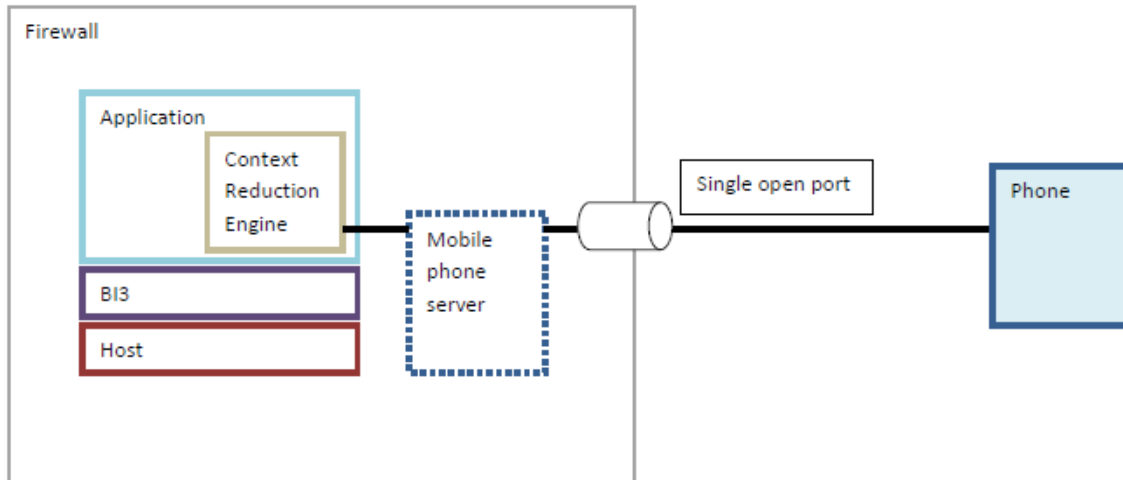
One of the major problems with network security is authentication; hackers can use "sniffing" software tools to gain password information used by people try accessing an application,

network application face of a lot security issues due to being online which allows almost anyone to have access or attack, therefore before an application is trusted, servers and networks must be well secured and have security patches updated, this is where platforms such as the Blueicon-CDN which I highly recommend.

## Blueicon CDN:

Blueicon-CDN (Cyber defence network), is a unique form of securing data stored on servers locally, making it slightly different to ordinary CDN based systems as they target mainly mobile phones however with high end mobile phones such as iPhone or Samsung galaxy becoming very popular they are very compatible with web based server, there are huge advantages of using the Blueicon-CDN and these include

- Base service is free for both content providers and content consumers
- Vulnerability free machine security based on the Theory of Absolute Information Security (TAIS)
- Inability for virus, Trojans, worms, spyware, or any malware to spread, cause damage or propagate stolen information out of the network.
- Instant Access (zero download time) with pre-emptive onboard thin-client caching
- Ideal operating conditions suits over 2 billion budget mobile phone.



Blueicon-CDN Uses a special firewall protection known as TAIS (Theory of Absolute Information Security) which uses the context reduction engine to protect application and data being transferred from or within their servers, what's more important is making sure their clients are also protected when retrieving data, this is assured by transferring data via a single port, making it almost impossible for unauthenticated users to have access.

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