CCS LEEDS

NETWORK SOLUTIONS

A GUIDE TO CO-LOCATION

This tutorial will provide useful guide about what co-location is, how it is used, and even the entomology of the word itself. It will also explore Cloud computing and how it works with co-location.

The information below is a comprehensive guide that is accessible to everyone interested in learning the subject of co-location, which was written and researched by experts in the field.

THE MEANING OF CO-LOCATION

The first section of this guide will be exploring the meaning of co-location. This will include the meaning of the word and the physical meaning of the service in correlation with data centres.

CO-LOCATION ENTOMOLOGY

One of the many questions that are most often asked is how to spell the word itself. Originating from the old verb *collocate*, which means to 'set in place'. The newer *colocate* or *co-locate* means to 'share a location'. Although, not yet present in the *Oxford English Dictionary*, the verb is present in two British dictionaries and two American dictionaries, but they don't agree on how to spell it. *Colocate* is more widely used in America, where as *co-locate* is more widely used in the United Kingdom.

The short answer is that you'll have to check back in a few years when the dictionaries make up their mind before a definitive answer is available, but essentially they all mean the same thing. Here is a modern definition:

"Colocation (business), the placement of several entities in a single location."

Not the most helpful information, but essentially true. It begins to explain the technical meaning for co-location.

UNDERSTANDING CO-LOCATION

To begin understanding colocation, you must understand what a server is. Servers vary from large computing systems to modern desktops. Any computer that is always switched on can be a server. In more modern times, powerful desktops are replacing mainframe servers, but either can be a server.

So a server is a resilient computer that needs to be permanently switched on. If you have computer that needs to be switched on all the time, it will need to be located in a secure and controlled space. It will also need to have the appropriate cooling and power backup systems to keep it running for as long as possible. You also need it to be connected to a high speed and reliable internet connection.

Many company premises may not have the cooling, redundant power routes or a reliable internet connection, so instead of keeping their server in-house, they will choose to 'co-locate' it in a purpose built facility such as a *Data Centre*.

The reasons for co-location are many and varied, but probably the most common application is web site hosting. As of November 2011, there were around 366,848,500 websites on the World Wide Web, and most of these are sitting on a server somewhere, which is being co-located in a data centre.

Postal
Address

Microsoft   CentOS   Cisco
                                   Powered

Unit A | Seacroft Trade Park | Coal Road | Leeds
postcode: LS14 2AQ | phone: (0)113 294 66 99
website: www.ccsleeds.co.uk

Other reasons may include:
- Online backup servers
- Hosted email services
- SPAM, or virus filtering services
- Disaster recovery servers

However, it all comes back to the fact that data centres are purpose built to guarantee a maximum uptime. Because if there was downtime, then it usually means that someone is losing money.

THE CLOUD AND CO-LOCATION

The *Cloud* is a recent buzz word that refers to making data and services available from the internet as opposed to a server or computer, which is sitting in your office. What the *Cloud* or *Cloud Computing* means is that the server that was previously in your office is now being co-located in a data centre because it is often more cost effective to do it that way. Due to the speed of the internet being so quick, we can now access that data and those applications in the same manner.

For some, the upfront costs of owning their own server can prove to be too expensive, which is why many data centres offer a server rental service, which is often referred to as 'Dedicated Servers'. The cost of renting such a device can be spread over a number of months, and they can be flexible in terms of the customer's requirement. In most cases, the servers would be built to a bespoke specification. They often come with a minimum contract term so that the data centre can ensure that they recover the original hardware costs.

Your typical data centre will have a number of measures that will significantly reduce any potential downtime, such as:

Cooling – Servers can and do get hot. If the temperature gets too hot, then it can damage the internal hardware components. This is why they work much better in a cool environment, and it is the reason why a good data centre will always have a robust air conditioning system in place, which will alert your provider if the temperature increases above a certain level.

Postal
Address

Unit A | Seacroft Trade Park | Coal Road | Leeds
postcode: LS14 2AQ | phone: (0)113 294 66 99
website: www.ccsleeds.co.uk

CCS LEEDS

NETWORK SOLUTIONS

Power – It is equally important to have a number of power and backup power options. Most data centres have at least two incoming power feeds, which would then be fed into a power distribution control. These will be supported by UPS (uninterruptable power supplies), batteries and diesel generators. The UPS devices will also protect against power surges and spikes. Meanwhile, the power distribution board will intelligently route power from the appropriate device in the event of an external power failure.

Internet – Since co-located hardware is always somewhere on the internet, it also makes perfect sense to ensure that the internet is always available in a data centre. Therefore, it is usually the case that there are at least two— depending on the size of the facility—high quality, fast and reliable internet feeds coming into the data centre building. These are in most cases provided on fibre connections, and they can typically offer speeds of up to 10Gbp/s.

Security – You need to know that your equipment will be kept safe and that it cannot be tampered with by others. Many data centres provide lockable rack space, so that only you and the data centre staff have keys to access your server(s). In some cases, it is not feasible to have dedicated lockable rack space—certainly if it is just one server—so a number of clients may share a rack. In this instance, it is commonplace for the data centre staff to accompany any user visits to ensure that they are only working on their own

Microsoft   CentOS   **Cisco** Powered

equipment. Many data centres have complex alarm systems and are manned twenty-four hours a day and seven days a week.

There are so many services now that are evolving into Cloud-based services, meaning the demand for good quality data centres is on the increase.

Data centres are becoming more widely used after the recent introduction of the video streaming services from:

- Netflix
- Apple's iCloud service
- Hosted Exchange
- Microsoft's SkyDrive

All of these services run on servers somewhere in the Cloud, or more accurately, on some hardware in a data centre.

Assuming you plan to sell Cloud-based services, and you have invested money in purchasing your new server hardware and software, what do you need to do next?

There are a few things to think about before a server can be co-located, such as:

How will the server physically fit into the rack? – All hardware equipment in a data centre is kept in rack space. These racks have mounting brackets, so that servers with rack mounting kits can be screwed into position. Some servers are not rack mountable and would therefore require a shelf within the rack to sit on. Rack shelves usually cost extra as they are non-standard. However, most modern servers do have rack mount kits available as an option along with side rails, so they easily fit into the racks themselves.

Postal Address

Unit A | Seacroft Trade Park | Coal Road | Leeds
postcode: LS14 2AQ | phone: (0)113 294 66 99
website: www.ccsleeds.co.uk

Leeds Fourteen

Collocation

Who will install the server? – Some data centres will insist that you deliver and install your own equipment. Others are more flexible and may offer to arrange for a courier to pick up your server. Then they will install it on your behalf at a cost, of course. Other companies may include free installation as long as you sign up for a minimum twelve month contract.

What about IP addresses? – When you have a device on the internet, it will need an address, so it can be contacted. The internet uses *IP Addresses* for this purpose, and your data centre can supply these as part of your co-location package. Sometimes, more than one IP address is required. In some cases, additional IP requirements cost extra or require written justification to explain the need for many IP addresses. However, some data centres include a reasonable amount of IP addresses at no extra cost.

How much will I have to pay? – How long is a piece of string? It all depends, and there are many different factors that can affect the price for co-location. Some data centres charge for physical space, i.e. the more rack space the equipment takes up, the more it costs to co-locate. Others charge on power consumption. It is worth bearing this in mind when purchasing hardware, especially if it is second hand or older kit as they usually are a lot less energy efficient and can cost a small fortune to co-locate. Some data

Microsoft   CentOS   Cisco Powered

centres will also charge for high bandwidth or data transfer usage, and some will use a mixture of all of the above to calculate their prices. As a rough guide, most data centres start their collocation packages at around £50 per month, and this would be for a 1U* server with low to average power consumption of around 0.5amps.

What is a service level agreement (SLA)? – Typically an SLA is a guarantee from the data centre that they will provide a service that will be consistent, reliable and have a realistic uptime. Failure to meet the service level agreement often results in a financial penalty in the form of a refund or credit from the data centre, which means that it really is in their best interests to ensure that the core services such as internet connection, power and cooling do not suffer or go down. Most data centres have efficient alerting systems in place, so they can catch any problems as soon as they occur and either fix or use an alternative method to deliver the service.

How will my server be protected from hackers? – The most obvious answer to this is to use some kind of firewall device, one that can protect against such attacks. You can supply your own, or—if you have limited firewall experience—most data centres can offer a managed firewall service at an additional cost. There are also many software firewalls available, especially with some of the open source operating systems such as Linux.

How do I choose the right data centre for me? – The best way to get started is to search on Google for collocation, colocation or co-location in your chosen locality, and you will get a good range of options. Some will have an online price calculator or perhaps a list of standard package prices, so you can get an idea of how much it is going to cost you. However, you may want to ask yourself these questions before contacting them:

- Do I need easy access at short notice?
- How long would it take me to travel to the data centre in the event of an emergency?
- How long a contract term am I prepared to commit to?
- What are the data centres chances of going out of business?
- Do the staff seem knowledgeable from a technical point of view?

Postal Address

Unit A | Seacroft Trade Park | Coal Road | Leeds
postcode: LS14 2AQ | phone: (0)113 294 66 99
website: www.ccsleeds.co.uk

- How will I be alerted if there is a problem, and how long will it take to get the alert?
- Do I need to give notice if I wish to cancel my contract, and if so, how much notice?
- Will my data transfer requirement increase over time?
- Is there onsite technical help in case of an emergency if I can't physically get to the data centre?

It is important to speak to the people who are running the data centre, so you can get a feel for what they are like as people. Better still, try to arrange a site visit, so you can look at the facilities and ensure they meet up to any expectations that are portrayed on their website. A good data centre should have systems in place, so that very little—if anything at all—goes wrong, which means that regular contact and support issues are kept to a bare minimum.

Postal Address

Unit A | Seacroft Trade Park | Coal Road | Leeds
postcode: LS14 2AQ | phone: (0)113 294 66 99
website: www.ccsleeds.co.uk

CCS LEEDS
NETWORK SOLUTIONS

The need for co-location is increasing on a daily basis. As internet connections become faster and more reliable, the benefits are becoming all too clear, and companies are buying into the concept of 'Cloud Services'. I hope this article has shed new light on what co-location is and how it plays an integral part in the Cloud.

CCS Leeds co-location hosting services enable companies to house their internet servers in our state of the art data centres, providing higher levels of security for company data and hardware. This service offers protection of business systems and a secure backup and recovery solution in the event of a disaster.

*"U" or "RU" refers to a defined unit of space within a data rack and '1U' occupies 1.75" or 44.45mm of space. In more simple terms, it takes up three hole spaces on the standard rack side rails. Some servers can come in 1U sized cases and are often referred to as 'pizza boxes' as they do resemble an actual pizza box. Most full-height racks are 42U so in theory they could host 42 1U sized servers in a full-height rack.

Microsoft   CentOS   Cisco. Powered

Unit A | Seacroft Trade Park | Coal Road | Leeds
postcode: LS14 2AQ | phone: (0)113 294 66 99
website: www.ccsleeds.co.uk