Hosting services from System Simulation

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System Simulation (SSL) are pleased to be able to offer full hosting services, tailored to the needs of each project. SSL have an exceptionally long experience with the internet and web building and hosting, with a continuously running IP network since 1986 and shipping our first large web-based system to 5000 users in a U.S. government agency in 1994.

SSL offer a complete set of services from which you can pick to provide hosting, system administration, and disaster protection. By offering these as separate services, customers can choose what is done in-house, what is out-sourced to SSL, and what is out-sourced to other providers. These hosting and system management services are provided as extras and are not tied into your licence arrangements with us. That means you can opt in and out of our hosting services as your requirements evolve, and as the fast-paced internet world develops. In a market place where many of our competitors are forcing you to sign up to their hosting services, we believe this is an important part of our proposition.

Our offer includes:

- Initial set-up
- Hosting
- System administration
- Back-up and disaster recovery
- Domain name (DNS) hosting
- Coping with success

These are each described in the following sections.

INITIAL SET-UP

We will install the system on the host machines and set in place procedures for its proper running. The host machine will be set up appropriately and the applications installed. Firewall rules will be reviewed and other services will be installed and configured including web visitor statistics gathering. After

testing it is common to run a "soft launch" or soft cut-over, allowing the new service to be tested more widely before committing to the final live launch. We will help you plan this cut-over and advise on the various options available to you.

Our Initial Set-Up service is independent of where or who is providing hosting. We can set up a system running under your IT services regime, or at a third-party web host, as well, of course, as a web host offered under our Hosting service.

HOSTING

We will provide host machines to run the system on. We make use of the competitive market-place for web hosting and select an appropriate partner company to place the on-contract with, in agreement with you. For UK-based sites this will typically be an existing partner company, hosting at a major facility with multiple Tier 1 network connections. Hosting will be provided in 24/7-monitored facilities with very high network up-time guarantees.

For light and moderately loaded sites, we usually propose hosting the site on a shared server, to reduce costs. Otherwise we generally recommend hosting the site on a single dedicated server of appropriate capacity. If the load on the site is high, a cluster can be built, by adding more servers to share out the load.

We will suggest an appropriate configuration for your server. We will usually advise use of RAID discs, a technique which means your web site will continue to run even if one of your disc storage devices fails completely. This substantially reduces the likelihood of disruption and can alter your disaster-recovery choices.

Bandwidth issues

The other big issue is bandwidth. Bandwidth is the amount of network traffic – the number of bytes flowing up and down the wires, in and out of the server or servers, measured in billions of bytes per month (Gb/month). There are two basic ways to handle bandwidth: costed and uncosted. With costed bandwidth, an amount of bandwidth is included in the regular hosting costs. If the amount of traffic in any month exceeds that amount, then the extra traffic results in a – usually small – extra charge. Uncosted bandwidth deals mean that there is no fixed amount of bandwidth – the site can generate as much traffic as it likes. What happens instead is that the *rate* of flow of the traffic will be restricted to ensure that your service doesn't use a disproportionate amount of the overall available bandwidth. Confused? We'll suggest what we think is best for

you and talk you through the options.

SYSTEM ADMINISTRATION

Our system administration service covers the day-to-day and year-to-year running of the computer, ensuring it's running and running well. This service can work in well with application support which SSL usually provides to cover the applications we supply.

The System Administration service includes:

- Health check: ensuring the site remains up and functional

- Checking system logs

- Managing web-statistics reporting

- Applying security updates

- User account management

- Performance monitoring

Remember, we can provide any of these services independently. So you can provide the host computer, and we can provide systems administration.

Security and defence against hacking

When running any publicly-accessible service, there is always the risk that the service will be "hacked" by malicious people intent on damage. This can take many forms: often the hack attempt is part of a larger move to launch an attack on some other web site. But sometimes hackers will be happy to deface your site and leave jokey or rude messages on it. The risks are very real, but luckily the precautions are also well-enough known and effective.

A critical part of the defence strategy is ensuring all available security updates are applied when available. The moment a vulnerability is detected, be it in the operating system, database, or application software, or in the machine's configuration, hackers will be working on code which exploits the opening. But software manufacturers will release a fix or workaround as quickly as they can, and as long as these are installed when it they become available, your server remains safe.

Other important aspects are firewalling, and running only the necessary services. Our hosting machines all run tightly configured firewalls which will defeat the vast majority of hacking attempts before any damage can be done. Similarly,

we tend not to run "all the standard services" which a computer might normally run. The fewer services running, the fewer the opportunities the hackers have to look for holes and vulnerable spots.

And should the impossible happen, our disaster recovery services are a panic-free, rehearsed, and co-ordinated way to step quickly and smoothly through what ever is necessary to sort out the problem.

A hacked web site is extremely expensive to us and our reputation as well as to you and your reputation and it is very much in our interests to ensure it never happens.

BACK-UP AND DISASTER RECOVERY

Disaster recovery is a huge concern for anyone hosting a web site. It is a complex area and involves difficult risk management assessments. We have several decades of experience in this area, and we've fed that into the design of a number of packages as part of our Back-Up and Disaster Recovery service, to help you provide the appropriate level of resilience, straightforwardly.

Back-Up

Back-up is the process of keeping copies of your files and data – text, images, digital assets, metadata, configuration data, software, etc., etc. In the event that the host machine goes wrong and loses any or all of your data, it can be recovered from a back-up copy. There are many ways to run a back-up scheme, including on-line backups, where the data is copied onto another computer somewhere; or off-line backups, where data is copied onto some kind of removable medium such as magnetic tape or DVD-ROMs. On-line backups can be local or remote with consequent issues: for example local backups won't survive if the data-loss was caused by a major fire, which destroys both the host machine and the back-up machine. Remote back-up can be done within the same web-hosting provider's network, or can even be done to servers running in SSL's offices, which is slower, but often cheaper.

But the first question to ask is whether you need a back-up at all. If the application you are running is created by publishing data out of your in-house cataloguing operation, for example, then your in-house catalogue is already acting as a back-up. If you need to restore the hosted application, you can just re-publish the catalogue out to the hosting facility.

The next issue is about speed of response. If your web host machine does go down, it will always take a time to restore it to health. Unless your web site is tiny, it can take hours to restore

data even from a local back-up. Remote restores tend to take longer. As part of our back-up and resilience service, SSL offer a hot-standby option, discussed in the next section. With the right hot-standby site in place, many organizations can afford to take a far more measured – an less expensive – approach to back-ups.

Finally, RAID needs another mention here. RAID makes use of extra disc storage in such a way that the computer system can continue running even if one of your discs fails. This can have a dramatic impact on one of the major sources of machine failures. It doesn't stop you needing to plan for down-time, but it means it will happen less often.

Hot-Standby Site

Ultimately, it isn't possible to guarantee that nothing will go wrong. All the redundancy, back-ups, strategies, and crossed-fingers in the world can't stop unexpected things happening. One of the options in our Back-Up and Disaster Recovery service is the Hot-Standby Site. This is a stand-in web site, running all the time, which can take over if the main site is unavailable.

There are several options for the hot-standby, of increasing complexity and cost:

- A simple, static site showing an attractive summary of your full service, with a quiet note saying that the full service is undergoing maintenance and will be back shortly.

- A cut down version of your live site. For example, an image library site might include all images but not the higher-resolution images. This approach greatly reduces the storage overhead of the hot-standby while still offering a good service.

- A full version of the live site.

Another big decision for the standby site is where to host it. SSL offer several options:

- Hosted at the same facility as the main site. This makes the synchronization between the live and standby sites fast and cheap, but does mean that a complete failure of the service provider will disable the standby site as well as the live site.

- Hosted at a separate facility.

- Hosted by you. In many cases you may be capable of hosting a small or infrequently-used site, and that can be a very cost-effective approach to hot-standby.

Disaster Recovery Test Service

However satisfied you are with your disaster recovery procedures, it is a very good idea to try them out occasionally. We offer a disaster recover test service where we will simulate the hosted server becoming unavailable, and then go through the procedures to bring any hot-standby servers into operation and restore the main server from back-ups. By doing this occasionally – once a year for example – you can find out whether your systems for disaster recovery are ready for when an actual emergency strikes.

DOMAIN NAME (DNS) HOSTING

Your site needs to have an internet domain name. If you do not already have a domain name, we can register one for you.

Once you have a domain name, it then needs to be hosted somewhere as part of the global internet Domain Name System (DNS). Larger organizations will often be able to manage this themselves, alternatively you may already make use of a third-party name-hosting service. Otherwise, SSL offer DNS hosting. By agreement with you, we can host your DNS records separately from your web hosting. This adds resilience by increasing the number of disaster-recovery options.

COPING WITH SUCCESS

So your site has been launched and it's up and running and all going well. Rather too well, in fact. Any service running on the internet is at the mercy of the sheer size of the internet: there are millions of computers out there that, for one reason or another, might decide to access your site rather more than you could have hoped or planned for. Sometimes this is because you're meeting and exceeding your business objectives, and that's great. Or it's because some blogger on the other side of the world has inadvertently pointed an automated crawler system at your site.

It is important to be able to call in strategies to cope with these eventualities. SSL's hosting services include considered progressions which can be called on to meet the demands which internet services have to cope with.

It's premature to spend a long time going through these issues: let's get the site running first! But it is critical to know that these issues have been considered. Our strategies include:

- incremental increases in bandwidth

- faster processors

- more disc space

- machine clustering – adding more computers to share the load.