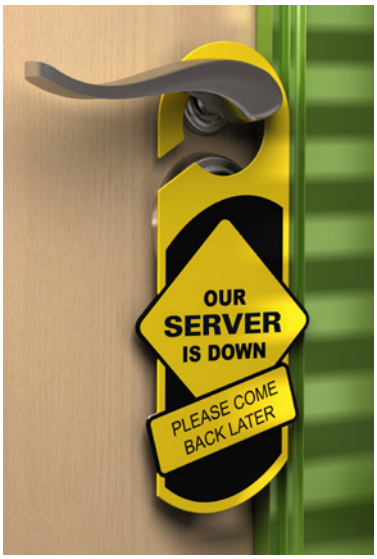
curve DENTAL® ORANGE PAPER

Uptime Comparison of Cloud-based vs Client/Server Systems

"What if my office's internet goes down?" It's a common question when people investigate cloud-based solutions. Certainly, technology introduces different failure modes than traditional processes. This begs the question, "How reliable are cloud-based solutions when compared with their client/server counterparts?"

The short answer is that cloud-based dental software applications, properly hosted, will be significantly more reliable. Let's explore why, and the actions that can be taken to mitigate the small risk associated with internet availability.

Client/Server Vulnerabilities



"Can you call back? Our server is down." It's almost a cliché. It happens with such regularity that we just take it for granted that it is just a fact of life. Many offices have grown accustomed to this situation with dental software. It is so commonplace because client/server based systems have many points of failure and any one of them can bring the whole system down.

Most client/server failures can trace their cause to two primary origins.

1. Typical client/server installations are not redundant, nor are they fault tolerant. There are many potential single points of failure in a client/server setup. It is like a long chain where the strength of the whole is only as strong as its weakest link. When one link breaks, the whole chain is rendered useless. Every hardware component found in the server (motherboard, memory, hard drive, communications cards, etc.), the software installation and drivers, are potentially catastrophic failure points.

One solution is to use "fault tolerant" architectures, systems and equipment. These are nice in theory, however not practical for a dental office to implement. Fault tolerant systems are so expensive that just the purchase price will break the budget. Additionally, they require significant experience to construct and maintain. It is a given fact that all computer hardware will break sometime. Computers (even really good ones) are complex electronic machines that will fail. If failure of a computer (or one of its components) is a given, then the ideal solution is to create an architecture that accepts that and designs for it. Unfortunately, there is no such architecture available at a reasonable price for office based client/server systems.

Client/Server Vulnerabilities (continued)

2. The typical office based client/server installation is put together using consumer grade equipment, processes and environments, and is maintained in a very haphazard way.

Think for a second where the typical server is located. Is it in a climate controlled, sterile Network Operating Center (NOC)? Or is it in a closet out of view? The typical installation of a client server based system is inherently at a disadvantage, simply by reason of where it is installed and how it is configured. The risk of bumping, or spilling, or nudging, or moving is synonymous with the risk of failure. Even just the additional humidity found in some offices or regions can significantly reduce the life of computer components. On the flip side, too little humidity creates a static environment that is a death sentence for any computer.

When a client server based system goes down, you will need to call your "IT guy" to come to the office and help get it back up and working. Sometimes all it takes is a "reboot," but more often than not, there is an underlying problem that needs fixing. Besides the financial consequences of the IT bill, the service call can take valuable time. Even with responsive service, you still are looking at hours, or worst case, days or longer.

The result of all these failures ends up as system downtime that is measured in hours per month or days per year. That quality of service is very costly and is far inferior to cloud-based systems.

Cloud-based Systems

Cloud-based systems will typically have downtime that is measured in minutes per year. In fact, quality cloud-based products spend less down time than is typically required to reboot a Windows PC once a month. **Here are several reasons why:**

1. Redundant and fault tolerant architectures: Cloud-based systems are frequently developed using fault tolerant and redundant architectures. These setups assume that every component will break some time. So, the architecture accommodates for the equipment to break.

2. Professionally housed, managed and maintained systems: There is something comforting knowing that highly qualified people are watching your system on a 24/7/365 basis. Literally, with professionally managed cloud-based systems there is someone who is on guard, watching the process and functionality of the hosted system on a continual basis. Because someone is watching the system statistics, they can tell if a hard drive is starting to spin a little slower, or if a CPU is heating up more than expected. Hardware will usually give some sort of a warning before it breaks completely, and these various components are replaced routinely before they fail.

3. Hardware Maintenance: Many hardware components have published useful service lives or quality guidelines. When the published service life of a hard drive or other system component is up, or it no longer works within the service guidelines, it will be replaced, even if it is technically "still working." In a typical dental office, the old component will just stay in the machine until it breaks. (remember that "weak link" discussion?)

4. Hot swappable components: Many industrial components in professionally managed environments are "hot swappable," which means you don't have to shut down the system to replace the component. So, if a power supply on a server starts to go bad or completely fails, or if a hard drive stops working, it is taken out of the computer while the computer is still running, and replaced on the fly. The computer does not need to be turned off to replace the component. It's like being able to change a flat tire without having to stop the car! Pretty amazing stuff, but that's what you get with a redundant cloud-based architecture

5. Controlled environment: Sterile, humidity controlled environments are for the operation of computers. Professionally managed cloud-based systems are housed in Tier 1 "hardened" Network Operating Centers (NOC's). This type of environment lengthens the life of computer components. It's good for quality service, and it is also good for the NOC – they don't have to replace broken hardware as frequently. Everybody wins.

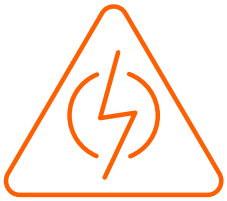
What if the internet goes down?

We've addressed why cloud-based offerings can have substantially better uptime, but does that mean they are infallible? The obvious answer is no. No more than you can guarantee that the power won't go out in your office. Sometimes construction will cut the network line to your office, or a glitch at your Internet Service Provider (ISP) causes a stoppage in service. What can you do then?

The most common method of protecting your office against a web access failure is to bring in a redundant web access point. A common and simple method is to have a cellular option from a reliable provider that seamlessly shifts to a battery-backed wireless connection, where computers can connect to a hotspot. It comes with a monthly charge, but some offices find that the security of knowing they have an alternate web access points is worth the extra monthly fee.

Many offices that start on this type of redundancy find that after many months or years of uninterrupted service, they choose to go without the redundant web access point. Actually, the risk is substantially less than you would think.

Utilities are more reliable than private services.



In addition to the inherent vulnerability of a client/server based system, they are also vulnerable to loss of electric power. The same goes for cloud-based systems.

If the power goes out and your computer system won't run, then you probably are also having a hard time running your air compressor, autoclave, lights, etc. So, power is not just a technology problem.

This risk can be mitigated by the use of Uninterruptible Power Supplies (more useful for "brown outs" than actual power outages), or by external generators for more extended periods of time. So, how many offices purchase a generator to protect against a loss of electric power in the office? Not many. Why? The answer is pretty simple.

Electric power is a public utility. As such, when an outage happens, there are typically hundreds or thousands of others with the same problem. With many people experiencing the same failure, the company will put all available resources on the problem until it is fixed. These outages, in most areas, do not last very long, nor do they happen very often. If you live in an area that does experience frequent and prolonged failure, then you are probably among those who have a generator.

The same principle goes for internet access and internet service providers. If the internet goes down, there are hundreds or thousands of others in the same situation. The local internet service provider puts all available resources at the problem until service is restored.

Because you are not alone, the problem is resolved much quicker and at less expense. Most offices find that although the internet does sometimes go down, it is so infrequent and of such short duration, that a backup internet access point isn't justified. Client/server system downtime is on the order of ten times as disruptive in both frequency and duration when compared with cloud-based solutions.

About Curve Dental

Founded in 2004, Curve Dental provides cloud-based dental software and related services to dental practices within the United States and Canada. The company is privately held, with offices in Provo, Utah, and Calgary, Alberta. The company strives to make dental software less about computers and more about user experience. Their creative thinking can be seen in the design of their software, that's easy to use and built only for the web.

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