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The Popularity of the Fax Machine



It always feels a bit peculiar to come across a fax machine still being used in the modern office. With all of our digital advancements, the fax

machine should have gone the way of the floppy disk. Contrary to common sense, it is estimated that there are 131 million fax machines still in operation around the world.

In fact, fax machines are doing so well that you can accurately. . .



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The Facebook Family of the Future



The ramifications of social media have extended well beyond just a tool used to keep in touch with friends. From games, to advertising, to even aiding in the overthrow of Middle Eastern governments, social media has added a new and powerful dynamics to the way people use technology. For better or for worse, social media also adds new and interesting dynamics to the most social part of our lives, our families.

Many of us are already feeling this new social media family dynamic with parents and kids befriending one another on Facebook. Social media acts as a magnifying tool, taking the odd social quirks families are traditionally good at hiding, and exposing them for the world to see and laugh at. Some family members handle family interaction through social media by creating separate accounts, one for their family and another for their friends (the NSFW version). Comparing the content of people's different accounts can make for an interesting bedside reading for any family counselor. If extended family and broken relationships from divorce are also considered in the social media family dynamic, then social media can turn into a very messy place that can be more entertaining than a daytime soap opera.

All of us could probably stop here and insert our own humorous and awkward stories of how social media has added new dynamics to our families, but let's keep going and take this analysis even further by asking the question, "How will social media influence family dynamics of the future?"

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Map Out Your Network's Growing Pains



Business growth is a double edged sword. It is great that you are increasing revenue, but you now have to deal with growing pains. These growing pains are often felt with your technology. Is your network cobbled together with random computers and your wires are one big tangle ball? Paradigm can help relieve these IT growing pains with network mapping.

In hindsight, maybe you should have planned your technology expansion better; then you would not be facing this scary jumble of Ethernet cords. But hindsight is 20/20 and now you must deal with these growing pains. You could spend hours untangling it yourself, tracing every wire back to the source, although, about halfway through the project you might get the urge to make a noose out of your wires and end your misery...by going wireless. Don't let IT growing pains push you over the edge. Give Paradigm a call and have our skilled technicians make sense of your mess.

Mapping networks for businesses is a little more involved than playing connect the dots on a restaurant placemat. There are several networking tools that are used to integrate auto network discovery with network mapping. Network mapping techniques like route analytics and simple network management protocol (SNMP) make it possible to visualize and understand

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About Paradigm

We are a technology consulting firm specializing in technology implementation and management for businesses. We're known for providing big-business, Enterprise-Level IT services to small and medium-sized businesses.

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Map Out Your Network’s Growing Pains

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the relationships between end devices and the transport layers that provide service.

Through this mapping process, computer components that slow down networks are identified. This process can also be used to discover if your hardware is underutilized; for example, you may have the hardware capability to virtualize your servers in order to reduce the amount of servers running on your network. Whatever the hardware needs of your network are, we can provide you with hardware solutions that will best fit the needs of your business while working around a price plan that you can afford--because fixing painful problems should not be painful to your budget.

Having a network mapped out for maximum efficiency will make everything run smoother, but even if all of your hardware is mapped out perfectly, it can all

be undone with a software security threat like a computer virus. When we design networks for our clients, we can also strengthen network security with an optional procedure called pentesting. Also known as penetration testing, this a process that evaluates the security of a network by simulating a virus attack to discover the parts of the network and firewall that are vulnerable. Pentesting discovers weak points that your network may have; this allows us to go in and shore up your vulnerable spots so that any future attacks will be unsuccessful and not derail your company's growth.

Once your IT infrastructure is secure, mapped properly, and equipped with the correct equipment, your technology will be running at maximum efficiency and your growing pain will be relieved. One service that we offer that will ensure that your network will be able to handle future growth, and not become a tangled mess once again, is our IT con-

sulting service. After a smooth running network is established, we will then create an IT roadmap to prepare you for your future IT expansion. Using an IT roadmap, we will analyze how fast your company is growing, and accurately estimate how many additional servers, workstations, and software licenses you will need in the next few years, and then work with you in order to plan accordingly. An IT roadmap will set you up for pain free growth on the technology side of your business for years to come.

Of course, rarely does a growth spurt happen without pain. From time-to-time, your computers will have hiccups, and you will require a service call. It is these future service calls where a properly mapped out network really pays off, because now visits from. . .



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Is a Mobile and Cloud-Based IT Infrastructure Right for Your Business?



With the widespread use of mobile devices in the workplace, more companies are questioning the relevance of their tradi-

tional IT infrastructure. Mobile devices take advantage of cloud computing, and every new generation of tablets and smartphones have productivity apps that can accomplish more tasks. Before you switch out your old technology, you will first want to consider the data needs of your business.

Does your business primarily create data or consume data? Mobile devices perform well at consuming data over a cloud network, but they are limited by both hard drive space and small screens.

Moreover, many mobile devices do not use a keyboard and mouse, so writing anything longer than a short email will prove burdensome. And despite being able to do more with each generation, many devices still fall short of the processing power desktops offer, and the operating systems and applications on mobile devices are typically stripped down versions of the real thing. As much as every company would like to empty out the room full of servers, replace big workstations with tablets, and give every employee a Segway, this vision may not be a good fit for every business.

The Strengths and Weaknesses of Mobile Devices

Not every business creates vast amounts of data; some companies use their technology largely for retrieving information

on products or clients, tracking company time, and communicating both internally and with their customers. Mobile devices can perform all of these tasks well. If your business primarily consumes data, and you know the IT needs of your business are not likely to change, then switching to a mobile cloud-based IT infrastructure is a real possibility.

One drawback to a mobile IT infrastructure is it that mobile devices are not designed for upgrades. Whereas with a PC, you can pop it open and add some RAM, the warranty with devices can actually be voided if you crack open the seal. We suspect device manufacturers have intentionally set it up like this to force you into buying a new device when your service contract expires. Having

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With every generation within the past 50 years, we can look back and see a technology that both parents and kids use together to the bewilderment of the previous generation. The current manifestation of this can be seen with video games. Generation Y grew up with parents viewing video games as a toy for children. Video games outgrew the toy label and evolved to keep up with the changing taste of Generation Y. Now, Generation Y is having kids of their own and turned video game playing into a family affair. It was the rare Gen X parent, and the even rarer Baby Boomer parent, who would even think about playing video games with their children in the 1980's and 90's.

We are already seeing both parents and kids interacting together through social media, but what will it look like when kids are raised with social media? What-

ever age a parent chooses to onboard their kids to social media is up to them, Facebook's official policy is no earlier than thirteen. According to a May 2011 Consumer Reports survey, Facebook's age restriction policy is being violated by 7.5 million children under the age of 13, and 5 million of these kids are under the age of ten. Very few adults today started using social media this early, most of us created accounts well after our most influential years as children. A new family dynamic to consider is that a child who is raised with social media will potentially be able to scroll down their parent's Facebook timeline for a unique look into their parents' lives. This family insight has not been experienced by any previous generation short of a child digging up Mommy's diary from a box in the attic.

Many new parents are already aware of this new dynamic and have edited their

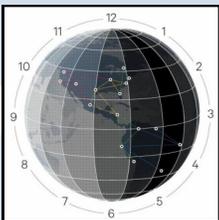
Facebook timelines accordingly. A few new parents may have even pulled the same move with their kids that they used on their parents, creating a separate account that is safer. Keeping your "real" social media account from your kids is a bad move, a kid raised on social media will have the know-how to discover both accounts much easier than grandma who still needs help finding the Windows start button.

Our advice, don't view this new family dynamic brought on by social media as a threat, embrace it like Generation Y embraced playing video games with the family, and Generation X embraced renting VHS tapes for family movie night (thank you Netflix for ruining this family tradition!). Here is one heartwarming example of how social media can . . .



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Meet Google Spanner: The Largest, Single Database Ever Created



The evolution of Google from a search engine company renting a garage, to one of the largest companies on the planet, is a story that can truly boggle the mind. One cause of Google's growth is their investment in developing new technology. This is the case with the Google Spanner, which is a new technology designed to manage Google's growth.

At the heart of the Google empire is data. Google houses all of their data from all of their various ventures (YouTube, Gmail, Google Docs., etc.), in giant warehouses all around the world called data centers. Each data center is packed full of servers that stores the world's data on

thousands of hard drives. Google's showcase data center, in their hometown of Mountain View California, has an estimated 45,000 servers, and this is just one of perhaps a dozen or more data centers around the world.

Google has hundreds of thousands of servers operating all around the globe, Datacenterknowledge.com estimates Google operates 900,000 servers based on power consumption reports released by Google. Herein lies the challenge, almost a million servers housed in data centers around the globe, serving the information needs of people in almost every country, and all of this data needs to be synced across the world's 24 different time zones.

The Google Spanner is a massive database that is designed to efficiently scale

this complex flow of data to a single time. Spanner will timestamp all of Google's data from all around the world using True Time API, which uses an atomic clock combined with a GPS clock in order to sync every server in every Google data center. Google released a very detailed 14 page paper explaining how Spanner works; here is an excerpt with a technical explanation (you might want to put on your thinking hat for this one):

Data is stored in schematized semi-relational tables; data is versioned, and each version is automatically timestamped with its commit time; old versions of data are subject to configurable garbage-collection policies; and applications can read data at old timestamps. Spanner supports general-

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your company upgrade to all new devices every few years might be too much of a strain on the budget.

Adapting Your Traditional IT Infrastructure to the Cloud

A traditional IT infrastructure uses computer components like servers, desktops, and laptops. If your company cranks out spreadsheets, presentations, media, and reports on a regular basis, then you are going to want to stick with a traditional infra-

structure in order to maintain the levels and quality of data that you are used to creating.

With cloud computing, it is possible to host your entire IT infrastructure over the cloud. There are several advantages to doing this, like increased security and saving electricity, but this might not make the most fiscal sense if you have an existing IT infrastructure that is already in place and meeting your needs. Modifying and making better use of your existing IT infrastructure

would be a smart move to consider before moving everything over to the cloud. Making your current IT infrastructure run at maximum efficiency can be achieved through a solution that Paradigm provides called virtualization.

At this stage in the development of technology, the best route for most businesses. . .



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We partner with many types of businesses in the area, and strive to eliminate IT issues before they cause expensive downtime, so you can continue to drive your business forward. Our dedicated staff loves seeing our clients succeed. Your success is our success, and as you grow, we grow.

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purpose transactions, and provides a SQL-based query language.

And breathe. In order to achieve this colossal data syncing feat, every one of Google's 900,000+ servers will need to be fitted with a GPS antenna and an atomic clock. Therefore, it might be a good move to find out who manufactures these devices and purchase stock in that company. The Google Spanner is incredibly efficient, able to

automatically balance the demands for data across all of Google's servers. Spanner also uses a data structure that lets the applications control the data locality, this means the data retrieval time for users will be at a maximum.

There are enough technical details on how the Spanner works to overheat your graphing calculator. One last detail that we would like to point out is the sheer scope of the Spanner's processing power. Google has designed

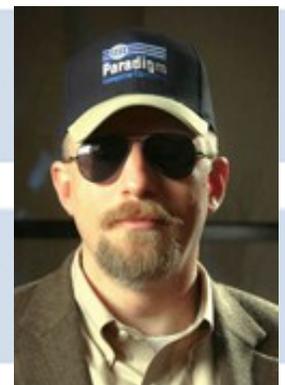
the Spanner to handle up to 10 million servers! The Spanner is Google's effort to lay the groundwork for future company growth, ensuring they will be able to grow ten times their current size. Considering how far Google has come from a few servers crammed into a garage in 1998, to their current incarnation, it should not be too long before Google reaches 10 million servers. . .



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Shawn Walsh
CEO



Tom E. Mitchell
COO

Paradigm Computer Consulting

2 Townsend W Ste 3
Nashua, NH 03063-1277
603-647-8614



facebook.paradigm.com



linkedin.paradigm.com



twitter.paradigm.com



blog.paradigm.com



newsletter@paradigm.com

Visit us online at:

newsletter.paradigmcomputer.com

