



How Green Is Your Data Center?

If you're interested in saving money, fighting global warming, or insuring better disaster recovery, you might consider "greening" your data center.

Computers, particularly servers, are using more electricity. As we use higher-performance servers and move from standalone models to rack-mounted and blade servers, both the power and cooling needed increase. IDC recently reported that the power to run servers increased on average from one kilowatt per rack in 2000 to 6.8 kilowatts in 2006.

Cooling systems costs have increased similarly, partially because servers packed closer together are harder to ventilate.

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BACKSTAGE AT THE GLOBAL VENUE

Isn't the Global Village wonderful? These days, it's no big thing for high school kids in New York City and their friends near Timbuktu to rock out over the satellite link. We can pretty much take things like that for granted. Or can we? Consider the following event...

On December 19, The Weill Music Institute at Carnegie Hall presented a distance learning event connecting high school students and musicians in New York City with their counterparts in Bamako, Mali, via satellite videoconference. Focusing on a different region of the world each year, Carnegie Hall's Global Encounters program integrates world music and cultures into high school social studies and music classrooms.

This event, one of more than a dozen concerts and in-school sessions taking place in both Mali and New York, was "something extraordinary" according to the African music enthusiast Website, Afropop. Through the combination of performances and a lively Q&A session between the students, "the students in Bamako and New York wound up dispelling stereotypes and respecting more the way of life in each others' cultures. And they had fun!" It was agreed that the video was as seamless as on TV and that the technology didn't get in the way of the people and the music.

Little did they know, that Carnegie Hall and CGNET technical staff had been working on the event since the previous



New York students join Mali's Oumou Sangare onstage. Photo courtesy Afropop.

April, and that making it happen required many months of technical planning. The first thing to know is that even in these days of IP everywhere Carnegie Hall has found that while the Internet can carry perfectly good discussions over video, performances are something else. When there's music, singing and dancing, you're really in "real time," and any technical artifacts affect the performance. So the first requirement for the videoconference was that it had to be over a dedicated connection.

In June, CGNET field consultant Issa Lawali, based in neighboring Niger, went to Bamako to identify potential carriers for the conference. What he found out was that none of the locals supported dedicated lines. They all relied on the Internet. Carnegie Hall did a comparable search among international carriers from

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Recent Projects

Save the Children

CGNET recently helped STC upgrade to Exchange 2003 and Active Directory in its Washington D.C. and Westport offices, and we are now beginning to reconfigure their worldwide Exchange network to improve performance and reliability, including dynamic failover services to replica servers.

Women's Funding Network

CGNET has been helping WFN with a wide variety of IT tasks, ranging from desktop and network support to providing a new search engine for WFN's Knowledge Center portal and assisting them in selecting new accounting and fundraising software. WFN is also planning to host its email at CGNET.

Nairobi Satellite Link

Ricardo Uribe traveled to Kenya in December to assist a major foundation in implementing a dedicated international satellite link from Nairobi to the Internet in Germany. This allowed the foundation to get greater bandwidth at lower cost than otherwise available.

ASARECA

CGNET is now supplying hosting for the Website of the Association for Strengthening Agricultural Research in Eastern and Central Africa, based in Entebbe, Uganda.

Family Health International

We are now providing Gatekeeper anti-spam and anti-virus protection to FHI's Research Triangle Park, NC, headquarters and Washington D.C. offices, in addition to the 25 international sites already covered.

Four Paths to a Speedy Recovery

By Tim Haight



For many of our clients, high availability and disaster recovery have become top priorities, so here is a model of some of the most interest-

ing developments.

The big shift is to online replication of key services to remote locations, usually over the Internet. With redundant capacity in a remote location, demand across the organization's network can shift there upon a disruption at headquarters.

Two forces have been driving this: greater desire for minimal interruption of critical applications, and the emergence of technologies that make this affordable, such as much cheaper bandwidth and storage, virtualization, and competitively priced replication software.

Two basic choices must be made in designing such a system. First, do you want near instantaneous failover, or is a slower, less expensive recovery acceptable? Second, are you going to locate the replica in your own facilities, such as a branch office, or at a managed service provider?

Combining these choices yields four alternatives:

1. Storage replication to a branch office
2. Storage replication to a managed service provider
3. Rapid application failover to a branch office
4. Rapid application failover to a managed service provider.

Today, storage replication often involves storing "snapshots" of virtual machines. Restoring a VM snapshot restores the

entire "server," up to when the snapshot was taken. This eliminates the need to reinstall the server software, add patches and configure it to the data.

Whether you store VM snapshots or other backups, such as from a SAN or NAS, storage replication involves rebuilding servers and a gap between the time the data was stored and when the outage occurred. Thus, recovery from a major failure can take a day. Furthermore, it is difficult to test the process without disrupting the system.

High availability dynamic replication uses application-aware software to update a full replica server on a transaction-by-transaction basis. Thus, failover takes only a few minutes and very little data is lost. Some products allow for testing while the application is running, so recovery can be assured. The downside of this method is that it continues to be more expensive than storage replication, even though its own cost has recently dropped significantly.

If a remote office is available, it may provide an inexpensive site for the backups or replicas. This assumes, of course, that the location's space, cooling and bandwidth are already provided for as part of the existing facility.

A managed service provider can also host the backups or replicas. This provides professional hosting and an on-site 24/7 engineering staff ready to implement the solution, which can mean more reliable service and more rapid recovery. This solution involves charges, however.

We have implemented all of these alternatives and would be happy to assist you with one for your organization. ☺

Tim Haight is CGNET's Vice President, Technology Services

CGNET's Take on Exchange 2007

Now that Microsoft Exchange 2007 is generally available, we asked a couple of CGNET's resident Exchange experts what our clients needed to know, in general, about the possible upgrade. The "nutshell" answer was that nobody needs to upgrade for upgrading's sake, but that there are several situations where considering Exchange 2007 will make a difference.

64-bit Architecture

"If an organization is planning to centralize its email servers, it's the option to select," said Eric Romero, an engineer on our Messaging and Development Services team. "The new 64-bit system is so powerful that it can be a better server." The 64-bit architecture allows for much more memory, which can mean support for more mailboxes and more memory per mailbox, for example.

CGNET Director, Global Technologies and Services Ricardo Uribe added that any hardware upgrades to email servers now ought to use 64-bit processors. Microsoft's 32-bit version of Exchange 2007 is really for demonstration purposes only, not for use in production.

Unified Messaging

Microsoft has added unified messaging to Exchange 2007, which means that users can, among other things, hear messages and work the Outlook calendar over the phone and also see voice mail in their email. This clearly can be convenient.

Some caution is necessary, however. "This is early technology for Microsoft, compared to Cisco and other vendors" Romero said. "Microsoft will be very strict about which systems work with it. It will probably support only a few PBXs, for at least a while."



CGNET's Messaging and Development Services Engineer Eric Romero (left) and Director, Global Technologies and Services, Ricardo Uribe

Autodiscover

"Autodiscover may be a help, particularly for large organizations," Romero said. "What this means is that Outlook will self-configure against the Exchange box, using Active Directory. Outlook 2007 will automatically know about the Exchange 2007 server and configure the account automatically. This can reduce the need for a lot of help-desk support."

Compatibility

Romero added that Exchange 2007 is compatible with Exchange 2000 and 2003, so a new Exchange server can coexist on a network with the earlier versions. "This is not true for Exchange 5.5, however," he said.

The Bottom Line

If you're replacing hardware or setting up a new office, the move to Exchange 2007 makes sense. But if you're not doing that, or consolidating or installing unified messaging, it really doesn't hurt to wait.

"I don't want to utter the cliché about waiting for the first service pack," Romero said. "Some clients may want to move now, and we're ready to help, but for many, it may not be necessary yet." ☺

Recent Projects

CGIAR

CGIAR centers now have access to Microsoft Live Communications Server, including native features, access to public Instant Messaging services, voice and video, and support across NAT firewalls, using SIParator technology.

Winrock International

Winrock International now has secure access to its organizational network via Virtual Private Networks from its home and branch offices via Cisco PIX firewalls configured and supplied by CGNET.

Beijing Office Implementation

CGNET field consultants are providing desktop, mobile, LAN and WAN implementation and support for a large foundation as it establishes offices in Beijing.

International Potato Center (CIP)

CGNET has delivered a Regional Broadband Global Area Network (RBGAN) mobile satellite terminal and tested Internet configurations, to allow the unit to serve as an emergency Internet connection in case of a terrestrial network failure.

African Development Bank

The Bank has begun a project which will provide high-availability business continuity for the Microsoft Exchange servers at its temporary relocation headquarters in Tunis. It is expected that the system will be expanded to include disaster recovery replication to a co-location facility on another continent.

TAS Wireless Venues Increase


Traveler's Access Service (TAS), CGNET's roaming Internet access service, is now available more widely than ever before. At last count, TAS customers can reach the Internet from 106,000 different locations in more than 160 countries.

The greatest recent increase has been in wireless venues, which now total more than 72,000. These now include hotspots at most Starbuck's locations, as well as at 7,600 McDonald's restaurants world-wide.

"These new locations have made my travel in the U.S. really convenient," said Georg Lindsey, CGNET's CEO. "In the U.S., you're never far from a McDonald's or a Starbuck's." TAS continues to offer wireless connections in hundreds of airports and hotels and thousands of other locations around the world. Hotspot locating software is available for free download from www.ipass.com.

Expanded Dialer Support

CGNET has also released new dialer software that supports Intel-based Macintoshes and mobile devices using the Windows Mobile 5 operating system, as well as Windows XP and 2000 and Mac OS X.

Traveler's Access Services is based on the iPass roaming Internet access service, but it adds service in 10 countries, customized accounting, dialers, authentication and 24/7/365 end-user support. 



Dante Palacios, server administrator at the International Potato Center (CIP) recently completed a two-week technical residency at CGNET. While at CGNET, Dante worked on disaster recovery simulations and Microsoft SharePoint implementation.

New Features for Gatekeeper Spam and Virus Protection

This year, CGNET is improving its Gatekeeper anti-spam/anti-virus email protection service by incorporating Symantec Hosted Mail Security. The new system has several advantages, both for customers and for CGNET.

For several years, CGNET used Brightmail Anti-Spam and Trend Micro Internet Virus Wall as its anti-spam and anti-virus engines in Gatekeeper. The two services were applied on servers at CGNET, as mail destined for our clients was routed through our servers first, for virus removal, spam quarantining and backup.

In 2005, Symantec acquired Brightmail. It has now incorporated the Brightmail service into its Hosted Mail Security service. Symantec Hosted Mail Security functions very much like CGNET's

former system, except that the anti-spam and anti-virus procedures take place at Symantec's Tier 4 data centers. The mail is then routed to CGNET for backup, and then on to our clients.

New Benefits

Users are seeing new benefits:

Increased Visibility: Notification of quarantined mail is sent to users, including the ability to review quarantined messages.

Personalized Control: Users can set several options about how their quarantined mail is handled, including how long it is held, frequency of email notifications, and ability to specify blocked addresses.

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The Trends We See in 2007

By Georg Lindsey, CEO

Scrap the Servers

Many clients are choosing to move in-house hosting to external providers. This lowers total cost of ownership (TCO) and increased uptime and reliability.

Blackberry Fields Forever

More and more of our clients are getting blackberries, Treos, PDAs and they expect to be able to read their email anywhere any time.

Bulletproof Email

Many clients want email to automatically continue even in the event that the primary server fails. Automated failovers without disruption are becoming more prevalent.

Clean Mail

Many clients leave their email-based spam and viruses with us. Since this is now up to 90% of email, clients conserve their bandwidth and massively reduce the load on their email servers.

Economical Disaster Recovery

Once only for those that can afford it, new ways of doing DR, including virtualization, make it possible.


Virtual Is Real

Virtualization has become a way of life. Clients save money, simplify operations, and recover from downtime faster.

Peace of Mind

More and more clients are increasing their uptime assurance through increased remote Monitoring. CGNET's 24/7 staff are attending to about 1500 monitors with specific protocols on what to do if problems are detected.

Wireless To Go

Travelers are making more use of broadband wireless connections. But how will security be enforced? We are seeing quadrupling of broadband use of TAS since it provides a secure solution at 106,000 access points. 

Why We Picked Quest Archive Manager

At this point, it's no surprise that organizations are striving to manage their knowledge by archiving their email.

Not only have demands escalated for organizational transparency and legal discovery of documents, but also growing organizations are finding their email at the center of their activities and its mushrooming content increasingly harder to leverage. Thus, CGNET decided it was time to add message archiving to our messaging services.

Last fall, we introduced CGNET eMail Vault, a comprehensive message archiving system based on Quest Software's Archive Manager. Leading up to the introduction was almost a year of research and testing, most of it carried out by Messaging and Development Services engineer Eric Romero.

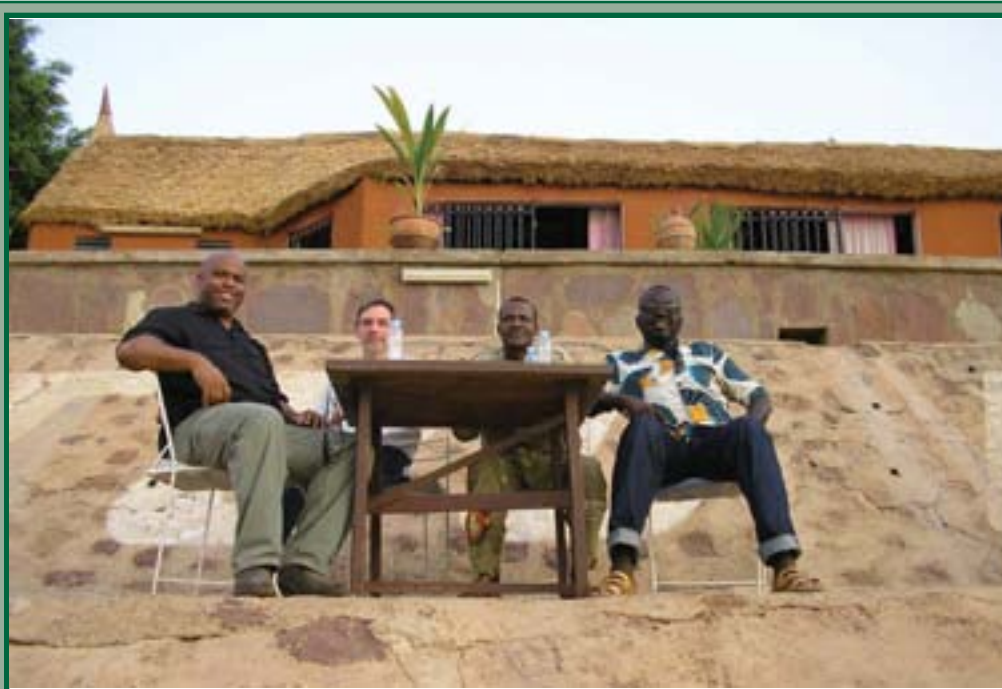
Romero reviewed many products on the market, narrowing them down to a short list for intensive research and, finally, to two products for in-house testing. Those two were Symantec Enterprise Vault and Archive Manager.

Quest Stands Out

Archive Manager stood out for three reasons, Romero said. First, the client software is entirely browser-based, which vastly simplifies installation, particularly in widely dispersed organizations.

Also, "it was always possible to browse the archive, which was not always the case with the Symantec solution," he said. Finally, the level of technical support was a lot better.

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The Bamako videoconference team takes a break. From left: Mark Burford and Hollis Headrick, Weill Music Institute, Boubacar Diallo, U.S. Embassy, and Issa Lawali, CGNET. (See story Page 1).

New Gatekeeper Continued from Page 4

Greater Reliability: Mail is processed at highly redundant IT facilities, with instantaneous failover to other sites.

CGNET benefits from the new configuration because spam and viruses are removed before the mail reaches CGNET. This cuts demands on our bandwidth, since spam now accounts for more than 80% of all Internet email traffic.

Both CGNET and its users save bandwidth and processing cycles, compared to installing these services in house. And users gain a convenient, easy-to-use system backed up by CGNET's 24/7/365 end-user support.

CGNET clients currently using an in-house system might consider how moving to a hosted service such as Gatekeeper would provide these benefits to them, as well. ☺

Archive Manager Continued from Page 5

CGNET eMail Vault has other advantages, too. Its true single-instance storage means that only one copy of an attachment goes into the archive, no matter how many messages contain it. This controls data volume and reduces the cost of storage management.

The product's browser-based interface allows users to find and retrieve data in minutes, by enabling them to visually zero in on specific content. Granular permissions can be set to retrieve items from particular mailboxes or across the entire organization. Its comprehensive searches can be based on sender, recipient, date, subject, message keyword or attachment keyword.

Romero also noted that Quest is constantly improving its product. "They are rapidly producing new versions with better features," he said. ☺

Special Offers on Satellite Services

Until March 31, CGNET will be offering \$1000 off some Broadband Global Area Network (BGAN) service plans, if the customer makes a one-year commitment.

In addition, several new service plans are being offered, including the ability to roll over unused megabytes of transmission into succeeding months.

In recent months, the Inmarsat-based satellite service has expanded its offerings significantly. Not only does it cover 95 percent of the world's land mass, but also a range of new terminals are available, some weighing less than one kilogram (see table below).

The service now offers both VoIP and switched voice, as well as data transmission at speeds up to 492 kbps. Details are on the CGNET blog at cgnetblog.blogspot.com. ☺

BGAN terminals: a quick reference guide							
							
R-BGAN IP-based, entry-level device	Wideye Sabre™ I Voice and data, entry-level device	WorldPro 1000/1010 Smallest, lightest device in the range	Explorer™ 300 Highly compact, robust device	Explorer™ 500 High bandwidth, highly portable device	HNS 920i High performance, multi-user device	Explorer™ 700 Multi-user device with extensive functionality	
Manufacturer: Hughes Network Systems www.hns.com	Manufacturer: AdValue Communications www.wideye.com.sg	Manufacturer: Nera SatCom www.satcom.neraworld.com	Manufacturer: Throno & Throno www.throno.com	Manufacturer: Throno & Throno www.throno.com	Manufacturer: Hughes Network Systems www.hns.com	Manufacturer: Throno & Throno www.throno.com	
Size: 300 x 240mm (1.4kg)	Size: 384 x 180mm (1.2kg)	Size: 200 x 140mm (<1kg)	Size: 217 x 148mm (1.4kg)	Size: 317 x 217mm (<1.5kg)	Size: 345 x 275mm (2.8kg)	Size: 290 x 399mm (3.2kg)	
Standard IP: Up to 144kbps (send & receive)	Standard IP: Up to 384 / 240kbps (receive/send)	Standard IP: Up to 384 / 240kbps (receive/send)	Standard IP: Up to 384 / 240kbps (receive/send)	Standard IP: Up to 484 / 448kbps (receive/send)	Standard IP: Up to 492kbps (send & receive)	Standard IP: Up to 492kbps (send & receive)	
Streaming IP: N/A	Streaming IP: 32, 64kbps (send & receive)	Streaming IP: 32, 64kbps (send & receive)	Streaming IP: 32, 64kbps (send & receive)	Streaming IP: 32, 64, 128kbps (send & receive)	Streaming IP: 32, 64, 128, 256kbps (send & receive)	Streaming IP: 32, 64, 128, 256kbps (send & receive)	
SDPA: N/A	SDPA: N/A	SDPA: N/A	SDPA: N/A	SDPA: 1 x 64kbps via USB only	SDPA: 1 x 64kbps	SDPA: 2 x 64kbps	
Voice: Via VoIP	Voice: Via RJ11 or Bluetooth handset / headset	Voice: Via Nera WorldSet, SDPA phones, Bluetooth handset	Voice: Via RJ11 or Bluetooth	Voice: Via RJ11 or Bluetooth handset, 3.1 kHz audio	Voice: Via SDPA handset	Voice: Via RJ11 (x2), Bluetooth handset, 3.1kHz audio	
Data interfaces: USB, Bluetooth, Ethernet	Data interfaces: USB, Bluetooth, Ethernet	Data interfaces: USB (with adapter for 1010), Bluetooth, Ethernet - static IP addressing (dynamic IP addressing from Q3 300k)	Data interfaces: Ethernet, Bluetooth	Data interfaces: USB, Bluetooth, Ethernet	Data interfaces: USB, Ethernet, WLAN 802.11b	Data interfaces: USB, Ethernet (x2), Bluetooth, WLAN 802.11g, Digital I/O	
Ingress protection: IP 54	Ingress protection: IP 44	Ingress protection: IP 44	Ingress protection: IP 54	Ingress protection: IP 54	Ingress protection: IP 55	Ingress protection: IP 55 (transceiver) IP 64 (antenna)	

Backstage at the Global Venue

Continued from Page 1

New York, to find one that could get a temporary dedicated line into Bamako. The alternatives looked like either installing a VSAT ground station just for the performance, a highly expensive proposition, or tolerating Internet glitches. Both were equally unacceptable.

"That's why I enjoy working on projects like this," said Jim Estes, CGNET's Chief Operating Officer and the technical lead for this effort. "You say you can't do that? Well, you should be able to do something here..." Jim remembered that the World Bank, famous for its global videoconferencing system, had an office in Bamako.

Conversations with the World Bank's videoconferencing staff made the conference possible. If Carnegie Hall could provide dedicated connectivity from the concert hall in Bamako, which ended up being the Centre Culturel Français (CCF), to the World Bank's Bamako office, and if another dedicated line could be set up from the bank's Washington D.C. videoconferencing center to Carnegie Hall in New York, concert-

quality videoconferencing could happen.

CGNET and Afribone Mali, a local service provider, set up a line-of-sight 48-mbps wireless link between the CCF and the World Bank, five kilometers away. One megabit of bandwidth was actually used, with another for backup. In the weeks before December 19, two tests and a rehearsal were held. After each one, all the equipment had to be removed from the CCF and taken back to Afribone, except for the outdoor antenna.

Things in the U.S. went more slowly, working with domestic carriers. The fastest service Carnegie Hall could get for the Washington-New York T1 was installation after a three-month wait. Advance planning paid off and Carnegie Hall ordered with enough lead time to ensure the delivery.

Planning for Carnegie Hall's next event in its Global Encounters will be underway shortly. Everybody is hoping that a videoconference with a connection-rich far-end will be easier to arrange than with Bamako. We'll see... ☺

How Green Is Your Data Center?

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The IT industry has noticed the trend, and vendors are beginning to offer solutions. One of the most promising is virtualization, where many virtual servers can be combined on one physical machine. Other approaches include buying servers that are more energy-efficient and designing data centers to be cooled more efficiently.

CGNET has begun to reduce its power usage by virtualizing servers. In the last year, we have virtualized more than 50 servers, replacing five physical servers with one virtual server, on the average. We anticipate that as we continue to virtualize, the ratio may approach eight or nine virtual servers to one physical server. We have also redesigned our data center to provide more efficient air conditioning.

CGNET is working with its local power utility, Pacific Gas & Electric, to reduce CGNET's data center power consumption. PG&E offers financial incentives as part of its commitment to reducing data centers' power consumption.

CGNET began virtualizing servers more than two years ago, largely because virtualization allows for much more effective restoration of services in the case of downtime, but it soon became apparent that virtualization is not only a good IT choice but one that also conserves power and reduces heat.

Another way to reduce your data center's power consumption is to outsource applications to green data centers. CGNET is dedicated to supplying services at the lowest possible levels of power consumption, consistent with maximum availability and reliability, so that it can be such a green outsourcing choice. ☺



Students in Mali watch the N.Y. performance by videoconference. Photo courtesy Afropop.

WHO IS CGNET?


For more than 23 years, CGNET Services International has provided global information networks and communications services to many of the most prominent nonprofit organizations and foundations in over 130 countries.

CGNET extends our clients' reach to "do good" particularly in challenging environments and difficult to reach geographies. We do this by providing stellar services in the areas of network design, implementation, Email services, maintenance and support.

Our clients are nonprofits of all sizes with headquarters throughout the world, including the David and Lucile Packard Foundation, the Hewlett Foundation, the World Bank, the African Development Bank, CAB International, Conservation International, the Consultative Group for International Agricultural Research, and Save the Children.

CGNET is a privately held, profitable company with its headquarters in Menlo Park, California, and people on the ground on four continents. We operate a state-of-the-art network operations center in Menlo Park, from which we monitor and maintain networks all over the world, and Tier 4 co-location services in Sacramento, California.

CGNET provides a number of complementary managed services, including Managed Messaging and Collaboration, Managed Hosting, Managed Network Services, Business Continuity Services, Traveler's Access Services and Consulting.

CGNET's commitment to constantly manage the key services of reliable networking provides unique benefits for domestic and international networks. Read more at www.cgnet.com. 

CGNET News

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