

Web Hosting: An Overview

Summary

Web hosts are no longer limited to selling traditional Web-hosting services—such as simple Web hosting. Vendor solutions now include complex hosting on collocated, dedicated, or shared servers. In addition, Web hosts are either creating new partnerships or acquiring complimentary product/services and offering their customers a “hodgepodge” of managed solutions, all backed by service-level agreements. Analysts following the hosting arena all agree. Managed Web hosting is the latest “in vogue” term to hit the technology hype cycle. For more info on players in this space, review Gartner’s “Web Hosting: Comparison Columns.”

Table of Contents

- Technology Basics
- Traditional Web-Hosting Types
- Operating Requirements
- Technology Analysis
- Business Use
- Benefits and Risks
- Standards
- Selection Guidelines
- Technology Leaders
- Technology Alternatives
- Insight

List Of Tables

- Table 1: Shared Hosting
- Table 2: Dedicated Hosting
- Table 3: Colocation
- Table 4: Distributors

List Of Figures

- Figure 1: Vendors Who Support Managed Services and the Type of Services Supported
- Figure 2: Managed Services
- Figure 3: North American Web-Hosting Magic Quadrant

Gartner

Web Hosting: An Overview

Technology Basics

Web hosting is the process in which a *third-party* service provider furnishes a customer with an Internet presence. A business or other entity hires a Web-hosting company to store a collection of files (Web pages) on a server owned and maintained by the Web host. The Web host is responsible for all day-to-day operations and maintenance of the server and the network (unless the customer opts for colocation), and the customer is responsible for maintaining the software (content).

All notable Web-hosting companies have their servers located in a “data center,” the facility where the Web servers (hardware) are physically located. Thousands of Web sites (clients’ software) reside on these servers.

Web hosting is similar to renting an apartment. You can rent the apartment and bring your own furniture (colocated server), or you can rent a “furnished” apartment, and the Web host provides the server.

Network Operations Center

The network operations center (NOC) is the most misunderstood operation in the Web-hosting arena. It is the central nervous system of the data center. Without it, there would be no infrastructure to transport data to the Web. All tier-one service providers as well as major telecommunications companies have developed or are developing these NOCs, for they are a critical piece to the Web-hosting puzzle. NOCs are custom designed, but they are generally built to military specifications. However, all data centers should include the following equipment; if not, find another place to host your data:

- Smoke detection
- Fire suppression systems
- Motion sensors
- Secured (sometime via biometrics) access to data floor
- Video surveillance
- Redundant computer systems
- Multiple back-up power generators
- Enterprise servers
- Routers
- Switches
- Air conditioners—(used to recycle and filter air and maintain a temperature of 68 degrees Fahrenheit, with no more than 45 percent humidity)
- T1 and T3 lines
- Uninterruptible Power Supply (UPS)—(to monitor and maintain external power feeds to a data center and to protect servers from power dips and surges)
- Batteries—(to take over the instant a power interruption occurs)
- Generators—(to feed power to the batteries during power interruptions)

Web Hosting: An Overview

The creation of a data center/NOC is a very complex and expensive task. For this reason, businesses should be wary of any second-tier hosting company claiming to operate its own data center.

Traditional Web-Hosting Types

Web hosting can be divided into three main categories: shared, dedicated, and colocated.

Shared Hosting

Shared hosting, also referred to as virtual hosting, is when multiple accounts or Web sites are stored on one server; hence the name “shared.” When a client opts for a shared solution, not only is the server shared, but also everything related to the server is shared, such as the hard disk drive, the central processor units, and the network bandwidth. This is one of the fastest-growing markets, especially considering that it is targeted to low-cost, entry-level consumers.

Strengths	Limitations
Economical.	Large number of accounts on one site (from 100 to 300 Web sites on a single server) create need for increased security.
Own domain name.	Sub-domains—look bad unless used to subdivide a site into subsections.
Choice of operating system software and disk space.	Control of all Web services is in hands of the Web host.
Reseller options include e-mail, shopping carts, mailing lists, and Web-based control panels.	Server is property of the Web host.
Tech support, redundancy measures, and site statistics.	
Streaming audio, streaming video.	

Dedicated Hosting

Dedicated hosting means that a client’s account or Web site is stored on a rented server (owned by the Web host). However, the server is “dedicated” to a single client. In addition, all other pieces required to run the site, such as hardware, software, and network connectivity, are also dedicated. The hard disk is generally of high capacity, and the technical support is thorough. This solution does not require the client to hire a staff to customize, upgrade, or maintain the server—just the software.

Strengths	Limitations
Single server ownership; one site on one server precludes the need for customers to purchase their own hardware.	Must depend on Web host.
Redundancy measures exist.	Server is property of the Web host.
No need to update or maintain equipment.	Large enough Web site to justify cost of dedicated solution.
Can purchase package based on needs.	Expensive—can cost thousands of dollars per month.
Highspeed Internet connections.	If data transfer allowance is exceeded, a financial penalty is assessed.
Site monitoring included.	

Colocation

Web Hosting: An Overview

When a client outright owns the server, but the server is housed in a Web host's data center, it is known as colocation. In this situation, the client wants more control over the maintenance of the equipment, but does not have the proper facilities to house its own servers. By storing the servers at a hosted facility, the client is responsible only for maintaining the servers, and the Web host delivers all the related network services, including bandwidth. Creative hosting providers are using the threat of disaster to sell colocation services, but this type of solution can be expensive. If a business does not possess the resources to administer or maintain the Web server, this is not a viable option.

Strengths	Limitations
Fast Internet connection and high bandwidth availability.	Technical skills are required in order to maintain own equipment.
More control over Web server administration.	Must update own equipment.
Large amount of storage space.	Initial up-front cost; overall expenses.
Update and upgrade at will.	For large high-traffic sites only.
Decreased dependence on external customer support services.	Web server administration is customer's responsibility.
Ability to use existing hardware.	Must purchase own equipment.

An additional option that has come into play is called "Non-Virtual Hosting." In this scenario, a third-party service provider rents or leases space on someone else's server hardware. This type of service is comparable to that of Application Service Providers (ASP), who own, rent, or resell third-party software packages.

Operating Requirements

Basic hosting solutions usually include:

- Domain name registration.
- Specific amounts of disk space (entry level usually being between 10MB and 100MB; no less than 50MB for online commerce).
- A monthly data transfer allowance (in the range of 1GB to 10GB for entry level).
- E-mail services, including a master POP3 account, between 10 and 20 configurable POP3 accounts, configurable mail-forwarding options, and auto respond.
- Anonymous FTP.
- Online control panel administration.
- Web-usage statistics.
- 24 x 7 technical support.

Technology Analysis

Differences Between Web Hosts and Application Service Providers (ASPs)

Web hosts and Application Service Providers (ASPs) are two different things. Web hosts focus on managing the network and servers in their data centers, while ASPs manage and deliver outsourced-business functions or applications from a data center. Moreover, ASPs can own the applications, can license the applications, or can resell third-party applications they offer a client.

Web Hosting: An Overview

Some ASPs provide end-to-end service offerings, encompassing the infrastructure, implementation, customization, and ongoing operations and support of an Internet-enabled solution. In addition, ASPs and Web hosts are partnering to resell packaged application brands, such as Lawson, Siebel, and Oracle, which require customization.

Managed Service Providers

Because of technical complexities, businesses are increasingly looking to outsource more than just Web-related services, and Web hosts are therefore offering more. The emergence of a new breed of services, called “Managed Service Providers” (MSPs), encompasses Web hosts, network providers, and application service providers all rolled into one. The traditionally clear boundaries are beginning to break down, and all players realize the importance of the latest marketing term, “one throat to choke.”

Figure 1: Vendors Who Support Managed Services and the Type of Services Supported

Who's got what?

Web Hosting: An Overview

Managed Services Offered	Colocation	Managed Hosting	IP Services	Storage Services	Content Distribution Services	Streaming Media Services	Redundancy Services	Bandwidth Services	Public and Private VPN	Security Services	Site Performance & Reporting Tools	Web Site Preparation	E-Commerce Application Services	Networking Services	Wireless Internet Services	Payment Services	Professional Services
IBM	●	●		●	●	●				●	●	●	●	●		●	●
Digex		●		●	●	●	●	●	●	●	●	●	●	●		●	●
Genuity	●	●	●		●	●	●	●	●	●	●	●	●	●		●	●
NaviSite	●	●			●	●	●	●	●	●	●	●	●	●			●
Intira		●		●	●	●	●	●	●	●	●	●	●	●		●	●
Exodus	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●
Qwest	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●
WorldCom (UUNET)		●			●			●	●	●	●			●			
AT&T	●	●	●		●			●	●	●			●	●			
DataReturn		●			●	●	●			●							
Cable & Wireless	●	●	●						●					●			
EDS		●											●				●
Digital Island	●	●		●	●	●	●	●			●	●	●	●			●
Rackspace		●	●	●	●	●	●	●	●	●	●	●	●	●			
Globix	●	●					●				●		●	●			
Unisys		●	●		●	●		●		●	●	●	●	●			●
SiteSmith	●	●		●			●	●		●	●	●	●	●			
XO Communications	●	●					●	●		●			●	●			
Verio	●		●	●		●	●	●	●	●	●		●	●		●	
Corio		●	●	●				●	●	●		●	●	●			●
XUMA*																	
Infonet	●	●			●		●	●	●	●	●			●	●		●
Loudcloud	●	●	●	●	●	●	●	●	●	●	●	●	●		●		
Sungard*																	
Intel Online Services	●	●		●	●	●	●	●	●	●	●	●	●	●			●

*Vendor did not respond.

Colocation—Offered or not offered.

Managed Hosting—Web site management services (shared or dedicated).

IP Services—Voice over IP.

Storage Services—Outsource of database functions, including monitoring and reporting services.

Content Distribution Services—Delivery and management of content; in most cases, closer to the end user. Enables content to be deployed, organized, and managed.

Streaming Media Services—Integration of streaming media components into customer applications to enhance live or taped events, media audio, or video.

Redundancy Services—Site backup and/or site mirroring of the original server(s).

Bandwidth Services—Bandwidth flexibility, such as bandwidth usage burst for unpredictable peaks of bandwidth usage.

Public and Private VPN—Virtual private network transportation services.

Security Services—Detection and deterrence of hacker activity, e.g., firewall technology.

Site Performance & Reporting Tools—Custom or noncustom monitoring tools; Web site testing tools.

Web Site Preparation—Customer needs to support solutions.

E-Commerce Application Services—Application services to deploy payment-side applications, e.g., online payment options.

Networking Services—Network management services which build, maintain, and monitor networks.

Wireless Internet Services—Wireless access.

Payment Services—Automated, interactive processing of transactions (payment) via the Web.

Professional Services—Usually nonrecurring; execute e-business strategies, build applications, assess solutions, design, and implementation.

Source: Gartner Group

Gartner's defines an MSP as the provider of managed services for specific application(s), for network and/or system management, and the IT e-business infrastructure; all *owned* by the client. Therefore, an MSP *does not* provide applications, servers, or the infrastructure they only manage existing ones using a

Web Hosting: An Overview

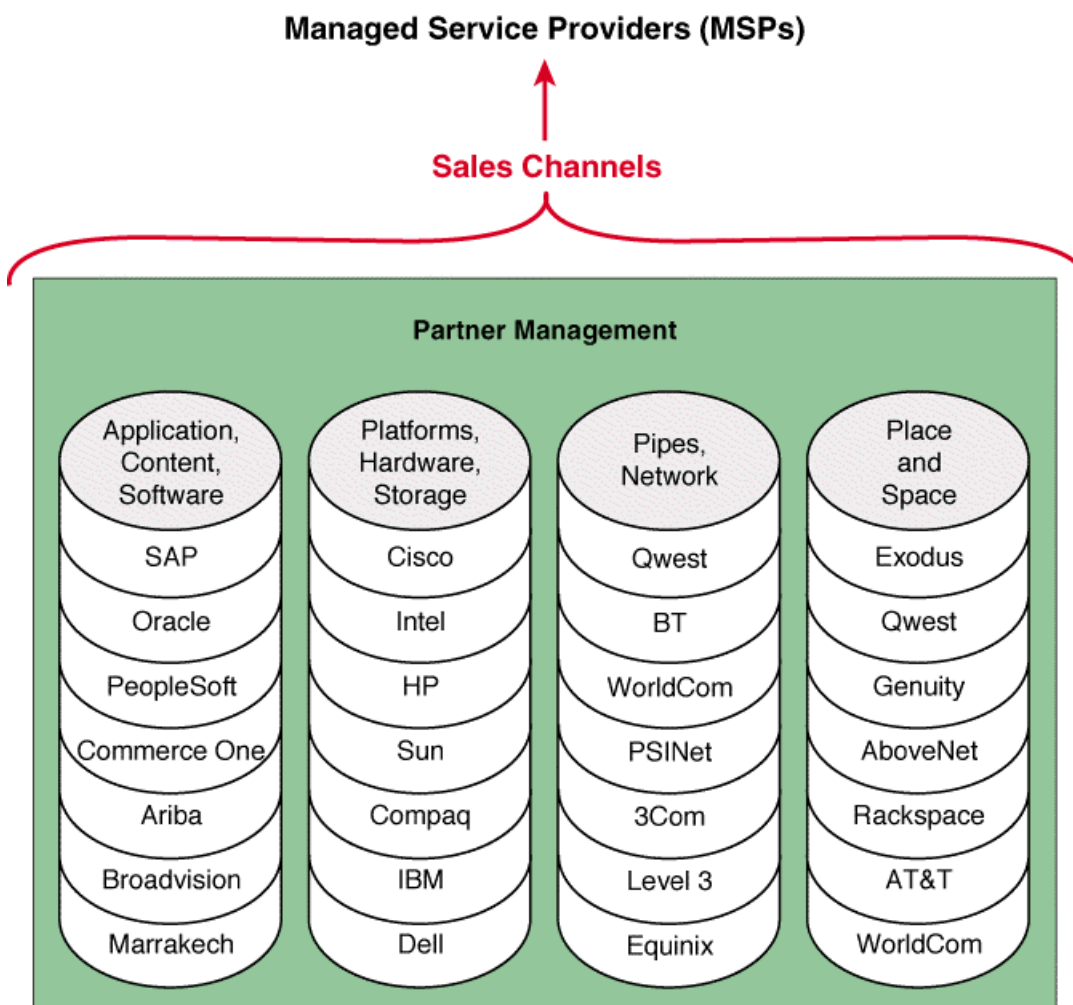
“pay as you go” model. MSPs differ in terms of the scope of resources that they are able or willing to manage, which may include a combination the external network, the enterprise network, the applications, the databases, the servers, type of storage, the desktop, and/or the data facilities.

All the hype surrounding MSPs brings us to the latest perplexities in this market. While it is easy to identify and classify some vendors as MSPs, it is difficult to classify others. Therefore, it is critical for an IS organization to understand and define the type of management services it needs and the scope of resources offered by an MSP. For example, do you want a service that tells you when your Web site is down, or do you want a service that tells you your Web site is down and then proceeds to fix it?

Both traditional and new carriers are active in this market, and it is no surprise. For in the carriers' eyes, every enterprise that procures a Web host or ASP is a lost opportunity.

Figure 2: Managed Services

A Snapshot



Source: Gartner Research

Content Distribution Network (CDN) and Peering

Vendors who supply content distribution services, be it software or hardware, can be divided into two groups:

Web Hosting: An Overview

- **Independent Content Distributors (No network).** They are independent operators (IOs) who provide services backed up by SLA contracts. The contracts come with guaranteed uptime of 99.0 percent to 99.9 percent on services such as application management, set up and management of servers in various ISP locations (colocation), and even satellite content delivery services to optimize large bandwidth uses, including streaming media.
- **Network Carrier Distributors (Own network).** A typical carrier distribution network requires all content to go through either the carrier's own content distribution system or under a resellers agreement with the carrier.

Network Carrier Distributors (Network-Based)	Independent Distributors (Non-Network-Based)
Exodus	Akamai
AT&T	IBM
Cable & Wireless	Digital Island
Genuity	Edgix
Qwest	Loudcloud
Global Crossing	DataReturn
British Telecom/Concert	Corio
Digex (55% WorldCom)	Verio
World Com	XUMA
Rackspace	Unisys
Navisite	EDS
Level 3	—

It is projected that by 2003, content delivery networks will reach US\$50 million. However, this market is poised to reach the billions. Large carriers are addressing this lucrative market, but it is not all smooth sailing ahead. Dataquest's research reflects that no available technology would allow all network providers to peer in all locations where they have a network presence.

When content is traveling from one network to another it must travel on the "origin" network until it reaches a "content peering point" between the two networks. In essence, content peering allows multiple content distribution networks (CDNs) to pool their server footprints. And herein lies the problem: if content originates with a Web host in California and is traveling to an end user in California, but the closest peering point between the Web host's backbone provider and the end user's ISP's backbone provider is Dallas, the content must be passed from California to Dallas over the Web host's network, and then back from Dallas to California over the end user's ISP's network. Content peering could potentially save a content provider some regional network and backbone cost.

Web hosts and telcos, such as Digex, Genuity, AT&T, Genuity, and Cable & Wireless, are backing the Content Alliance initiative. The Content Alliance, initiated in August 2000, was formed to foster interoperability of Content Delivery Networks (CDNs). Although initiated by Cisco Systems, the Content Alliance is self-governing, and is open to any technology vendor, service provider, or content provider interested in supporting the development of open standards for the advancement of content networking. Notably missing from the alliance is Inktomi (CDN service providers). The goal for the alliance is to foster an Internet engineering task force (IETF) working group.

Web Hosting: An Overview

Business Use

Benefits and Risks

Unexpected Costs

In addition to fixed costs per month, most Web hosts also charge usage-based fees. For example, over and above the base rate for data transfer, hosts may also charge US\$0.05 to US\$0.15 for every MB of additional download. Some hosts base charges on the number of hits a hosted site gets rather than on data transfer amounts. This can prove quite expensive for a high-traffic volume site, since hits include not just the retrieval of a given Web page but also the graphics that may appear on the page. Thus, the more visits a site gets, the more it will cost the host client for hosting, either in terms of the number of pages and graphics downloaded by each visitor or in terms of the number of hits the site gets overall. Other caveats include finding out whether there are variable charges for e-mail messages and other transactions types and also if support calls are included in the monthly fixed rate or if they are billed on a per-call basis.

Standards

In July 1998, Sumo Inc. founded the Web Host Guild (WHG), dedicated to instituting an industry-wide standard for Web hosts and their clients. The guild's stated mission is to "protect consumers from unscrupulous hosts and to help identify the honest, legitimate host companies that exist," and its motto is "Service, Support, and Speed." The organization also hopes to promote awareness of Web-hosting services worldwide.

To achieve these lofty goals, the WHG has established a set of verifiable criteria for the purpose of certifying Web-host firms. Certification will provide consumers with a resource for determining a given host's professionalism and for comparing various hosts. In order to become a member of the WHG, a host must pass an extensive certification evaluation. Certified hosts are able to display the guild seal on their sites and are included in a searchable directory of certified companies maintained on the WHG site (www.whg.org). In addition, guild members are re-evaluated every quarter to ensure that they continue to meet WHG standards.

During the certification process, all potential guild members are benchmarked in the areas of network operation, customer service, and technical support. Minimum requirements for certification include access to an actual person for 24 x 7 technical support; at least eight hours per day of direct telephone support; daily incremental and full weekly backups; a 30-day, no-questions-asked refund; access to logs for all customers; and at least one year in the hosting business. Reviewed categories include technical support, payment options, reliability, features, usage/access logs, customer support, and company background. The company must also submit to a performance audit conducted by NetMechanic that rates it on host ping times, DNS lookups, connect times, download times, and number of timeouts. Once a host has passed the evaluation, the company must be voted into the guild by the WHG Board of Directors, pay US\$250 in quarterly dues, and agree to quarterly audits.

Guild members include:

- AboveNet Communications
- Concentric Networks
- Digital Telemedia
- Interliant

Web Hosting: An Overview

- Internet Billion Co.
- Media3 Technologies
- Online Marketing
- Rackspace
- TierraNet

Selection Guidelines

Service-Level Agreements

According to Gartner research, service-level agreements (SLAs) will be a critical success factor in this market, for they define the quality of the services being outsourced. Businesses considering Web hosting should be aware of poor customer satisfaction levels in the Web-hosting market, which have been attributed to host pains to keep up with steady demand, as well as the complexities of networking. In response, leading Web hosts have begun offering service-level agreements (SLAs).

It is hazardous for a business entering an outsourcing relationship without a solid SLA because the SLA is the means of tracking a vendor's performance. The SLA also defines the scope of the outsourced service(s).

The following data points define each service level measured within the SLA:

- **Category Definition:** The key business function, process, or procedure that is being measured, reported, and continuously improved.
- **Time Frame (Availability):** The dates and times during which the defined service level is to be measured, usually indicating the inclusion or exclusion of recognized national holidays.
- **Assumptions/Responsibilities:** Statement of specific requirements that must be met by the provider and recipient to remain in compliance with the SLA.
- **Service-Level Metric:** Measurement of required work performed by the service provider, commonly expressed in percentage terms.
- **Measurement Formula:** Description of the mathematical formula used to measure service.
- **Measurement Interval/Reporting Period:** Period of measurement that determines whether target service levels have been exceeded, met, or not met.
- **Data Sources:** Description of the type and origin of data that will be collected, where and how it will be stored, and who will be responsible for it.
- **Communication:** Specifies who is notified, and when, if provider is out of compliance. This includes "Escalation Activity" for day-to-day out-of-compliance situations, and "Escalation Management" for cases where compliance was not achieved over the course of the defined measurement period.
- **Contractual Exceptions, Penalties, and Rewards:** Describes any contractual exceptions, rewards, and penalties included in the contract.
- **Reward/Penalty Formula:** Description of the mathematical formula used for rewards and penalties.

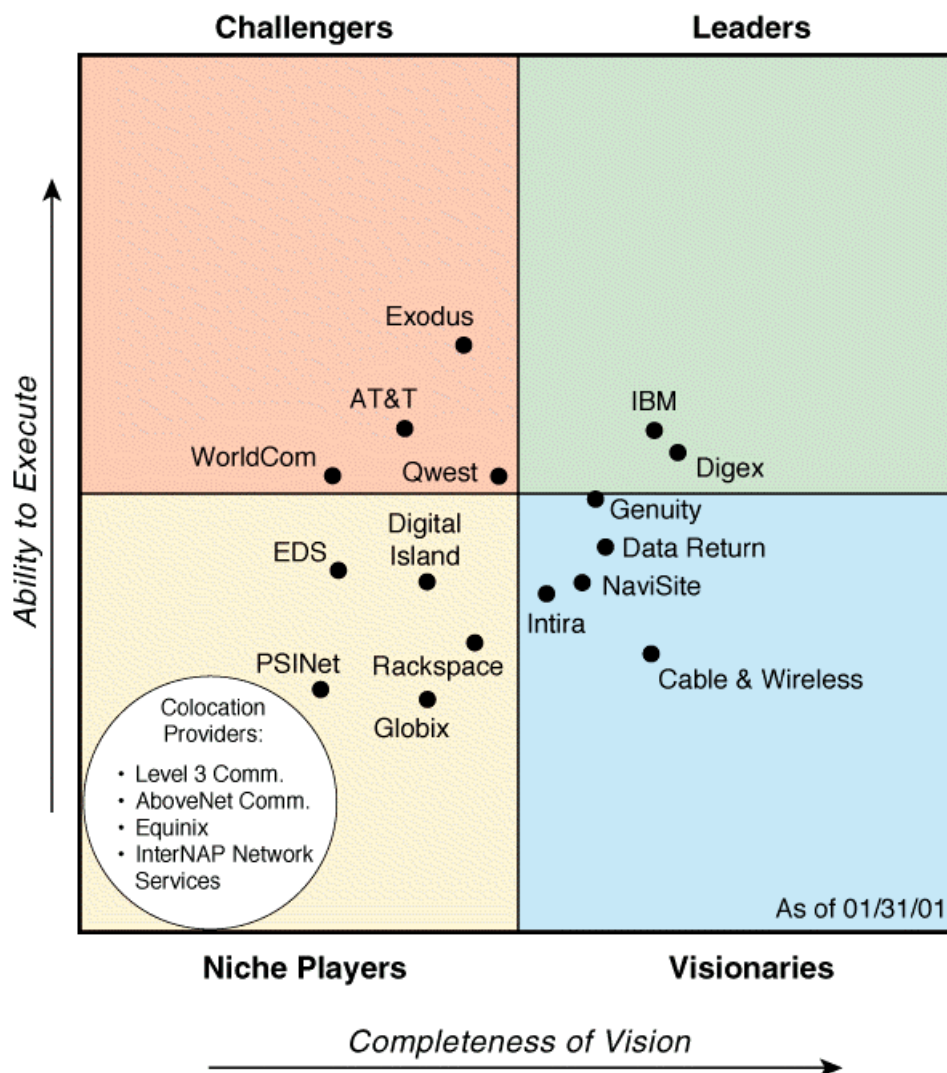
Web Hosting: An Overview

- Desired Behavior: The desired service provider behavior that will result from meeting the defined service levels. This should be established by the service recipient in its review of which service levels are appropriate.

Technology Leaders

According to GartnerGroup's Magic Quadrant, the major Web hosts can be ranked as follows: IBM is the market leader; Digex takes second place; and Genuity (formerly GTE Interworking) currently holds third place. Other top-tier hosts include Exodus, AT&T, Qwest, NaviSite, Digital Island, Rackspace, and Loudcloud. Other players listed in these profiles include Equinix (offers its users a different type of hosting service), SiteSmith (formerly AboveNet), and XO Communication.

Figure 3: North American Web-Hosting Magic Quadrant



Source: Gartner Research

AT&T

32 Avenue of the Americas

New York, NY 10013-2412, U.S.A.

Gartner Research
Copyright 2001

DPRO-90803
6 April 2001

Web Hosting: An Overview

Tel: +1 212 387 4000

Internet: www.att.com

AT&T manages 13 data centers globally and offers a variety of Internet access and related services using AT&T high-speed backbone networks. AT&T has over 650 POPs in operation, to which are being added the 1,400 worldwide POPs of the former IBM Global Network (which AT&T acquired in 1999). Various DSL service offerings are also available for both residential and business customers, and AT&T offers access to the Internet via cable modem connections through its Broadband and Internet Services subsidiary (formerly TCI cable TV). AT&T offers Managed Internet Services to business clients with Service Level Guarantees for 99.99 percent availability, 80 milliseconds round-trip latency, and no more than 1 percent packet loss in an average month. AT&T's other service offerings include managed Web hosting, electronic messaging, security options, and VPN services.

AT&T has a partnership with British Telecom to build a network of 44 Internet data centers in 16 countries by 2003. The company's short-term goal is to add 8 new centers by the close of 2001, bringing the number of data centers up to 21.

Digex, Inc.

One Digex Plaza

Beltsville, MD 20705, U.S.A.

Tel: +1 240 264 2000

Fax: +1 301 847 5215

Internet: www.digex.com

Digex manages five data centers in the U.S. and one in London. The data centers hold more than 4,000 servers, which support 4,000 additional edge servers (owned by AKAMAI) within its network. Digex data centers have around-the-clock guards, closed-circuit television, touch-reader ID cards, and utilize palm-scanner biometrics.

Digex offers a variety of services that can include the monitoring and management of a Web/E-commerce site. Originally, Digex positioned the company as an ISP and built the IP backbone acquired by Intermedia in 1997. Intermedia then "carved out" Digex in an IPO in 1999 to support Web- and application-hosting services only, and Intermedia retained the former Digex IP network as its own.

In 2000, WorldCom announced plans to acquire Intermedia (a data and voice service provider) and the majority shareholder in Digex. With this acquisition, which is expected to be finalized this year, WorldCom will hold a 55 percent stake in Digex and will have 94 percent voting power. Prior to the announced acquisition of Intermedia, Digex switched its primary backbone provider over to WorldCom. Overall, the deal allows WorldCom to enhance its services, which include colocation, shared and dedicated hosting, and limited application hosting, and allows Digex to connect its three Web-hosting centers to WorldCom's global IP network.

Digital Island

45 Fremont Street, 12th Floor

San Francisco, CA 94105, U.S.A.

Tel: +1 415 738 4100

Web Hosting: An Overview

Fax: +1 415 738 4141

Internet: www.digisle.net

Digital Island manages seven data centers globally, which are all connected to a global transport network holding 160 access points. The company offers site hosting, private network access, and applications services as well as consulting services. In an effort to boost its content-distribution capabilities, the company acquired Sandpiper Inc. for US\$630 million in stock and paid US\$70 million for Live On Line, a leader in streaming media. Since the acquisitions, the company has literally played backup to its latest partner: Interactive Video Technologies (IVT). IVT worked with Victoria's Secret to host the well-publicized online swimsuit fashion show. IVT used Digital Island's TotalHost services to monitor IBT's servers and complete backup to Digital Island's private network. Microsoft has chosen Digital Island (an exclusive partner) to stream live video for the Association for Computing Machinery (ACM) conference.

Equinix

2450 Bayshore Parkway

Mountain View, CA 94043, U.S.A.

Tel: +1 650 316 6000

Fax: +1 650 316 6900

Internet: www.equinix.com

Equinix designs, builds, and operates what they termed Internet Business Exchange (IBX) centers. Equinix signs up businesses to place their equipment and their network facilities in an IBX facility in order to interconnect with each other and improve Internet performance. Currently the company owns six IBX centers that provide physical security and multiple back-up services to its customers. The centers also provide content providers, ASPs, and e-commerce companies with the ability to directly connect with a competitive choice of bandwidth providers, ISPs, and site/performance management companies. Equinix competes with a number of sources, although none are direct competitors; in fact, a number of vendors who compete in this space are Equinix customers (SiteSmith, Exodus, Globix, AT&T, WorldCom, and Qwest). Equinix became a public company on 11 August 2000.

Exodus Communications, Inc.

2831 Mission College Boulevard

Santa Clara, CA 95054, U.S.A.

Tel: +1 408 346 2200

Internet: www.exodus.com

Exodus manages 42 data centers across the globe using a backbone network of leased lines from WorldCom, AT&T, Qwest, and Global Crossing. Exodus provides the Internet infrastructure and network management solutions for companies with mission-critical Web operations. The company's service offerings include Internet connectivity, hosting solutions (basic to fully managed), and both managed and professional services. Professional services encompass consulting, program management, site analysis, and application development, and managed services include monitoring, reporting, and management tools for the control of hardware, network, software, and application environments, network security management, and content distribution services. Exodus customers include Merrill Lynch, Best Buy, Microsoft, Yahoo, eBay, USA Today, Fujitsu.

Web Hosting: An Overview

Five months after a failed attempt to purchase Digex, Exodus bought the Web-hosting arm of Global Crossing, named GlobalCenter Inc., for US\$6.5 billion. The Digex deal would have extended Exodus-managed hosting capabilities. However, the GlobalCenter deal includes a 10-year preferred pricing network agreement on all network assets and services. It also enabled Exodus to expand its datacenter presence as well as its enterprise customer base.

Genuity, Inc.

3 Van de Graaff Drive

P.O. Box 3073

Burlington, MA 01803, U.S.A.

Tel: +1 617 873 2000 (or 4000)

Fax: +1 617 873 6023

Internet: www.genuity.com

Genuity, a leading provider of managed Internet infrastructure services and e-business network platforms, manages 12 data centers globally (10 in the U.S. and 2 internationally). The company plans to add four more data centers internationally within the next 18 months.

GTE acquired BBN Planet (one of the oldest providers of IP service) and Genuity (then a San Francisco Web-hosting company) in 1997. That same year, GTE merged and renamed the company GTE Internetworking. Three years later (April 2000), GTE Internetworking announced it had changed its name to Genuity. But here is the deal. Genuity was spun off from the GTE/Bell Atlantic merger that formed Verizon. Genuity completed its IPO in June 2000. By choosing the name Genuity (a domain name GTE Internetworking already owned), the company was able to avoid searching for a new trademark and URL, typical when renaming a company. Genuity operates as an independent entity with its own CEO and board and is totally separate from Verizon; however, Verizon does hold a minority share (9.5) in the company.

Genuity's flagship product is called Black Rocket and provides businesses with Internet access, hosting, security, and connectivity. Pricing starting at US\$25,000 per month.

IBM Global Services

Route 100

Somers, NY 10589, U.S.A.

Tel: +1 914 765 1900

Fax: +1 914 765 4190

Internet: www.ibm.com/services/webhosting

IBM e-business Hosting Services is provided by IBM Global Services (IBMGS) and encompasses platform, Internet connection, operations, and support. A variety of hosting packages are available, ranging from entry-level solutions that provide basic Internet presence to shared or dedicated platforms designed for interactive, high-traffic e-commerce sites. IBM provides services from nearly 200 datacenters globally, 4 of which the company owns.

IBM offers a range of solutions from prepackaged through custom high-end solutions from 10 categories (see managed services figure). IBM's forte is its system integration expertise, which makes it ideal for

Web Hosting: An Overview

businesses looking to tie their Web operations into back office operations. Qwest selected IBM Global Services to build and provide operational support for its new data centers over the next couple of years.

Loudcloud

599 Mathilda Avenue North

Sunnyvale, CA 94086, U.S.A.

Tel: +1 408 744 7300

Fax: +1 408 744 7379

Internet: www.loudcloud.com

Loudcloud does not “own” its own data center, but rents floor space from partners such as Exodus, Equinix, and AT&T on behalf of its customers. Loudcloud provides the means for a business to place Web applications on a pre-configured set of servers at one of the data centers. Essentially, a customer hires Loudcloud to operate, manage, and grow their Web site.

Loudcloud technologies and supporting services are organized into SmartClouds, and every customer site is managed using its proprietary automation technology, called OpsWare. OpsWare components include operational audit, monitoring analytics, change management, disaster recovery, server and network provisioning/configuration, and a security framework. Loudcloud performs a thorough technical drill down of each customer’s Web site to help execute and coordinate a client’s specific business needs. The top management executives (Netscape and AOL veterans) have taken an assembly-line approach to promote quality, consistency, and efficiency and have pulled together a different type of Web-based solution.

Qwest

1801 California Street

Denver, CO 80202, U.S.A.

Tel: +1 303 992 1400

Fax: +1 303 992 1724

Internet: www.qwest.com

Qwest currently runs 15 data centers, with plans to have approximately 3 million sq. feet of hosting center space built by the end of 2001. Built on an OC-192c native IP network that spans 25,500 miles across North America, Qwest can manage the network, the facilities (or what they coined “CyberCenters”), and provide professional services to build an ebusiness environment. It targets companies that require broadband networking and a hosting infrastructure for outsourced applications.

In June of 1999, Qwest and KPMG formed an enterprise ASP joint venture, Qwest Cyber.Solutions (QCS). Seven months later, Qwest acquired KPMG’s 49 percent share of QCS, as a wholly owned Qwest asset. KPMG is now focused on its integration and consulting services, but retains the strategic alliance with QCS.

Qwest and HP struck a deal in March 2001. The deal requires Qwest to purchase management and internal server and disk management tools (not marketed to the public) from HP. Additionally, Qwest will leverage HP network management tools primarily from Qwest CyberCentral, Qwest newly opened, centrally-located Hosting Operations Center in Denver, Colorado. In turn, HP will purchase high-speed

Web Hosting: An Overview

connectivity from Qwest; for internal use only, and take over operational management of 7 of Qwest's 15 CyberCenters.

Rackspace

112 East Pecan, Suite 600

San Antonio, TX 78205, U.S.A.

Tel: +1 210 892 4000

Fax: +1 210 892 4392

Internet: www.rackspace.com

Rackspace manages more than 3000 Web servers for 1,500 clients, and claims to manage the largest network of Linux-based Web server across the globe. The company offers managed dedicated web servers based on Free BSD, Sun Solaris, Windows. Rackspace services are specifically targeted to small and medium sized businesses. Unlike their competitors, Rackspace builds its servers from scratch, component by component, and run on a Cisco-powered network.

Rackspace has formed an alliance with RealNetworks to provide streaming media technology to Rackspace customers. The agreement allows customers to add RealSystem iQ streams in increments as low as 10 streams. Customers can also add Real Audio 8 and RealVideo8, MP3, Apple's QuickTime, or 45 other digital media data types. Rackspace has also formed a partnership with WebTrends to offer analysis and behavior patterns of a user visiting a businesses Web site. The offer comes in two packages: a basic service, and a full-service package for customers with multiple servers and high-traffic Web sites. Lastly, Rackspace announced an agreement with VeriSign to offer a full line of e-commerce solution. This includes digital certificates and transaction processing services.

SiteSmith (Formerly AboveNet)

3250 Olcott Street

Santa Clara, CA 95054, U.S.A.

Tel: +1 408 987 6400

Fax: +1 408 970 0010

Internet: www.sitesmith.com

In early 2000, Metromedia acquired AboveNet (as a wholly owned subsidiary) largely for its wide-area network, peering connections, and data centers expertise. Metromedia then went on to purchase SiteSmith for its infrastructure network management expertise. Adding SiteSmith and Abovenet allowed Metromedia customers to have their Web site designed, built, hosted, managed and delivered from SiteSmith. In addition, customers have access to collocation space and network bandwidth provided by Abovenet. SiteSmith manages 22 data centers (14 in the U.S. and * in Europe) running on a global backbone at OC-48 (2,488 Mbps).

Verio Inc.

8005 South Chester Street, Suite 200

Englewood, CO 80112, U.S.A.

Tel: +1 303 645 1900

Web Hosting: An Overview

Fax: +1 303 708 2490

Internet: www.verio.com

Verio provides Web-hosting and Internet services for businesses of all sizes, including multinational corporations, large global enterprises, and small to medium businesses. The company's Web-hosting services focus on higher-end dedicated hosting and managed services, and also encompass shared hosting and colocation, while its Internet services include high-speed access using a tier-one Internet backbone. Verio offers advanced solutions, such as backup and recovery, security and VPNs, network monitoring and bandwidth metering, e-commerce, Web-site design, and domain registration. In addition, Verio has acquired over 50 independent, regional ISPs and formed alliances with numerous companies, including Microsoft, AOL, Qwest, Cisco, and Sun Microsystems. The company's purchase of regional Internet companies has enabled it to provide localized service with the expansive scope of a national network. Its national network, which it owns and operates, interconnects over 29 national nodes and over 200 local point-of-presence facilities across the U.S.

NTT Communications acquired Verio in September 2000, but the company continues to use the Verio name. Before the merger, Verio managed more than 400,000 Web sites; now the combined companies are working to expand Verio's Web-hosting presence in Europe and to extend its IP Network offering as well as its business services to Europe.

WorldCom

3060 Williams Drive

Fairfax, VA 22031-4648, U.S.A.

Tel: +1 703 206 5600

Fax: +1 703 206 5601

Internet: www.uu.net

UUNET, now referred to as WorldCom Inc., has been providing business-class Web-hosting services since 1994. WorldCom manages 14 data centers globally, serving approximately 1,700 hosting customers, which are primarily comprised of midsize, large businesses, and ASPs worldwide. Its hosting services include shared and dedicated hosting, e-commerce solutions, groupware and application solutions, colocation services, and enterprise-class hosting. Enterprise-class hosting clients work with a team of WorldCom engineers to design, deploy, and manage customized network, hardware, application, and monitoring solutions. Additional service components available include virtual private networking, remote access services, and security services. The company also offers Hosting Professional Services that permit its clients to create a more customized solution with additional services and/or support. This might entail more detailed reporting or additional support during a major Web-site event.

XO Communications, Inc.

1111 Sunset Hills Road

Reston, VA 20190, U.S.A.

Tel: +1 703 547 2000

Fax: +1 703 547 2636

Internet: www.xo.com

Web Hosting: An Overview

Founded in 1994 as Nextlink Communications, XO Communications was formed by the merger of Nextlink with Concentric Network Corp. in 2000. XO targets small and mid-sized businesses, and currently provides broadband communications services in 51 markets across the U.S. The company's Web-hosting services encompass e-mail, distance voice services, e-commerce, and site development. It offers Internet access via dedicated or digital subscriber lines and fiber direct to buildings, and its future plans include Wireless access. Packages are priced according to market; however, monthly deals generally range from US\$675 to US\$2,500. XO also offers a suite of Ethernet services, including gigabit Ethernet.

Technology Alternatives

Hosting In-House

Numerous companies have chosen to host their own Web sites rather than outsource them to Web-hosting providers. For most entry-level Webmasters, this is not a viable option. However, any companies considering this should take a good look at the potential costs associated with purchasing and running the necessary computer and access equipment, with maintaining and expanding bandwidth, and with the staffing required for around-the-clock maintenance and support.

An in-house operation involves significantly higher start-up costs than outsourcing. These include the cost of the computer equipment, software, routers and interface equipment, and ISP initiation fees. Costs could run as high as US\$20,000 for a low-end Web-hosting solution. Moreover, an in-house site requires staffing to set up the operation and then to maintain and support it.

One of the key advantages to outsourcing Web services is that Web hosts not only have the expertise in this area, they also have the bandwidth necessary to support growth, the ability to vigilantly monitor the integrity of the network connections, and the redundancy to insulate themselves from network failures. All of the major Web hosts are currently focused on building facilities featuring redundancy and tight security. Moreover, a Web host can increase or scale down bandwidth according to demand, while an in-house operation, especially one sensitive to downtime, must maintain an adequate level of bandwidth at all times in order to be constantly prepared for increased traffic demands. With a Web host, a given site can arrange for bandwidth bursting during a holiday season or a high-volume event and then have it dialed back afterwards.

Hosting With Mainframes

Some businesses are installing IBM's zSeries 900 (formerly the S/390) to duplicate the capabilities of data centers. zSeries 900 is the result of a two-year US\$1 billion dollar effort; built from the ground up, with e-business as its primary function.

The z900 can be partitioned into thousands of virtual servers that mirror a server farm environment. At the heart of the unit is IBM's multi-chip module, which utilizes copper technology. The 5" x 5" x 1/4" module contains 2.5 billion transistors and 35 chips mounted on 101 layers of ceramic glass, connected to 4,226 I/O pins and 1 kilometer of wire.

Insight

Competition is only beginning in the Web-hosting industry. Those winning the struggle will be the ones able to differentiate themselves by the variety of managed services they provide and promptly service. When choosing between an in-house solution versus a hosted solution, consider this: If your Web presence is *not driving shareholder value*, and/or if your *core competency is not maintaining Web services*, and/or if your business is not obtaining or *sustaining a competitive advantage* by building in-

Web Hosting: An Overview

house, then you should consider a hosted solution—unless there are extenuating circumstances, such as high-risk security or extremely dynamic Web content.