

APPLICATION SERVICE PROVIDER... ...A Definition and Rationale

An **Application Service Provider** — or, as we prefer to be known, an **Internet Business Service Provider** (IBSP) — is a business, or combination of businesses, formed to offer remote (to the customer) hosting of business applications that historically would reside on a customer's local (LAN) or wide area network (WAN).

A HISTORICAL PROSPECTIVE

Information Technology (IT) began after the second World War as the war effort spawned digital computing devices capable of *processing* large amounts of data in a relatively short period of time. Initially this information consisted of large stores of information containing data on a particular subject that often needed to be accumulated, sorted, manipulated, analyzed and output in various formats. These assemblages of information became known as *databases*.

Initially these *databases* were stored on what became known as *mainframe computers*, which were large, expensive, delicate and extremely difficult and costly to access and control, or *program*. In order to have more than one person be able to access and manipulate these databases, computers were developed that were *multi-user*, allowing several — and ultimately many — users or *clients* to access the information concurrently. These users interfaced with the mainframe via simple *dumb terminals* that connected them to a *virtual computing session* running along with many other virtual sessions on the large central computer.

This basic model of computing, known as *centralized data processing* continued and flourished until the early 1980's. These mainframe computers became larger in size, speed and processing capacity over several decades and ultimately were joined by a smaller, less expensive modality known as *minicomputers*, which allowed smaller and smaller businesses to realize the function and power of the computer that previously was the exclusive tool of the large and wealthy. Prior to the introduction of the *minicomputer*, the only access that many smaller companies had to *data processing* was by way of *timesharing*, where they rented time and services on larger mainframe computers owned and operated by service companies.

THE MODEL CHANGES...

In 1981 IBM introduced the *Personal Computer (PC)* and an information revolution was born. Smaller, freestanding computers had existed for several years, coming from the likes of Apple and Radio Shack, but these were considered to be the "toys of hobbyists" and "not appropriate for business use". Only after IBM blessed this new concept was the PC taken seriously by the business world.

It was then possible for an individual to have a relatively powerful computer located on his desktop for his personal use. Early software such as *VisiCalc* allowed business users to analyze and manipulate data immediately and accurately, without waiting for, or paying for, the historically slow and expensive response from the *data-processing* department. Word processing software such as *EZ-Writer* and *WordStar* quickly established the foundation that eventually led to the demise of the typewriter, an office device that most thought was a permanent fixture.

Tremendous increases in efficiency and productivity were immediately realized by the utilization of the new PC technology. Mini data processing departments began sprouting up in even the largest companies and

many marketing, engineering, accounting, personnel and sales departments adopted the PC as an almost immediate necessity of business. This process developed into the era that became known as *distributed data processing*, where a lot of smaller, interconnected computers shared a lot of the work, rather than having a single large *mainframe* computer do all the processing. The previously unquestioned and unchallenged power of the *Management Information Systems* (MIS) department began to erode as competition for data management resources and budgets created inter-departmental wars. In most companies the MIS departments were eventually able to regain control of the data processing functions although autonomous departmental IT initiatives still exist in many companies to this day.

THE BIRTH OF THE LAN...

As departments within a company began to depend on PC technology to “crunch the data”, it became more and more desirable, and necessary, for members of these departments to share the large amount of data being managed. Moving files from PC to PC via floppy disks quickly became both tiresome and problematic as multiple copies of files created confusion, concern and data inaccuracies. This problem was minimized by the development of the *local area network* or LAN, by companies like IBM, Novell and later by Microsoft. The LAN allowed connected and authorized users to share not only the latest copies of data and information files, but also eventually — and perhaps most importantly — allowed them to share expensive resources such as laser printers, tape backup systems, large arrays of disk storage space, CD-ROM drives and towers, communication channels, modems and other input and output devices. The individuals then had access to *peripherals* which, before the economies of scale of the network, were deemed too costly to deploy within a department or on an individual basis.

THE LAN EVOLVES INTO THE WAN...

As LANs, and the companies that housed them grew in size and geographic divergence, the LAN, or *local area network*, was quickly supplemented by the WAN or *wide area network*. These WANs quickly grew to span and connect buildings, cities, countries and eventually the entire globe. WANs, like computers in their infancy, were the tools of the rich and famous because the infrastructure to link the component segments of the WAN was an archaic system of copper wires designed for phone connectivity or outrageously expensive satellite-links and other esoteric wireless technologies. The WAN made it possible to instantly access a file at the home-office in Chicago from a remote branch office in Australia or China. However, only the largest and the wealthiest could afford the technology. To this day, the cost of *data transport* — moving this large amount of information quickly and efficiently around the world — keeps this *distributed data processing* WAN model out of the reach of most businesses.

ENTER THE INTERNET...

When Microsoft chairman, Bill Gates, published his “The Road Ahead” in 1995 he envisioned an evolution of the existing government-developed Internet into a tool for connecting the masses. When Gates revised and updated his book for the audiotape/CD version in 1997, even the essentially optimistic Bill admitted that even he, with both his innate understanding and his industry insider information, miscalculated the speed at which the infrastructure of the Internet would grow. Even Bill Gates greatly underestimated the number of computers connected to date. Faster *dialup modems* (56K), *cable modems*, *digital subscriber lines* (DSL) and increased competition in the broadband *frame relay* services created by deregulation of the communications industry, have all led to an unbelievably rapid deployment of high speed connections to the Internet. This economical connectivity was coupled with huge multinational government and private sector investments in the technology of the *Internet backbone*. Also, the rapid rollout of broadband *fiber pathways* by companies such as Level III has literally caused the Internet growth to exceed even the most optimistic predictions.

THE DOWNSIDE OF THE CURRENT (LAN) MODEL...

One of the downsides of the current *distributed data processing* structure of the LAN is the constant upward spiraling *total cost of ownership* (TCO) of this model. It is true that competition and production efficiencies have reduced the base price of the actual PCs on the LANs. However, the increased hardware demands made by newer *operating systems* and *application software* have raised the bar. Now the latest and fastest PCs are necessary to make the software perform at even reasonable speeds. We now have evolved into a technology environment where we have incredibly powerful local computers that generally spend about 95% of their time doing absolutely nothing. These newer, more powerful systems have extremely complex operating systems, even more complex application software and constantly changing technical specifications regarding hardware elements, including huge hard drives, faster and faster CD-ROMs and DVDs, faster *network interface cards* (NICs) and video systems. The elimination of obsolete legacy hardware sub-systems like *serial ports*, *parallel ports*, *ISA bus* configurations and the introduction of new technologies like *universal serial bus* (USB), *Firewire* and PC166 memory bus speeds have all combined with the latest software changes to make PC management and support both a logistical nightmare and an economic hardship.

THE UPSIDE OF THE NEW (ASP) MODEL...

Because of the rapidly decreasing costs of broadband connectivity to the new Internet and the wider geographic areas serviced by this high-speed connection, a new model of network services is quickly developing. A convergence of all the latest technologies now permits a business to have their applications hosted by an *Application Service Provider* (ASP) or *Internet Business Service Provider* (IBSP). This service model is not to be confused with "*web hosting services*" which attempt, usually at great expense, to web-enable your legacy applications and make them available from your (or more often, their) website. The ASP, on the other hand gives you access to applications that are already running on a powerful server that resides on the Internet. The ASP applications are running in a true *client-server environment*, which means that the application runs in a *virtual computer session* on the host server and only requires what is known as a *thin-client* to access the application. This model requires that the host computer be large and powerful, but the PC you use to access your application needs only to be able to access the Internet and does not even have to be able to run a browser. This thin-client can be as simple and inexpensive as one of the *Internet appliances* now available for about \$399 from companies such as NIC, Larry Ellison's newest venture. The functional and financial ramifications of this new ASP computing model are enormous.

BUSINESS IMPLICATIONS OF THE ASP MODEL:

- **Fileserver Considerations:** You can now rent space and *bandwidth* on the host's powerful server or server farm. This eliminates the need for small businesses to acquire and, more importantly, maintain a local *fileserver*, which can be a substantial expense.
- **Workstation Considerations:** Currently, businesses are facing the constant upgrade charges inherent in keeping the desktop PCs (*workstations*) fast and powerful enough to properly handle the ever-increasing complexity and performance demands of the latest operating systems and application software. Many businesses now find it necessary to replace, or upgrade, about 1/3 of their desktop computers every year.... A very large investment in Dollars, support charges and non-productive employee time. You can now use inexpensive PCs, usually the systems that you have owned for years, without replacement or upgrade. Additional users would require only a very basic PC or an inexpensive Internet Appliance and a bare minimum of setup expenses.

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- **Data Security:** Previously, businesses had to invest in — and maintain — high speed, expensive tape backup systems, which required the use of costly backup tapes and a lot of employee attention. You currently have to rotate tapes and confirm the proper functioning of the backup tape drive and software to insure that you are getting the *verified tape backups* that are so necessary to give you a comfort level in your ability to recover from a computer disaster. Remember.... It's not just your data on those backup tapes... *It's Your Business!* With ASP service, the expense and attention to detail required for proper data security becomes the responsibility of the hosting ASP who has the proper equipment and procedures in place to perform this service more efficiently, reliably, and at a much lower cost to your business.
- **Service & Support:** Most businesses now having 20 computers used by 20 employees have 20 completely different hardware and software setups and configurations to deal with when it comes to servicing or upgrading a PC. This usually results in costly services and support charges to keep each of these separate PCs running properly. Also, if an employee needs to use a different PC for any reason it often requires hours of expensive wasted time trying to figure out *where things are* on the other PC. Now everyone can have exactly the same setup, with security and access determined and controlled by *you*. Imagine upgrading to a new release of Microsoft Office by having your ASP install, test and configure the software on your remotely hosted server and then have all of your employees be able to automatically, and instantly, access the latest programs without anyone ever having to change a single thing on the local PCs. No downtime... Minimal expense... Instantly available, simultaneous upgrades to ALL users. This feature alone is motivating many business to make the move to an ASP.
- **Application Independence:** Most ASPs are hosting proprietary applications developed or licensed by them with the hopes of getting your business to rent their specific software as part of the service. AMSYS, on the other hand, has developed a somewhat unique ASP model which we refer to as an Internet Business Service Provider (IBSP), we are one of the few companies that will host *your* applications on *our* servers at the AMSYS Data Center (Click to see details of the AMSYS Data Center). The AMSYS IBSP computing model allows you to transition to the economy, convenience and security of ASP services in a manner that is virtually transparent to your computer users. Your people will still use the same applications, the same programs that they are used to, in the same way that they are used to seeing them, often faster than they currently access them.
- **Application Expandability:** Because AMSYS is an IBSP we can also offer you a virtually endless list of new applications that you can chose from, (and even try out for free) without anyone even coming to visit your office. Additions, changes and deletions can now be made directly and instantly by professionally trained and certified experts. These changes are made directly to your setup on our servers, quickly and inexpensively. Please inquire regarding the rapidly expanding list of available *standard applications* as well as the many *vertical market applications* being hosted.
- **Multiple Business Sites:** Businesses with more than one office often need to access common information from multiple locations. The ASP model eliminates the need for complex and costly wide area networks that previously were the only option.
- **Remote User Access:** Businesses with employees (or even customers) that must access data from remote locations (or even from home) are also excellent candidates for the ASP model. This model finally eliminates the need for costly, cumbersome and slow remote control systems such as pcAnywhere and equally expensive, inconvenient and tediously slow remote access systems such as RAS.

CUSTOMER HARDWARE, SOFTWARE, CONNECTIVITY AND SECURITY CONSIDERATIONS:

Businesses contemplating a migration to an ASP service need to consider the following issues:

- **Workstation Capability:** In most cases existing PC systems are probably more than capable of handling the reduced performance requirements of this new thin client environment. Essentially any PC capable of running Windows 95/98 or later is an excellent candidate. Where an existing PC doesn't meet the specifications, a simple Internet appliance or basic PC in the \$400 to \$600 price range will usually more than suffice. Additionally, handheld and wireless devices can now have easy access to data... and access from systems running different operating systems such as Mac/OS and Linux is now easy and cost effective.
- **Software Compatibility:** While there may exist some older proprietary software applications that may not work in this new environment... We have not found one to date. Naturally, all of your current applications would be tested before we would recommend that you transition to the ASP environment. In most cases a simple upgrade or configuration change would handle any potential software incompatibility. Most software companies have already tested their applications and certified them for ASP solutions.
- **Software Licensing:** In most cases businesses already own legal licenses to use their existing application under an ASP model. The only exceptions to this would be those companies that are currently in violation of proper software licensing requirements. *AMSYS will not enter into an ASP relationship with any company that is not fully licensed to use the software that would be hosted for them.* We will require that a potential ASP customer provide us with documented licenses in order to protect ourselves as well as the customer from legal complications. In some special cases it is now possible to "rent" many software applications, including the Microsoft Office Suite, on a monthly basis, without ever having to purchase a copy of the product. In most cases this scenario is still too expensive to be considered. However we will continue to monitor this approach and report to our customers regarding advisability.
- **Internet Connectivity:** ASP customers will require at least one method of Internet connectivity for each computer that will connect to our servers. In most business environments this would be a shared high speed Internet connection by way of DSL, Cable Modem, Frame Relay or T1 Connections. The method and speed of individual location connectivity will, in great part, be determined by the relative availability of the above services at the specific geographic location. With some business applications, especially with individual remote users, a simple 56K modem dialup connection could suffice. Regardless of the method of customer Internet connectivity, *AMSYS requires* that every ASP customer have a redundant, fall-back connection available, even if it is a less desirable, dial up connection.
- **Service Level Agreements (SLA):** To backup its commitment to providing *always-on* application availability, an Application Service Provider must be willing to offer a Service Level Agreement which insures a customer of network availability of at least 99.9% uptime. See the AMSYS SLA.
- **ALWAYS-ON:** To insure the always-on state required to meet customer demands a Class-1 Datacenter, such as the Datacenter maintained by AMSYS, must provide an infrastructure that is able to support performance levels that are offered. This infrastructure must include the following:
 1. **Redundant Broadband Internet Connections:** Multiple Pathways to the Internet must exit the datacenter in Multiple Directions to insure connectivity should a connection coming from any one direction ever be damaged or disabled by either natural or manmade causes. This type of

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connection to the backbone of the Internet is often referred to as *self-healing* because the connection automatically, and instantaneously, switches to the functioning circuit.

2. **Redundant Electrical Power Pathways:** Not only must the Internet Connection be Multi-Pathway and Multi-Directional, but so must the Electrical Power enter the Datacenter from Multiple Connections coming from different directions. This prevents power outages should there be a disruption in service coming from any local grid failure.
 3. **Extended Time Battery Backups:** In the unlikely event that power should fail coming from multiple pathways, a battery backup system must be able to provide adequate clean power for a period long enough to handle momentary outages and also allow sufficient time for the fail-over generating system to engage.
 4. **Automatic Generator Fail-Over:** Self-starting generators must be located at the Datacenter with sufficient load capacity to provide adequate power for an indefinite time period.
 5. **Redundant Server Power Supplies:** All Fileservers must be equipped with redundant power supplies to insure continued operations in the event of a power supply failure.
 6. **Redundant Server Connectivity:** All Fileservers must have redundant network interface cards (NIC) to provide uninterrupted network connectivity in the case of a hardware failure.
 7. **Redundant Server Drive Arrays:** All Fileservers must be provided with Redundant Array Hard Drives (RAID) to insure complete data integrity and continuing operation in the case of a hard drive failure. And these drive arrays must be *hot-swappable* to allow failed drive replacement without taking the server down.
 8. **Clustered – Load Sharing Servers:** All Fileservers must be installed in a *Load Sharing or Clustered Configuration* to provide server fail-over in the remote case of a total server failure.
- **Data Security:** All servers must be backed up daily utilizing tape sub-systems with sufficient capacity and speed to provide verified total system backups. All backups are to be performed during off-peak hours to minimize impact on system performance during backup operations.
 - **Backup Security:** All backup media must be maintained in disaster proof data vaults and copies kept in a remote, secure location.
 - **Network Security:** All systems on the network must be housed in locked server security racks and access limited to personnel with stringent security identification.
 - **Access Security:** Your data resides behind a firewall, is encrypted and requires proper authentication for access. This is significantly better security than many small businesses have on their LAN.
 - **24x7 On-Site Emergency Support:** Datacenter must provide 24x7 onsite emergency qualified technical support to handle any hardware or connectivity issues.
 - **Add, Change, Maintenance Support:** ASP must provide timely professional support to allow additions, deletions and changes to application and user configurations.
 - **Data Center Hot Site:** In the event of a local catastrophic event, provisions must exist to move the entire network to a secondary datacenter within 24 hours. (Unique to AMSYS ASP)

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- **Customer Hot Site:** In the event of catastrophic event at a Customer Site, provisioning must be made to allow customer to access his applications from a local backup work site. (Unique to AMSYS ASP)
- **AMSYS Data Center:** To check the details of the AMSYS Class-1 Data Center and to take a quick **Virtual Tour**, Click Here.

ESCROW DATA SERVICES©:

To insure the customer against denial of access to their data due to any and all reasons, legal and otherwise, AMSYS offers our unique Escrow Data Services. A current copy of the customer's complete system and data backup is maintained in a legal escrow site, off the premises of both the Datacenter and AMSYS, Inc.

AMSYS ASP TECHNOLOGY PARTNERS & CERTIFICATIONS:

Technology Partners: AMSYS is Partnered with and Certified by most major hardware, software and industry service providers, including, but not limited to:

- IBM Business Partner
- IBM Authorized Netfinity Server Dealer and Service Center
- Hewlett Packard Authorized Sales & Service
- Compaq Authorized Sales & Service
- Microsoft:
 - Microsoft Certified Solution Provider
 - Microsoft Certified Partner
 - Microsoft Certified Systems Engineers
 - Microsoft Certified Professionals
- Citrix:
 - Citrix Silver Certified
 - Citrix Certified Network Administrator
 - Citrix Certified Sales Professional
- Cisco:
 - Cisco Certified Network Administrator
- Netopia
- Microsoft Windows 2000 Professional Server
- Microsoft Windows NT Server & Terminal Server
- Citrix MetaFrame

MORE INFORMATION:

- ASP Hosting Service Charges: Contact sales@amsys.net
 - Setup Charges
 - Monthly Fees
 - Additions, Changes and Maintenance Charges
- To Schedule a Live ASP Demonstration or Take A Data Center Tour: Contact sales@amsys.net

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