



A Guide to Technology Outsourcing for Hedge Funds

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Contents

- Executive Summary 2
- Overview: Outsourcing Goes Offsite. 4
- Laying the Foundation of an Outsourcing Plan 5
- Cloud Computing 7
- Hosted IT Environments and Managed Services 9
- Colocation 10
- Outsourcing FIX Connectivity. 11
- Outsourced Staffing Options 12
- Pricing Models 13
- Looking Forward 14
- Appendix: Sample Request for Proposal (RFP) Questions. 15

Executive Summary

Hedge funds are leveraging outsourcing in diverse ways to expand offerings and enhance productivity. As technology becomes a strategically important differentiator for hedge funds, outsourcing enables managers to develop a reliable, scalable infrastructure while focusing on their core money management competencies.

Eze Castle Integration developed this guide with Pershing Prime Services to serve as a roadmap to understand the various options that exist in outsourcing. We tapped into our large network of industry sources, in-house expertise and deep experience with leading hedge funds. This guide highlights recent trends and includes practical information to help you evaluate and choose outsourcing options.

Current Trends

- Powerful market forces are reshaping the way hedge funds outsource technology.
- Running a hedge fund is more complex than ever due to changing regulations, shifting investor demands and rapidly evolving technologies.
- Rising overhead costs have made it prohibitively expensive to build and maintain hedge fund infrastructure in-house, driving the demand for outsourced solutions.
- The financial crisis added impetus to the technology outsourcing movement, as cautious investors focused on operational risks and reliable, transparent reporting and accountability systems.
- The emphasis on outsourcing has shifted from permanent onsite data centers to offsite solutions, such as Software as a Service, colocation and cloud computing.
- Hedge funds today can choose from a range of outsourcing solutions, including help desks, document management, virtual Chief Technology Officers, disaster recovery plans, Financial Information Exchange (FIX) connectivity and more.

Laying the Foundation for an Outsourcing Plan

Today, a hedge fund has the choice of outsourcing virtually its entire infrastructure. However, savvy fund managers realize that each component of an outsourcing plan should meet a few baseline requirements:

- A secure physical infrastructure
- Efficient and reliable telecommunications
- Data protection
- Vendor strength and stability

Exploring the New Outsourcing Options

Technology outsourcing providers have introduced an array of new approaches, including offsite solutions.

CLOUD COMPUTING

The cloud computing solutions adopted by hedge funds include:

- Software as a Service (SaaS)
- Infrastructure as a Service (IaaS)
- Disaster recovery and business continuity planning
- Mixed environments

HOSTED IT ENVIRONMENTS AND MANAGED SERVICES

Potential advantages include low or no startup costs and solutions customized for hedge funds' business models.

COLOCATION

Colocation provides site security and redundancy that would otherwise be expensive to duplicate in downtown offices. This allows for seamless business continuity during emergencies.

OUTSOURCING FINANCIAL INFORMATION EXCHANGE (FIX) CONNECTIVITY

Outsourcing FIX connectivity helps hedge funds reduce time and cost commitments for installing, testing and maintaining connections, and can also improve connection quality and reliability.

STAFFING OPTIONS

Hedge funds may evaluate several models for meeting IT staffing needs:

- Supplemental staff
- Complete outsourcing (external staff)
- Support staff
- Value-added services
- Custom technology

Understanding Pricing Models

Many technology vendors offer choices among pricing models, including block contracts, service contracts or per user per month contracts. Each of the pricing models can offer different cost structures and benefits, which can vary based on each hedge fund's specific needs.

Finding and Evaluating Outsourcing Vendors

The financial crisis acted as a catalyst in the expansion of both technology outsourcing solutions and vendors. As a result, hedge funds have more attractive choices and can outsource critical technologies more easily. Other catalysts have made outsourced solutions more powerful and cost-effective, which is helping hedge funds cut expenses, adapt to new regulations and enhance efficiency. Outsourcing is also helping managers streamline essential functions such as managing assets, monitoring risk, increasing client communication and attracting new investors.

To find and evaluate outsourcing vendors, hedge fund managers can access the expertise of their prime brokers and technology integrators, who can be valuable partners in their search for solutions.

Overview: Outsourcing Goes Offsite

Why has there been an explosion in technology outsourcing—especially solutions hosted offsite? Why are more hedge funds relying on outsourcing vendors to meet an expanding share of their technology needs?

- **Cutting through complexity.** The increasing complexity of the industry—including a rising tide of regulation—requires a greater depth of expertise in each business discipline, including technology. Outsourcing offers instant access to experienced technical personnel to complement in-house talent, allowing a hedge fund to focus on its core competencies and key competitive differentiators.
- **Controlling costs.** Relying entirely on in-house staff to address new technology challenges can be prohibitively expensive. Technology requires 24/7 coverage, as well as a constantly evolving skill set to keep pace with technical innovations. An outsourcing partner can deliver on-demand access to hundreds of experienced engineers, with skill sets matched to hedge fund needs, at a lower cost than an in-house technology department. In addition, outsourcing allows hedge funds to control the structure of their expenses. A new fund can select a variable cost structure that scales up as it grows. A more established fund can choose a fixed cost structure to maintain predictable expenses.
- **Gaining a competitive advantage.** Investors are more vigilant about operational risks, and the ability to inspire confidence in this area has become a competitive differentiator among hedge funds. Through outsourcing, a hedge fund can offer investors transparent processes, a robust disaster recovery plan, a business continuity program, consistent risk management and compliance oversight processes.

The Growth in Offsite Solutions

Traditionally, technology outsourcing partners served as value-added resellers (VARs) who sold, installed, configured and serviced hardware and software in a hedge fund's office location. Many large funds still follow this model, housing equipment in onsite communications ("comm") rooms or at colocation facilities.

However, after evaluating the high cost of equipment purchases and onsite maintenance, more managers are seeking alternatives. Demand for solutions hosted offsite continues to grow as more technology vendors are exiting the business of hardware sales. Offsite solutions offer special advantages to small and mid-sized funds, which can now access state-of-the-art solutions without extensive commitments of capital and increased costs for IT staff and office space. Even large funds have begun to mix onsite infrastructure with offsite solutions.

Quant funds and high-frequency trading (HFT) strategies are accelerating the offsite move. These hedge funds need high-end processing power and high-volume storage for tick-level data. Although a bulge-bracket firm can afford to invest millions of dollars and the better part of a year to build architecture in-house, a startup or small hedge fund cannot. Small and mid-sized funds are leading the movement toward offsite approaches such as SaaS, hosting environments, managed services, cloud computing and virtual offices.

More Strategic Use of Resources

Today, a hedge fund can choose from a variety of outsourcing solutions to align its resources with critical business objectives, including:

- **The help desk.** Perhaps the most commonly outsourced information technology (IT) function, the help desk provides day-to-day support for printer, telephone, networking, connectivity and other issues.
- **Virtual Chief Technology Officer services.** Outsourcing this role saves a high-level salary and benefits, while helping funds identify strategic business needs, develop a technology roadmap and plan future budgets.
- **Disaster recovery solutions.** These services can include documentation written by certified business continuity planners, permanent colocation or “hot seat” facilities, and offsite document management and storage.
- **Hosting environments.** These include virtual offices, cloud computing and colocation.
- **Software applications.** These are delivered through a SaaS model for a monthly fee.
- **Written privacy policies and procedures.** These are mandated by federal regulations or state laws. This is an expertise that only the largest hedge funds find cost-effective to retain as staff.
- **Special projects.** These include installations and upgrades to software, hardware, networks or phone systems.
- **Staff extension.** Used to supplement, replace or add value to in-house IT services.
- **Financial Information Exchange (FIX) connectivity.** Outsourcing this service eliminates the need to invest in additional networking equipment and ongoing connection testing and maintenance.
- **Startup and relocation services.** These help to ensure a smooth ramp-up or transition for fund managers and their clients.

Laying the Foundation of an Outsourcing Plan

The challenge facing hedge funds is to determine whether a particular solution is the right fit. To evaluate potential outsourcing partners, funds must keep one eye on specific business needs, as well as vendors’ resources and reliability. Every component of an outsourcing plan should meet defined criteria.

A Secure Physical Infrastructure

To protect critical information, hedge funds need vendors with multi-tiered security. An offsite location requires physical security, such as cages and 24-hour monitoring, as well as technical security, such as cameras and digital monitoring. Data centers need redundancy and availability, and an N+1 infrastructure demands multi-entry fiber paths and power grids, an adequate onsite fuel supply and multiple network providers.

Efficient and Reliable Telecommunications

Essential telecommunications include Internet service, phone, voicemail and market data services. Here are a few guidelines to evaluate outsourcing services.

- **Internet service.** A hedge fund that wants maximum availability should select a T1 line from a vendor offering proactive monitoring and security features. For superior reliability, a fund should consider having two providers along with a router to switch between them if one goes down.
- **Phone and voicemail.** These services typically rely on a phone switch installed in the fund's data center, which provides services such as call routing, caller ID, an auto-attendant and integration with ringdown lines to various brokers. Voice over Internet Protocol (VoIP) services may offer a lower-cost alternative for a startup fund, but the service provider's call quality must be carefully assessed. Before shopping for a phone system, consider the number of users as well as the functionality required including redundancy, voicemail to e-mail, branch office support, call accounting and call recording. These factors will influence cost. A fund with fewer than 40 employees can expect to pay roughly \$20,000 to \$40,000 for a basic solution. A full-featured system with the power a modern hedge fund needs—including modular messaging, advanced mobility capabilities and trading system integration—can push costs into the \$30,000 to \$80,000 range. VoIP can be a cost-effective alternative for many funds.
- **Market data vendors.** Well-known providers included in this group are Bloomberg®, ThomsonReuters® and Dow Jones®. Full-service solutions such as Netik GSMSM, available online or under local control, act as a single source for reference and market data, incorporating multiple supplier feeds and integrating with portfolio management and fund accounting systems. Funds typically select data vendors based on the market and product coverage they need as well as cost, speed, reliability and service. Pricing depends on features, the number of users, remote access methods, client service and real-time requirements.
- **Data protection.** Disaster recovery and business continuity plans are essential to hedge funds of every size. The two types of plans are distinct but complementary. Disaster recovery focuses on planning hardware, software and sites to restore mission-critical information, services and applications after an emergency. Business continuity planning focuses on keeping operations up-and-running through an emergency and beyond. It requires identifying mission-critical processes, creating a plan to notify key personnel, protecting intellectual property, assigning disaster phase responsibilities, and providing the locations and infrastructure needed to continue business as usual.

Not every disaster and business continuity plan is effective. Common mistakes include:

- **Relying solely on backup tapes:** It can take days to recover mission-critical data from physical backup tapes; there may not be readily available equipment to restore data from a tape if an office is damaged by fire or flood.
- **Hosting a disaster recovery site at an employee's home:** Most personal residences lack the essential requirements—such as redundant power, heat/ventilation/air conditioning (HVAC) systems, fire suppression systems and diesel generators—to run a disaster recovery server.
- **Locating a site close to the main office:** This approach offers no protection from regional disasters (earthquake, flooding, air contamination, power outage, etc.) that could affect proximate locations.

Cloud Computing

“Cloud computing” has become one of the most popular buzzwords in IT, but its definition remains as hazy as the associated weather feature. The area of greatest clarity is the cloud pricing model. Rather than buying hardware or licensing software upfront, cloud users pay a per-user monthly fee for each subscription service.

A hedge fund can use cloud solutions to extend its application suite, infrastructure, storage capacity or raw computer power (i.e., number-crunching capability). For a hedge fund considering whether to adopt a cloud strategy, it makes sense to examine the following solutions.

Software as a Service (SaaS)

Popularized by enterprise solutions vendors such as Salesforce.com, SaaS has become one of the best known cloud models. Rather than requiring users or local IT staff to install and maintain applications on the desktop, SaaS offers anywhere, anytime access to individual applications from any computer with a browser and an Internet connection. No upfront investment in software or server hardware is required, and the vendor handles all application upgrades and security patches centrally. Disaster recovery and business continuity protection is built into this model because computing resources are located offsite, safe from fires, floods and other local mishaps that may strike the fund’s office location. In an emergency, data can be accessed from backup offices or even employees’ homes.

The most familiar SaaS offerings are horizontal business solutions, such as e-mail and word processing. Some providers also deliver more sophisticated, industry-specific solutions, such as enterprise-wide document management. Document management technology becomes especially important as a hedge fund grows or becomes registered, since tracking, storing and retrieving important documents manually is error-prone and time-consuming. Registered firms are subject to surprise SEC or state audits that require quick retrieval of specific documents, perhaps in large quantities.

The most useful SaaS document management systems incorporate document-specific functions such as capturing, storing, signing, routing and retrieving with workflow management. Such systems allow users to: 1) send and receive documents at will; 2) index documents by user profile; and 3) specify different workflows for different documents, enabling a paperless office.

For some hedge funds, the appeal of SaaS is obvious. A small startup fund with limited resources can get up-and-running quickly and economically. By assembling SaaS solutions, a hedge fund can create a virtual office with e-mail, smart phone connectivity and file-sharing in a high-availability environment. With fewer employees and IT resources onsite, less office space may be needed, which is particularly important for funds located in high-cost business districts near major exchanges.

Infrastructure as a Service (IaaS)

A number of vendors, ranging from small shops to top technology brands, now provide on-demand access to storage, virtual servers and computing power via a cloud. IaaS allows customers to control processing power, networking components, operating systems, storage and deployed applications. It does not include control of the underlying physical infrastructure, which is managed by the service provider.

As with SaaS, this approach reduces upfront infrastructure investment and permits a hedge fund manager to use expensive office space for staff rather than a large communications room. It also allows for easy scaling when increased demands are driven by overall growth or the particular requirements of a project or modeling exercise. Hedge funds large and small may choose to run batch algorithms and other computationally-demanding processes using a cloud, because it can be cost-inefficient to permanently maintain the large capacity required to meet temporary or project-specific peak demand.

Disaster Recovery and Business Continuity

Cloud computing offers new ways to help hedge funds recover from a disaster. For example, a disaster recovery strategy called a “hot seat”, re-creates a fund’s essential infrastructure at an offsite location, requiring employees to travel to a different office in the event of a disaster. Although such an approach can work well in an emergency of limited scope (such as a building fire or neighborhood power outage), it faces significant limitations during regional or national disasters. During major storms, terrorist attacks or other events causing widespread disruption, employees may be reluctant to leave their homes and families to travel to an unfamiliar location. A cloud environment enables employees to remain home and resume working virtually without interruption, simply by logging in from any computer with Internet access. If employees’ homes are inside the disaster area, they can evacuate to any safe areas and access the cloud.

Another benefit of cloud-based disaster recovery solutions is that firms are no longer required to purchase and maintain duplicate equipment for production and secondary (Disaster Recovery) environments. A fund can now “rent” space in a service provider’s cloud and replicate critical data and applications into the professionally managed cloud environment. When considering disaster recovery in the cloud, a fund should question not only the provider’s cost but also flexibility, security, infrastructure design and resource allocation.

Finally, with any outsourced disaster recovery service, a fund must ensure that the provider has the internal safeguards and resources—both computing and human—to handle an outage in which multiple clients activate disaster recovery sites at the same time.

Mixed Cloud Environments

A common approach employed by hedge funds combines cloud computing services with other onsite or offsite solutions. Medium and large-sized hedge funds often combine cloud strategies for disaster recovery or extra processing power with colocation facilities, custom applications and onsite infrastructure. Such complex configurations may serve sophisticated needs, but they also place higher demands on a fund’s internal IT resources and communications networks.

A Few Raindrops?

Cloud computing offers compelling advantages in affordability and ramp-up time, especially for new hedge funds operating on limited capital. However, for any fund registered with the SEC or one that is preparing to register, caution is in order.

Few public cloud environments yet incorporate the robust compliance engines needed to meet federal and state regulatory requirements. Can a hedge fund rely on a mass-market hosted e-mail provider to retain and report the five to seven-year archive of e-mails that the SEC requires? Or to proactively monitor sample sets of outgoing e-mails for hot-button words such as “guarantee?” A growing number of privacy and anti-identity theft regulations, including the federal “Red Flags” rule, as well as state rules such as the stringent Massachusetts 201 CMR 17.00, have established new standards for the protection of personal private information, such as names, bank or credit card numbers and Social Security numbers. Complying with such regulations can be onerous without an industrial-strength technology platform that includes automated safeguards.

Increasingly, hedge funds are competing for investors by emphasizing operational risk management and transparency, including third-party audits of their own infrastructure. Investors also want to know that their critical data is secure, which can be problematic in a low cost, public cloud environment where sensitive information is held on a common platform with hundreds or thousands of other cloud customers.

Navigating the Cloud Safely

Observing a few simple guidelines can bring clarity to a hedge fund's cloud strategy.

- **Look for proven platforms.** With critical infrastructure, it is not a good idea to boldly go where no hedge fund has gone before. Make sure the system and service provider you choose has been battle-tested in similar business environments.
- **Make sure critical needs are met.** Double-check to be sure that the cloud service fully supports the applications and infrastructure your business uses on a daily basis.
- **Choose a service that can grow with you.** Your needs will change constantly, and most technology has a three to five-year life cycle, at best. A solution is not inexpensive, at any price, if it requires you to switch vendors frequently as you outgrow it. Moreover, investors may be more hesitant to trust a fund that is constantly changing partners and infrastructure.
- **Look for a vendor you can trust.** A hungry startup provider or mass-market vendor may promise low costs, but in the long run, your interests are best served by a vendor with a history of working with financial organizations and a deep understanding of the industry and evolving regulatory environment.

Hosted IT Environments and Managed Services

The term “hosted IT environments” encompasses cloud computing, as well as the enterprise-wide solutions known as managed services. Designed specifically for smaller hedge funds and investment advisors, managed services deliver a comprehensive, turnkey IT infrastructure to support daily operations including phone services, office applications, e-mail servers, file services and access to market feeds—all in a vendor-hosted and managed environment. For a fund that wants to focus on investment strategies rather than its technology, this approach offers several advantages:

- **Low startup costs.** There is no need to purchase equipment or build a data center. Hedge funds pay per-user monthly fees.
- **Fast ramp up.** A fund can get up-and-running quickly with a hosted solution.
- **Security.** In addition to user-facing applications, managed services also provide behind-the-scenes protection in the form of firewalls and anti-virus and anti-spam technology, as well as data center monitoring.
- **Built-in disaster recovery.** A Tier II or Tier III vendor data center offers the redundancy needed for disaster recovery as well as business continuity.
- **Agility.** IT infrastructure can be scaled in any direction, adding storage, processing power or new applications, including custom applications as needed.
- **Continuous support.** Few smaller funds can afford around-the-clock IT coverage. A managed services vendor can provide support 24/7, 365 days a year.

It is essential to select vendors carefully, given the critical importance of the functions entrusted to a managed services provider. A fund manager should: 1) inquire into the SAS certification of the vendor's data center; 2) ask about the vendor's own disaster recovery and business continuity planning and testing; 3) evaluate the physical and technical security of equipment; and 4) establish how the hedge fund's proprietary data will be isolated from data belonging to other managed services clients.

Colocation

Where can a hedge fund turn if it wants more security and control than the cloud offers, while keeping bulky equipment away from its expensive office suite?

With colocation, multiple customers share an offsite data center that houses much of their critical networking, storage, processing and communications equipment. A colocation facility provides not only space but also security and business continuity services, such as redundant power and cooling, added fire protection and continuous security at all points of entry. These protections are especially compelling for hedge fund managers located in dense urban centers, where commercial rents are high and office buildings are vulnerable to accidents or attacks. Using a colocation facility, a hedge fund manager whose offices become disabled can simply work from home without announcing a business emergency.

Like cloud computing, colocation lets customers share the costs of maintenance and security for an offsite data center, reducing the burden of supporting a completely proprietary facility. However, the two strategies differ greatly in other respects.

- A cloud strategy virtualizes data and processing from multiple customers across shared servers, storage devices and communications equipment. The hedge fund does not own the equipment.
- By contrast, colocation facilities assign specific racks, cabinets and locked cages to secure each customer's individual equipment.
- Cloud pricing is per user per month.
- Colocation facilities charge recurring fees per rack, cabinet or other unit of space allocation.

Most large funds that can afford colocation are using it already. They may keep a small comm room onsite, with networking, a domain controller, file sharing and a private branch exchange (PBX) for telecommunications. However, they typically use an offsite colocation facility for functions such as research management and processing.

Whether colocation makes sense for a particular fund may depend on its strategy. High frequency traders, for whom milliseconds matter, must know the precise peaks and lows in latency that their strategies can tolerate. This narrow window may eliminate colocation facilities that offer attractive features and pricing, but are located too far from an exchange to deliver the responsiveness required. By contrast, a long-short equity fund that trades less frequently may be content with a less expensive colocation facility in a remote location.

Evaluating Vendors

Choosing a colocation vendor calls for extensive tire-kicking at the actual facility. A visit will reveal:

1) whether the site is secure; 2) if there is adequate backup power; and 3) whether the equipment appears well maintained. A hedge fund representative should personally examine the vendor's documentation to see whether it is complete and current, and review SAS 70 audits to check certification. Such a rigorous examination may seem daunting for a hedge fund whose primary focus is investing, not technology, but it is very important. It may be helpful to ask for references from the colocation vendor's clients. More importantly, guidance is available from technology outsourcing providers as well as from the fund's prime brokers.

In selecting a colocation vendor, here are a few considerations to keep in mind:

- **Bandwidth.** Without sufficient bandwidth and redundant connections, latency will quickly become an issue.
- **Application compatibility.** It is critical that a data center be compatible with the applications a fund uses today, as well as any other applications it may need to add in the future.
- **Location.** A colocation facility should be far enough away to remain unaffected by local emergencies that affect a hedge fund's main office, but close enough to maintain high connection speeds. Every 60 miles from a data center adds one millisecond of application response time.
- **Flexibility.** A data center should allow a hedge fund to use and pay for only the bandwidth and services it needs now. However, it should offer the capability to expand as needs evolve.
- **Cost.** A typical hedge fund can expect to pay about \$1,800 to \$3,500 a month for colocation space, depending on the data center's location and the fund's storage needs.

Outsourcing FIX Connectivity

Although a prime broker typically pays for a FIX connection, a hedge fund still must support it onsite.

Taking in another T1 line requires investing in additional equipment, monitoring the connection and testing integration between the Order Management System (OMS) and FIX line. In addition, a FIX line that runs directly to the fund's headquarters is vulnerable to any accidents and disasters that can befall the building.

Outsourcing FIX connectivity relieves hedge funds of the burden of installing, testing and maintaining a connection on their own. In addition, a single point of contact will be responsible for service and troubleshooting, which eliminates gaps between vendors. In the case of a disaster, the FIX line can be re-pointed away from the affected office, allowing smooth business continuity and avoiding the need to swamp a broker-dealer's office with phone calls for help during an emergency.

High-Frequency Traders

Hedge funds that specialize in high-frequency trading are voracious consumers of IT resources, given the rigorous demands of their strategies. They have huge appetites for data storage and computing power for their production and testing environments. IT resources for testing are regularly relied upon by teams of developers to back-test algorithms against large volumes of historical data.

Strict latency tolerances require funds to maintain offices close to major exchanges. However, these are the very locations where commercial space is at a premium and building infrastructure may be the most outdated or vulnerable. The need for reliability, business continuity and disaster recovery is particularly acute for these funds. Although a traditional fixed income manager might be able to weather a certain amount of downtime, lack of availability can cost a high-frequency trader millions of dollars per second.

In short, high-frequency trading funds need Fortune 500 technology, even if they work on a modest budget. This combination can be challenging to implement in-house, considering the high startup costs required and the physical limitations of onsite office space. For that reason, high-frequency traders rely heavily on outsourced solutions, and their demands exert outsized influence on the shape of the technology market.

Outsourced Staffing Options

Although hedge funds turn to technology providers for equipment or services, they also may need specialized people skills. For example, key employees may need backup coverage during vacations. Or, a special project may overload the capacity of busy in-house staff. Developing a complex proprietary application may call for specialized, hard-to-find skills. Whatever a fund's needs may be, a variety of outsourcing staffing options is available to fill them.

Supplemental Staff

Few hedge funds can afford to permanently staff an IT department for absolute peak capacity by hiring standby employees to fill in for absent team members. As an alternative, funds turn to outsourcing to cover employee vacations and sick time or to supplement a team during special projects. This strategy is far more cost-efficient than expanding full-time headcount. It also provides the fund with a ready backup contingency plan, as well as the flexibility to scale up resources as needed.

Complete Outsourcing (External Staff)

Rather than building an internal IT department, a fund can hire an outside provider to take ownership of its entire technology function. For a hedge fund manager, this approach offers relief from the daily burdens of managing an in-house staff and provides a cost-effective way to access best-of-breed technical skills. If the vendor uses dedicated resource pools, its staff can build a deeper understanding of the fund's business processes.

Outsourced vendors also can assume responsibility for technology management and planning, helping to make budget forecasts more accurate and predictable. In addition, they can take the lead in training a hedge fund's staff on IT systems and tools. Before entrusting its entire technology platform to an outside party, a hedge fund must be certain that its vendor thoroughly understands the financial industry and operates from a position of financial strength and stability.

Support Staff

A hybrid model consists of at least one in-house IT professional supported by additional staffing resources provided by a trusted vendor. It differs from the supplemental staff model in that it represents a permanent, strategic arrangement rather than a temporary, ad hoc remedy. This approach allows a fund to employ its own IT resources without concentrating mission-critical responsibilities in one or two key individuals. It also lets a fund tap into the knowledge base of an outside vendor for research and development, instead of depending entirely on the skills and experience of a small in-house staff. For the arrangement to succeed, the hedge fund manager and vendor must work together to coordinate planning and activities.

Value-Added Services

Even an in-house IT department that successfully supports day-to-day operations may encounter special challenges beyond its capabilities. Certain disciplines—such as disaster recovery, compliance, application development and network design—call for highly specialized skill sets. Outsourcing is an affordable way to tap into top expertise and best practices in these disciplines. At the same time, it can also help make budgets and schedules more predictable compared to tackling the same complex, unfamiliar project in-house. These value-added projects are narrower in scope than complete staff outsourcing. However, because of their mission-critical nature, they require the same vigilance in regard to vendor experience and financial strength.

Custom Technology

Like other value-added solutions, custom technology outsourcing offers a hedge fund access to raw IT resource power, as well as a repertoire of specialized skills. Custom projects can range from new application development to Web design, and from developing new technology to enhancing existing platforms. The selected provider should be able to handle all phases of a development effort including requirements, design, usability, development, testing, deployment and hosting.

Pricing Models

In choosing an outsourcing partner, a hedge fund must consider two factors: 1) The quality of the vendor's services and technology; and 2) pricing structure. In both cases, the hedge fund should evaluate how well an offering fits day-to-day operational needs and long-term business strategy.

IT service providers offer several pricing structures allowing hedge funds to make the decision best suited for their business model.

Block Contracts

A block contract is the prepaid calling card of technology outsourcing. A client pays in advance for a set number of hours, typically by the month. As each hour is used, it is deducted from the remaining balance. If a client requires additional service time over the contract, a premium hourly rate generally applies. At the end of the month or other agreed-upon period, unused hours in the block may simply disappear. To replenish prepaid hours, the client purchases an additional block.

Service Contracts

In a typical service contract, a provider guarantees to deliver a set number of hours each month for a flat fee—from a few hours to the equivalent of one or more full-time people. Both clients and vendors gain the advantage of a predictable, budgetable fee structure. In addition, a service contract offers a client the personal attention of a relationship manager who manages the account to ensure optimal usage of the contract. The predictability of the commitment also enables the vendor's staff to develop a deeper understanding of the client's business and become more proactive in recognizing challenges and proposing solutions.

Per User Per Month

In this arrangement, a client pays a monthly fee for each user for delivery of all contracted services, much like a subscription. This is the most typical model for cloud relationships. Although this approach offers a certain appealing simplicity, it also carries a significant downside. Since the actual hours worked play no role in calculating billing, a hedge fund could end up vastly overpaying for services. On the other hand, if a project proves more time-consuming than anticipated, a vendor can lose a significant amount of money on a relationship—often a recipe for lack of responsiveness and reduced attention to a client's needs. Per user per month arrangements also make less financial sense as a hedge fund grows. A fund with 80 employees paying \$150 per user per month might find it less expensive and more effective to engage a full-time IT professional on staff.

Looking Forward

The technology outsourcing trend began with hedge fund managers looking for ways to reduce the time and money spent on technology, so they could focus attention on more important business functions. In this “early era,” technology was viewed as overhead. However, as the outsourcing trend accelerated, its growth was fueled by specific driving forces. Quant funds, especially high frequency traders, began to invent new ways to capitalize on market inefficiencies, bringing technology to the very core of their strategies. As institutional investors became more cautious about hedge funds' operational risks, having a robust infrastructure became a competitive advantage.

Thus, outsourcing is closely enmeshed in a shifting perspective on the role of technology in hedge funds, and perspectives have also shifted to view technology less as an expense and more as an integral part of a growth strategy. Although this change has yet to permeate the entire hedge fund industry, the trend appears powerful and irreversible.

The increasingly strategic role of technology, as well as its growing functionality and complexity, is raising the stakes in the outsourcing vendor selection process. How can a hedge fund manager—whose main job is investing—make informed choices among so many technology outsourcing options? Fortunately, a hedge fund can share the burden with a trusted strategic partner. The right prime broker, for example, who primarily serves hedge funds of a similar size and segment, can provide guidance, access to resources and offer well-vetted referrals aligned with a manager's unique needs. A technology integrator can also help to winnow down the myriad of choices and even take full ownership of vendor relationships if a manager prefers.

Whatever the challenges of selecting vendors, there is little chance that the outsourcing trend will diminish. The benefits have simply proven too compelling. Not only has the future of technology arrived in the hedge fund industry—but it is clearly here to stay.

If you would like to discuss any of the outsourcing strategies covered in this guidebook in greater depth, please contact Eze Castle Integration at sales@eci.com, call (800) 752-1382 or visit www.eci.com.

Appendix: Sample Request for Proposal (RFP) Questions

This template can serve as a guide in developing an RFP for your own technology vendor search.

Staffing and Skills

- Provide the total number of employees (current year and past year). Please show numbers for overall staff as well as a breakdown by function (e.g., developers, client service, etc.).
- Provide the number of employees gained and lost (current year and past year).
- Describe the organizational structure of your company. Please detail the roles specific to your business (e.g., engineers, client managers, trainers, QA, etc.).
- How many full-time employees are assigned to these particular roles, by functional and geographic split?
- What is the anticipated project resource profile through the stages of the implementation process?
- Provide names, roles and responsibilities of key members of the management team.
- Provide names, roles and responsibilities of key members of the technical teams who will be supporting our implementation. Will these be dedicated resources?
- What level of involvement and time commitment will you require of our employees during this project?
- Please break down required full-time employees by skill set and level for each region.
- What organizational certifications do you have that are of relevance to the work required (e.g., Cisco, Microsoft, VMware, etc.)?

Client Service Model

What is your current client service model? Please provide a description of client interaction points.

- Do you use a dedicated or shared implementation team approach?
- How is the model modified as you go through the implementation phase to support?
- What contingency plans do you have in place to maintain client service levels during peaks in business volume, holidays, etc.?
- Describe the nature of service reviews conducted with your clients. How frequently are they scheduled and what are the typical outcomes of such reviews?
- How do you resolve client conflicts?
- What is your client support availability with regard to countries or regions and time zones?

User Support

- What are the hours of operation of the help desk? If located in multiple locations, including foreign offices, please describe overall coverage.
- In regards to ongoing support, is there a designated support representative and call center and what are the hours of operation?
- What is the critical problem response policy of your firm?
- Do you supply technical and user documentation?

Business Continuity and Disaster Recovery Plans

- Does your company have a written policy and program for business continuity and disaster recovery?
- Have your company's policy and program for business continuity and disaster recovery been fully implemented? If not fully implemented, please discuss those areas in detail and explain any plans to address them.
- Does your business continuity and disaster recovery policy and program include the implementation of the following actions? (Be sure to address all parts.)
 - Personnel requirements, including emergency management contacts and all operations personnel
 - The restoration of service to clients in a prioritized manner
 - Capability and support of multiple client recovery events
 - Geographically dispersed recovery locations to allow diversity of data centers, utilities, transportation, telecommunications, etc.
 - Full security controls (for operating systems, hardware, software, user access) activated at time of system recovery, same as in a normal state
 - Timely and ongoing client status reports as part of emergency response procedures
- How often does your company test its business continuity and disaster recovery plans to ensure their effectiveness?
- Are there aspects of services that would be excluded or delayed in your recovery plans that would impact our fund? If yes, please explain.
- Does your company use unaffiliated service providers for recovery services?
- Are the recovery services dedicated or shared?
- Is our fund at risk of being preempted in a disaster? If yes, please explain.
- Did your most recent business continuity and disaster recovery test meet its stated objectives?

Backup and Retention

- Does your company have a written policy and program for backup and retention?
- Are your backup and retention policy and program fully implemented? If the policy and program are not fully implemented, please discuss those areas in detail and your company's plans to address them.
- Does your company's backup and retention policy and program have processes that include these elements? (Be sure to address all parts.)
 - Implemented and sustained process-data and information archiving
 - Media obsolescence
 - Local and offsite data retention
 - Climate-controlled environment
 - Validation of receipt
 - Segregation of bank data and information

Data Security

- Does your company have a security methodology and process for consistent planning, design and implementation for the following systems? (Be sure to address all parts.)
 - Operating systems
 - Networks
 - Databases
 - Firewalls
 - Infrastructure
 - Software
 - Purchased third-party software and hardware
 - Applications
 - Physical security
 - Environmental security
 - Communications

- Does your company’s methodology include security design considerations? (Be sure to address all parts.)
 - Data and information confidentiality
 - Data and information ownership
 - Administrative functions and controls
 - Privacy
 - Regulatory and compliance needs
 - Monitoring, tracking and auditing security events
 - Risk assessment and mitigation
- Have your company’s security architecture methodology and processes been fully implemented? If the policy and program are not fully implemented, please discuss those areas in detail and your company’s plans to address them.
- Does your company have a policy and program for training employees on information security?
- Does your company have a written policy and program for encryption?
- Are your company’s encryption policy and program fully implemented?

Intrusion Detection and Incident Response

- Does your company have a written policy and program for network intrusion detection and incident response?
- Are your company’s network intrusion detection and incident response policy and program fully implemented? If the policy and program are not fully implemented, please discuss those areas in detail and your company’s plans to address them.
- Does your company’s intrusion detection and incidence response policy include a program for implemented and sustained processes? Some of these include:
 - Monitoring and analysis of security alerts
 - Remedial action of security incidents
 - A fully implemented Intrusion Detection (IDS) tool
 - Action for network attacks against vulnerable services
 - Action for malware (such as viruses, trojans and worms)
- Does your company have 24/7 coverage of the IPS environment?
- Does your company’s staff monitor and take action on real-time attacks?
- Does your company conduct testing to assess the effectiveness of the implemented controls?

About Eze Castle Integration

Eze Castle Integration is the leading provider of technology, consulting and IT services to more than 600 hedge funds and alternative investment firms worldwide.

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