CIPS KNOWLEDGE

Embedded IT | Buying Guide Series | Cloud / Hosting

This Buying Guide provides a checklist of questions to ask in order to create a requirements specification for buying cloud and hosting services, as well as a series of questions to ask that validate a supplier's responses. It also provides you with suggestions on how to find a good quality supplier of services.

This knowledge paper is supportive of Procurement professionals operating at operational of the CIPS Global Standard

01 CPD HOURS

CIPS members can record one CPD hour

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Buying Cloud and Hosting Services

Introduction

Cloud services have been the de-facto method of delivering IT for a number of years now, however there is still much confusion about the use of the word "cloud" in many different contexts. At its highest level, cloud services should imply consumption based, commoditised and highly flexible services, however variants such as "Private cloud", "Hybrid cloud" or other combinations can dilute the pure messaging associated with this. Similarly, there are a number of layers to cloud solutions, dealing with Infrastructure or higher-level software components, ranging from Infrastructure as a Service (IaaS), through Platform as a Service (PaaS) to Software as a Service (SaaS) – suitably confusing.

Within the broader "cloud" definition there are "Public" and "Private" clouds, which typically refer to the shareability of the core platform on which the cloud sits. Public clouds tend to be massive automated infrastructures that are highly multi-tenanted and shared at every level - therefore offering significant commercial flexibility but come with potential regulatory risk because of the perceived security threat of shared components. Private clouds tend to operate with more dedicated components, however leveraging virtualization to try and mimic the flexibility offered by Public clouds. There are no clear common definitions within this space and as such most people are buying "Hybrid" clouds, comprising Public and Private components, to avoid getting stuck on terminology.

The Infrastructure (IaaS) level services in general comprise the delivery of technology services up to the Operating System level. In technical scope terms, this brings together Data Centre facilities, server hardware, virtualization components and the operating system itself in a single monthly bill, usually charged per server, or other unit of technical measure (CPU, RAM). The secondary variable in billing terms is usually time, with many providers able to bill on a per minute basis. More traditional methods of delivering IT, such as Managed Hosted Services (or "Hosting"), still exist and can offer a credible alternative to cloud solutions dependent on use case. These tend to focus on the delivery of dedicated or shared infrastructure components on a more fixed cost model, compromising flexibility against, potentially, lower costs.

On this basis, selecting a "cloud" or a "hosting" service is entirely dependent on your requirement, and selecting the wrong model can be costly. Akin to the commercial comparison of owning a car vs hiring a taxi. For services that are highly variable or peaky in profile there could be benefits in using an IaaS cloud, and for things that are more constant a dedicated hosted service could be more suitable.

This guide will focus on the IaaS Cloud or Hosted services layer, with PaaS and SaaS services being discussed in a later guide. This guide is deliberately high level, and for more complex requirements it would be prudent to use external consultants to help with the scope and approach of the project.

This Buying Guide developed by Phil Clark aims to provide CIPS members with a checklist of questions to ask in order to create a requirements specification for buying cloud and hosting services (Technical, Operational and Commercial), as well as a series of questions to ask that validate a supplier's proposals. It also provides you with suggestions on how to review the supply market to source the most suitable supplier of services for your business requirements.

Terminology

Within the industry, much of the terminology is based on acronyms, which are defined as below:

- **"IaaS"**
  Infrastructure as a Service – cloud services focused on infrastructure, or up to operating system level, service.

- **"PaaS"**
  Platform as a Service – cloud services that incorporate IaaS and some core database or development languages provided as part of the service.

- **"SaaS"**
  Software as a Service – cloud services that incorporate IaaS, PaaS and a core application software component that delivers a specific function such as Office 365 (office applications), Salesforce (CRM applications).

- **"MSP"**
  Managed Service Provider – someone who delivers integrated support and services across a technology platform.

- **"CSP"**
  Cloud Service Provider – someone who delivers integrated support and services across a cloud platform.

- **"RTO"**
  Recovery Time Objective – how quickly you need to have your application or infrastructure back up and running after a failure.

- **"RPO"**
  Recovery Point Objective – the oldest point of data you can recover to, usually defined by the frequency of backups on your estate. For instance, if you are backing up your data every evening, your RPO would be 24 hours.

Major Industry Players

The major vendor players in the IaaS Cloud services market are generally split into Public "hyperscalers" and Private cloud specialists. Below is a list of the major players in the current market:

- Public cloud (IaaS): Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform.
- Private cloud: Pretty much any "Managed Service Provider" in the UK who range from large, usually US owned, corporates down to local providers who rent data centre space. NB most Resellers in the UK also have a Managed Service arm that can offer Private Cloud solutions

Developing Your Specification

1. Information to provide – Technical

Current Application Inventory
List out the applications you wish to move to the cloud.

Application Name	Purpose	Service Hours	Developed by	Application Supported by	Regulatory Considerations
e.g. SAP	Enterprise Resource Planning	9am – 6pm, Mon-Fri.	SAP (Vendor)	Accenture	Contains some credit card information (PCI:DSS)

Current Infrastructure Inventory
Please complete the table below to describe the current infrastructure, showing every component that could be affected by the project (Servers, Storage, Backup Devices, LAN infrastructure):

Infrastructure Component Name	Associated with which Application	Make / Model	Type of device	Operating System / Version	Role
e.g. yoda123	SAP	HP DL380	Physical Server	Red Hat Linux 9	Production
e.g. vwookie37	SAP	VMWare	Virtual Server	Red Hat Linux 9	Development
e.g. deathstarsan	SAP, Active Directory, Exchange	NetApp AFF 800	Storage Device	n/a	Production

Current Network Topology
Please complete the table below to describe where the users that access the applications are located, and how they are served.

User Category / Site	Location	Method of Access	Number of Users	Security Requirements	Notes
e.g. Remote Users	UK wide	PaloAlto GlobalProtect VPN and Internet	100 names; 20 concurrent	Managed via VPN	Mainly VIP users
e.g. Manufacturing Site	Slough	Leased Line 100Mbps	80	None	Business critical site

2. Solution Constraints

Ensure any solution constraints you may have, or may want to consider, are stipulated such as:

- Geographical location of your data (does it have to be in the UK, EU for instance for Data Privacy purposes?)
- Distance between data centres (do you need an exclusion zone between sites for Disaster Recovery purposes?)
- Sustainability (do you want to ask the supplier to demonstrate their credentials for Green use of resources?)

3. Information to provide – Operational

Support Requirements

Explaining the levels of support you want regarding Cloud services can be complex and variable by provider. There is a framework which can be used to define exactly what you need.

There are effectively two layers:

- Technical Support Requirements – the technical skills you need to support your cloud environment.
- Service Management Requirements – the operational skills you need to support your cloud environment.

Although many requirements specifications tend to focus on the Technical Support requirements, the Service Management components tends to have the most impact on the success of the relationship. Ensuring you have a clear list of expectations around the service management approach will set the right expectations for the services longer term. Whereas the list below is a long and detailed list, it is worth considering each point and discussing this internally in terms of your expectation from the supplier in each category.

Technical Support Requirements

Confirm a list of functions you expect the provider to perform as part of their Private or Public Cloud service, based on the following list:

- Data Centre Facilities – proactive management of all Data Centre components (power, space, cooling, security) (NB – usually a "given" for Public Cloud services).
- Data Centre internal networking – proactive management of all connectivity within the Data Centre (LAN, Firewall, cabling, wireless).
- Data Centre external networking – connectivity from the Data Centre to the offices / users listed in the Technical Section (in most cases this would be from a company's Wide Area Networking provider, but Internet Access would usually be provided by the cloud provider).
- Server and Storage Management – proactive support of all aspects of the server to operating system level, including:
    - Hardware Asset, Hardware Maintenance and Monitoring.
    - Operating System License, Operating System Maintenance and Monitoring.
    - Backup and Recovery of Data within site or to an alternative site (for DR purposes).
    - Configuration changes, Patching of Operating System and Firmware.
    - Storage allocation, maintenance and monitoring.
- User Access Management
- Software Asset Management – maintaining an accurate list of all deployed software and ensuring compliance to license conditions (provide a list of software that you expect them to manage).

- Infrastructure Security – deploying security tools to protect the Server / Storage / Network components from vulnerability (provide a list of functions you expect them to provide, such as Denial of Service, Anti-Virus, Firewall Management etc.)

- Decommissioning – assuming some assets become redundant as part of any migration, expectations around decommissioning, recycling and secure wipe of technology assets is key.

Service Management Requirements

Confirm a list of functions you expect the provider to perform as management of their service, based on the following list.

Note: this is a summary of the ITIL process list, more detail is available widely on the internet:

- Service Strategy:
  - Maintain active dialogue with the business to determine that the services being provided are in line with the business direction, and adjusted appropriately.
  - Predict likely fluctuations in demand and amend the service to cater for these (e.g. seasonal peaks).
  - Help with budgeting and charging of services to internal business users.

- Service Design:
  - Creation of a "catalogue" of service items that users can use, for easy sourcing and deployment.
  - Management of availability of the services, such that they are available whenever needed (including managing outages and reducing the impact of those outages).
  - Security / Compliance – designing a service that ensures appropriate security protections, and regulatory compliance checks, and other considerations are installed throughout the service.
  - Service Level Management – ensuring that the services conform to set expectations and reporting is produced to demonstrate this on a regular basis.
  - Capacity Management – ensuring proactive monitoring of how much technology resources are being used, spotting trends, and proactively suggesting increases or reductions to align cost and capacity.
  - Solution Design – ensuring any policies of regulatory requirements are met, any constraints regarding resource or risks are managed.
  - Downstream Supplier Management – ensuring commercial ownership of any third parties involved in the services is clearly understood and managed appropriately.
  - IT Service Continuity – ensuring failures in the services are proactively mitigated, reactively addressed and roles and responsibilities are clear when failures do occur.

- Service Transition:
  - Ensuring absolute clarity on how to move from the current service to the future service, including risks of change (assumptions, issues, dependencies), creation and management of transition plans.
  - Ensuring day to day change is properly managed with approvals and communications appropriately defined.

- Ensuring new releases of software are planned, testing and implemented with the right levels of communication and control with all stakeholders (internal business users, external application support companies etc.).
- Ensuring that all assets and licenses, including any configuration settings within the components, are listed, tracked and maintained including financial management (e.g. depreciation). Clarity around processes for purchasing upgrades or new assets needs consideration.
- Validating and testing new services, or changes to service, such that they are not released to users until they are fault free.
- Maintaining a knowledge database, such as user guides, processes and procedures, and storing it so it is readily available to those who need to know it.

- Service Operation:
  - Maintaining appropriate access control to the services, such that people without the need to access the services cannot.
  - Trapping and processing all “events” raised by the systems such that potential problems are spotted proactively and addressed before they become a problem.
  - Defining and executing processes for new service requests, ensuring people requesting additional services follow the right approvals and controls, and are prioritised appropriately.
  - Running a helpdesk, or ticketing system, that takes “incidents” from users of the service and manage these to resolution in accordance with priorities and service level expectations.
  - Grouping incidents into “problems”, to address root cause problems rather than individual incidents as they happen.
  - Using automation to improve efficiency and improve accuracy of service operations is a good thing to look for.

- Continuous Service Improvement:
  - Running a process by which regular governance drives service improvements using quality measurement and reporting, tools and data to underpin suggested change.

Internal Resource Requirements

Outline any internal resources you have to provide management, support or configuration of the infrastructure you are looking to move, and clarify their role going forward in terms of interfaces with the suppliers. Specifically:

- Application Management teams.

- Security teams.

- Business interfaces if there are multiple business relationships internally.

Billing Requirements

Make clear how you expect to be billed for the services, and what you expect regarding invoice detail. This is particularly key for Public Cloud services, which as a variable and consumption-based cost model can become expensive quickly.

Key points to request would be:

- Clear boundaries between Fixed and Variable cost elements on invoicing.

- For variable cost elements:
  - Detailed breakdown of cost drivers, including "price x quantity" metrics if available.
  - Allocation to individual users or businesses.

Known Changes / Strategy

Are there any business changes that will need to be considered strategically as part of this new service:

- Significant increases or decreases in usage volumes?
- Significant changes in locations / sites?
- Significant changes in business function (e.g. launch of a product or service)?
- Significant new applications or infrastructure needs?
- Changes in regulatory or compliance postures within the business? (e.g. trying to secure a new ISO accreditation)

4. Information to provide – Commercial

If there is a requirement for transfer of existing assets to the Service Provider as part of the transaction, you will need to provide:

- Make, Model, Age, Specification and current book value of hardware assets.
- Manufacturer, Version, Product, License conditions, quantities, contract terms and current book value of any software assets.
- Details of any maintenance contracts that are associated with Hardware and Software assets such that you are not left with maintenance contracts on assets no longer owned by you (if you are looking to novate these they should be detailed in this section also).

Outline any preference for financial smoothing? Most providers will flatten the up-front cost of a new service over the term of the agreement if this is your preference, however consider termination charges throughout the term in this regard.

Are there any critical dates that the provider needs to consider (contract end dates, peak processing dates) when designing their migration plans?

Is there a budget set for the project and if so, how is it phased (all up front / capital expense OR operating expense)? What term are the costs budgeted for?

In the uncommon event that TUPE applies to the services, outline the in-scope employees with associated roles and employment terms. Engage specialist support for these type of contracts.

If you are able to make term commitments to any aspects of the service, there is benefit in outlining those. Service Providers will provide substantial discount for a 12month+ commitment of resources, but be wary of the potential termination costs if your profile changes.

5. Information to provide – Sourcing Process

- What are the timelines that the supplier has for:
  - Reading and asking questions in the specification?
  - Providing their written proposal
  - Coming in to present their proposal if appropriate
  - Receiving a decision on whether they have been awarded or not

- What are your time expectations for the project delivery:
  - Supplier commencement date after being awarded
  - Completion of the transition project to new services

- What are your standard legal terms / principles for these services that the provider should adhere to?

Verifying the Responses

1. Questions to ask – Technical

- What levels of capability do you have regarding the technologies being requested (number of staff, partner levels/accreditations)?
- How many other customers does the supplier have that have similar size and type of requirement to you, and are any of them referenceable?
- What constraints are there with technical solutions in terms of future growth and performance?
- Are any of the components included in the solution forecast to go end-of-life within the term and what will be the strategy / charging approach to managing this?
- For software-based solutions, will patches and upgrades be provided by the provider as part of the service or chargeable, and if so on what frequency is this likely to happen (and at what cost?)

2. Questions to ask – Operational

- What reporting / monitoring and management will the service come with? How will you be notified of a fault or potential fault?
- What are the expected turnaround times on a change / problem in terms of response and resolution?
- What Service Levels will be provided by the supplier, and what are the penalties of non-compliance?
- What are the hours of service for their helpdesk service, in terms of core hours and any extended support hours? Will support for the users be provided directly or is there an expectation that users will phone an internal "expert" before logging a call with the provider?
- What automation / efficiencies are built in to the solution such that support costs are optimised? Is there potential in the future for more automation to be incorporated into the service to reduce charges?
- What documentation will be provided as part of the service in terms of:
  - Design / Architecture
  - Processes and Procedures
  - Service User information ("How to…" guides etc)
- Which parts of the service are provided by the supplier, and which are provided by other third party subcontractors (and who are they)?
- How will new future technologies be considered in terms of the service, will the provider suggest them proactively? How can they be incorporated into the services?

- How will changes or maintenance windows (e.g. cloud provider maintenance) to the platform be communicated to the users / operations teams?

- Who will be the main contact points between client and supplier:
  - Helpdesk touchpoints
  - Management / Review touchpoints, and frequency / format
  - Executive Level escalation touchpoints, and triggers

- Are processes designed to any standard (such as ITIL) and verified as such by an external auditor?

- Are the services regulated / certified to any ISO standards and if so, on what scope and when was the most recent audit?

- For regulated clients, what levels of access do support staff have to call records and what security protocols are in place to protect this personal / sensitive information? Where are support staff based geographically?

3. Questions to ask – Commercial

- Are all prices fixed, or will they vary over time with usage / inflation / currency fluctuation? If so, how is this controlled through the contract?

- What is the expected payment profile (in advance, arrears / payment terms)?

- Are there any volume discounts available, or what are the thresholds for improved pricing / price changes?

- Are there funding opportunities from the Public Cloud provider (if appropriate) that could be leveraged to fund the migration activity to the Public Cloud, and if so what are the conditions associated with that?

- If additional work is required, what is the day rate per skill set required and will this be set in the contract at the outset?

- What are the termination rights for cause / convenience / other scenarios? Are there any expectation of fees on termination / expiry?

- On termination / expiry, what help are the provider going to give to transition away? Will there be any fees to transfer licenses, equipment or numbers as part of the process?

Questions to ask – Other

- Core supplier demographics:
  - Turnover / Profit for last 3 years
  - Ownership structure
  - Number of customers overall
  - Number of customers in your industry
  - %age of revenues that could be associated with this style of service or contract

- Provide reference clients who take a similar service, ideally in a similar industry and company size.
- What level of accreditation / certification does the supplier hold with external Public Cloud providers, or relevant key vendors (this will demonstrate the investments they have made in skills)?

Understanding the Market

Since the mass adoption of Cloud Services in the early 2000's, nearly every IT provider in the UK claims to have Cloud or Managed Services capabilities and it can be difficult to identify good, mature providers from the aspirational. Specialisms around niche technology can lead to differentiation, and demonstrable (referenced) capabilities is always the primary indicator of the ability of a supplier to deliver quality services.

Many of the Public Cloud providers have immature partner programmes that can be used for identifying partners to help with projects. As they are Vendor specific however, it can make it difficult to find a vendor agnostic partner. AWS and Microsoft both manage partner portals, and these can be found by googling "Find an AWS Partner" or similar, however the functionality is limited and can produce poor results if you are looking for a recommendation of supply based on your specific location, size, industry or other. They also have a bias towards partners who have invested heavily in training and accreditations, which provides high quality engineering resource but can lead to price increases.

Embedded IT provide a free of charge "supplier matching" service at www.embedded-directory.com, which takes your company details and matches suppliers by capability, location, company size, target industry, and industry experience. Simply enter "cloud" or "hosting" and your location on the home page, and all suppliers with this capability will be provided. Through registration and entering company details, suppliers will be ranked in order of appropriateness to your specific company. To find out more, visit www.embedded-directory.com

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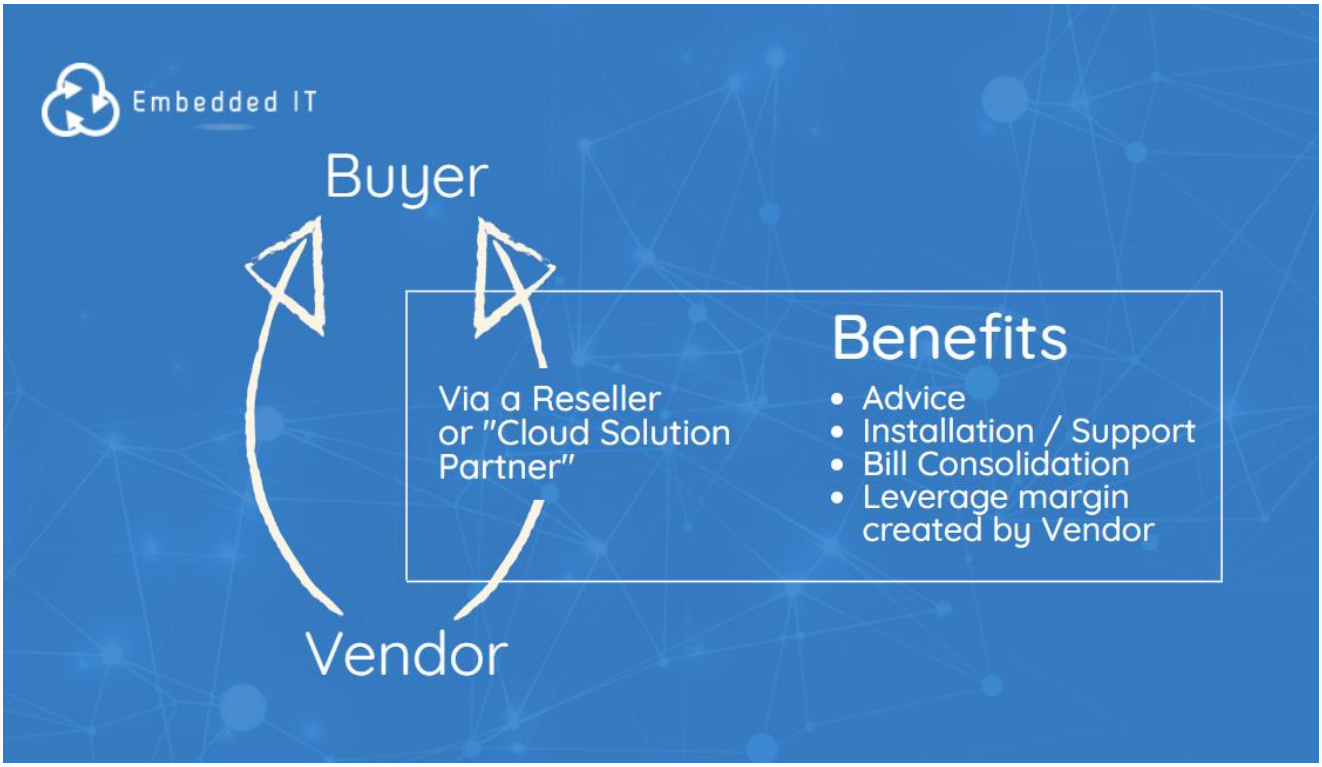

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Phil Clark is the founder of the Embedded Directory; a website designed to help technology buyers find the right technology suppliers. Over the past 25 years, Phil has overseen numerous senior commercial management roles within Client, Vendor and Service Provider organisations, and now focusses on supporting technology sourcing and procurement projects for UK clients. **He is the Treasurer of the CIPS South of England branch and actively supports CIPS events in the region to promote Technology Procurement with local students.** Make sure to follow Embedded IT on LinkedIn for further commentary on technology supply chain and trends.

For further commentary on technology supply chain and trends connect on LinkedIn.

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Further Reading

If you found this useful, throughout 2020 Phil Clark and CIPS will be working on a series of IT Buying Guides for a range of Technology Projects which can be found here.