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MoDM, MADM and MEM: managing mobile devices in the enterprise

Charles Brett, C3B Consulting Ltd. and Constellation Research Group

Management introduction

More than 400 million tablets and smart-phones will be bought in 2011 — the year in which Morgan Stanley believes that smart device sales will overtake PC sales. This means that additional management capabilities are required by all organizations whose employees wish to bring these to work and use them within the corporate environment.

Such enormous change is throwing up a myriad of challenges. In this analysis Charles Brett looks at how the management of mobile devices may be segmented.

A new segmentation is needed

Arguably, the arrival of so many smart devices justifies a more extensive product management hierarchy than has existed before, in order to reflect the various different additional capabilities needed to satisfy an enterprise's requirements for handling that mobility of devices. These categories can be called:

- 'MoDM'
- 'MADM'
- 'MEM'.

Each has its place. But each is distinctively different.

MoDM

Mobile Device Management — often reduced to MDM (which far too often is confused with that other 'MDM' — Master Data Management) — is most often applied to software which assists enterprises to handle multiple mobile phones (especially RIM's Blackberries, previously the 'darling' of enterprises because security of the device was 'baked in'). This is an established field which emerged from the need to provide organizations with smart-phone configuration and management, including some levels of security. The focus traditionally has been on the physical device.

The more than 40 vendors that exist in this space have been extending their products' capabilities, most notably to include iOS devices (iPhones and iPads), Android devices (tablets and smart-phones) and (for some vendors) other devices like Windows Mobile or QNX (used on RIM's Playbook).

To remove the confusion with 'traditional MDM', this category might now be more happily referred to as MoDM.

MADM

MADM — Mobile Apps and Data Management — goes a distinct stage further than mobile phone configuration and management. With the purchase of all those smart-phones and tablets, ***the new endpoint to secure is less and less the device and more and more about the apps and data that run on each device***. The issues here concern security and compliance but with an added complication. BYOD (Bring Your Own Device) is the term used to describe the reality (Note 1) that ever more people are buying their own smart-phones and/or tablets, rather than their employer buying enterprise-dedicated devices — which has been the past expectation for PCs and even for Blackberries. This different ownership generates a conflict of interest: a BYOD device is the property of the employee who may be happy to use it to support his or her employer's organization's objectives, but not if the organization insists on taking control of the device. Yet organizations must avoid compromising their own priorities, especially of process and security of data and applications.

One extreme approach is to forbid non-enterprise-owned devices from being used for corporate purposes — but this has a minimal chance of succeeding (except in certain circumstance, like secure government use). The previous mid-way solution — to provide a corporate mobile phone to employees with employees being responsible for any personal mobile phone — is less and less practical as mobile devices add capabilities and processing power (who wants to carry 2 phones, 2 tablets and/or 2 PCs?).

Furthermore, the sandbox software model of both iOS and Android combines app and data so that the

client/server approach used with PCs (and early smart-phones) in the past is no longer adequate to maintain separation (previously the data was on the server and only presented on the client whereas now it can be held within the app). MADM refers, therefore, to a category of solution which addresses the management of mobile device apps and data so that personal and organizational apps and data are kept distinct while still observing both the device owner's interests and the requirements of the organization.

MEM

MEM — Mobile Enterprise Management — goes beyond MADM. MEM should provide the total solution (including the functions of MoDM and MADM) within an architected approach that manages everything from:

- deployment and delivery of apps/data to and from devices
- a delineated separation between app developers, whether internal or external, administrators and users
- the capability to handle multiple destination platforms (preferably without needing separate functions to be developed)
- adaptability as platforms change and are added.

MEM must also be able to scale (to tens of thousands or more users) and operate across boundaries (organizational, political, geographical, etc.). It must be able to distinguish between point and policy requirements, for example whether storage can be local temporarily for when someone is offline, and be able to police as well as verify this. All this must occur while recognizing the need to observe relevant regulatory and legislative requirements (SOXX, HIPAA, etc.) and provide the necessary supporting documentation to demonstrate that compliance.

There are, broadly, two approaches to MEM, those coming from:

- MoDM (and to a lesser degree MADM vendors); in general these are shaped by their 'phone-origins'
- an IT systems management background: these vendors are accustomed to providing the detailed facilities that IT has possessed for many years.

There are advantages and disadvantages to each of these.

- those with a phone background may be more 'friendly' in approach but lack the understanding or ability to integrate with existing enterprise IT control systems
- in contrast, the systems management-derived solutions may be integrated with IT but are often overly controlling and rigid (being more accustomed to managing infrastructure and systems than dealing with the types of non-systems problems that mobile devices often generate).

Management conclusion

MoDM today is broadly mature, but becoming limited in capabilities. MADM is becoming a bigger and bigger concern, at least in those organizations that understand the issues. MEM is broader and deeper still. Indeed MEM, to work, requires some form of architected approach so that, for example, compliance is provable. MADM solutions are emerging. MEM ones for mobile devices are being refined.

Enterprises that wish to accommodate BYOD (after all this has attractions as it can reduce capital costs and maintenance) while also keeping employees productive need to take action. They must understand that MADM and MEM are different to and move beyond the mobile phone-oriented experience wherein MoDM originated: this is why the additional categories (of MADM and MEM) are desirable. They draw attention to where enterprises need to focus.

Note1: Consumerization of IT Report (September 2011) from Dimension Research which found that "87% of employees use personal devices for work".

Charles Brett
C3B Consulting Ltd
and
Constellation Research Group
www.c3bconsulting.com
and
www.constellationrg.com

Cloud ecosystems and their impact on the future of enterprise software and IT

Robert B. Cohen, Cohen Communications Group

Management introduction

Most of us think about cloud computing using a framework which divides clouds into private clouds in the enterprise and public clouds accessible via the Internet. Now the outlines of a new or extended type of cloud are becoming visible. Some are calling these 'cloud ecosystems' while others prefer to refer to them as 'social enterprise' since they are increasingly linked to social media for the enterprise (Note 1).

In this analysis Bob Cohen looks at what such cloud ecosystems might become. He uses Salesforce.com's cloud ecosystem as an example which offers more than a platform. He also considers the implications for enterprise software and IT overall.

Cloud ecosystems are based on clouds

Traditionally, private clouds are built by systems integrators or hardware vendors. In most cases, private clouds are highly customized, although a specific integrator or vendor can employ a basic architecture that has many common elements. Public clouds — such as those offered by Amazon, Microsoft and Google — provide a framework structure to access to computing and storage, with the end-user required only to have the expertise needed to use the cloud (unless the business proposition is to outsource email and other simple applications to Microsoft, Google or another provider).

A third model is emerging. It begins with software, such as a customer relationship management (CRM) package like the original offering that Salesforce.com offered as Software-as-a-Service (SaaS) (Note 2). This new type of cloud ecosystem is still based upon cloud platforms — with specific Software-as-a-Service at the core. Its key difference is that this adds external partners in order to create much broader offerings of Software-as-a-Service plus it introduces Service Integrators (SIs) to help move more applications into the cloud. This extends beyond 'just' providing a platform in the cloud: services and interlinked external partners provide applications, support services and other capabilities with a common theme (Note 3).

For example, Salesforce.com links its core CRM software to a wealth of other applications that are closely interconnected to that core. This then expands the reach of the original cloud platform. (Arguably this is, in many ways similar to the Wintel platform strategy, which helped to shape and then define personal computing.) In its latest effort, Salesforce.com has extended its core to create a platform model which builds on and provides a broader and far more flexible set of services. Salesforce.com's Marc Beniof also refers to this as a 'social enterprise'.

Further and farther

Warner Vogel (CTO of Amazon) has used a different terminology to define this linking of software to a wide range of software suppliers and systems integrators. He calls it a 'cloud ecosystem'. Such an ecosystem enables Salesforce.com or Amazon customers to extend their use of the Salesforce.com platform — by enabling the connected purchase of a wider range of available products, from manufacturing ERP (inventory, shop orders, purchase orders, and material planning) to Human Capital Management, Travel Management, Accounting, etc. All this is provided as SaaS.

The key is that all the applications are closely coupled to both Salesforce.com's small business offering and Force.com's (Salesforce.com's business focused group) business software. Such an approach becomes an ecosystem because it opens the way for customers to shift legacy applications into the cloud by having integrators use cheaper and more efficient methods to port existing application functions — that used to be developed and/or run in-house — into the cloud.

In sum, the development of cloud ecosystems, or what Salesforce.com labels the 'social enterprise' (Note 4), opens a new direction for cloud computing. It emphasizes the need to provide small and medium-sized enterprises with the ability to simplify business operations by using software obtainable in and based in the cloud. In addition, because the members of the ecosystem are focused and experienced, it offers rapid implementation — often aiming at two weeks

or less to have previously complex internal applications or systems moved to, up and running in the cloud.

Obtaining advantage

If this seems familiar, it should do be. The Salesforce.com effort to create this cloud ecosystem bears more than a passing resemblance to the ease of use of buying applications though the Google Market or Apple's iTunes Store. By creating a 'stable' of applications providers and integrators, Salesforce.com gives business customers (large and small) a range of choices for assembling the building blocks they choose for the applications (not systems) they need to operate — including application integration.

In the future, one might envision Salesforce.com moving in several directions simultaneously so that it might have early-mover advantages over competitors. For example, the most powerful change that Salesforce.com has created is the ability to purchase an entire group or bundle of SaaS services that a customer needs to run its operations. This was previously one big benefit of purchasing business software from firms like PeopleSoft, Siebel Systems, SAS and Oracle (which now owns both PeopleSoft and Siebel). With many early SaaS offerings, one could one purchase one application (or only a few) from a single SaaS vendor. Salesforce.com's cloud ecosystem means that a customer has access to and can purchase from a broad group of applications offered by individual specialty business software vendors ***and*** have the vendors integrate and manage each one within Salesforce.com's cloud.

While Salesforce.com emphasizes that its partners create 'sell-through' opportunities, it also offers customers a further ability to combine or bundle offerings from different software vendors with Salesforce.com's main offering. In addition, Salesforce.com is integrating social media, such as its Chatter product, within its sales and service cloud and pushing this out to include applications available in its Appexchange (somewhat like a business-oriented iTunes App Store).

In turn this provides Salesforce.com with a new opportunity to exploit economies of scale. In addition, applications are sold jointly, and integrated, with its main products. It can also offer businesses discounts on popular applications while simultaneously extending the reach of its cloud ecosystem partners — making the latter both more successful and more profitable.

Yet more advantages

Second, since the real benefit to Salesforce.com is the delivery of diverse application function from within a cloud, this new cloud ecosystem potentially simplifies the marketing of application bundles to business customers. Since using software in the cloud means that customers only purchase a contract for SaaS services, the process of adopting new software is already simplified.

Might it be possible for Salesforce.com to take another step in simplifying the purchasing SaaS still more? With a large stable of application vendors associated with Salesforce.com, one step to facilitate SaaS marketing would be to create an applications store, like the iTunes store. This would sell commonly used applications for small and medium sized businesses. If Salesforce.com operated such a store like the iTunes App Store, potential customers would be able to purchase a bundle of SaaS services plus the services to integrate these. If firms wished to move legacy applications into the cloud, they would be able to purchase services from experienced systems integrators that are part of the Salesforce.com cloud ecosystem. Indeed, all of these purchases might be made on the on the application store site.

Finally, Salesforce.com and its partners could choose to pre-build several specialized bundles of SaaS applications that have the opportunity to become widely used. In doing so, they would take advantage of the scale economies that would result if a common architecture was adopted to provide the way that customers would buy and access these application combinations in the cloud. This has the potential to create what will be a generalized approach to applications in the cloud. If the number of Salesforce.com clients that used such application bundles of SaaS applications increased dramatically, it would make it possible for Salesforce.com to create a *de-facto* standard architecture for SaaS services in the cloud.

Management conclusion

Salesforce.com has moved far beyond its original narrow focus on CRM delivered via software as a service. It has created what Mr. Cohen, like Amazon, believes is most accurately called a 'cloud ecosystem'. This is a platform of services in the cloud that includes Sales-

force.com's core software offerings plus a team of partner application vendors that sell related applications and services in the cloud that are closely tied to Salesforce.com's own SaaS offerings.

In doing this Salesforce.com is altering the way its customers use software, especially bundles of business applications, and the way that businesses buy IT. By creating a cloud ecosystem, it may also be altering the economics of software by creating the potential to bundle services and making them available through a business-oriented applications store.

Robert B. Cohen
Cohen Communications Group
and
Center for Policy on Emerging Technologies

Note 1: See Mark Benioff, "Welcome to the Social enterprise," Dreamforce 2011 conference, San Francisco, September 6, 2011, http://www.slideshare.net/jcarroll5231/dreamforce-2011-social-enterprise-marc-benioff-keynote

Note 2: "SaaS … is a software delivery model in which software and its associated data are hosted centrally (typically in the (Internet) cloud) and are typically accessed by users using a thin client, normally using a web browser over the Internet. SaaS has become a common delivery model for most business applications, including accounting, collaboration, customer relationship management (CRM), enterprise resource planning (ERP), invoicing, human resource management (HRM), content management (CM) and service desk management." Wikipedia, "Software as a Service," http://en.wikipedia.org/wiki/Software_as_a_service

Note 3: See Annabelle Gawer and Michael A. Cusumano, Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation, Cambridge, MA, Harvard Business Press, 2002.

Note 4: See Mark Benioff, "Welcome to the Social enterprise," Dreamforce 2011 conference, San Francisco, September 6, 2011, http://www.slideshare.net/jcarroll5231/dreamforce-2011-social-enterprise-marc-benioff-keynote

Xooming: experiences with a Motorola Xoom Tablet

Amy Wohl, Wohl Associates

Management introduction

In this brief offering, Amy Wohl looks back on her experiences to date with a Xoom Tablet. This was purchased when the Xoom was first launched.

Tablets are, allegedly, all the rage. But, as Amy Wohl points out, that does not mean they are perfect yet. It all depends on what you want to do.

An announcement day purchase

I purchased my Motorola Xoom on its announcement day — I had been looking at an iPad for a long time (with considerable longing) but I would not buy it because the connection was (then) only through AT&T. I had given up on AT&T as a supplier some few years ago — attributable directly to "negative customer service".

Initially the Xoom looked great. It was great fun taking it out of the box and trying it out. I even bought a keyboard for it so that I could write with it on the road (I am one of those who cannot write anything long, even a blog post, without a keyboard). My enthusiasm burned bright.

Disappointment followed

But disappointment quickly followed. I knew in advance that it would not have as many applications as the iPad (but who needs that many applications anyway?). But I assumed, incorrectly, it would have most of the business applications I was counting on it to have. Wrong.

The real killer for me was that it does not have the Citrix Go-To-My-PC which I have been using for years to connect myself on the road with my desk back in the office. They (Motorola, Google and/or Cisco) keep promising this will be sorted. I have long lost patience about this.

Worse, however, was to follow. In practice the battery life is pretty short — the pretty, brightly lit screen takes its toll. This is not good. I would have liked to use the Xoom in lots of places. But unless I was certain that plugging in was available, carrying it became pointless.

Some upsides

There are upsides. It is a 3G machine. This is wonderful: I can obtain a signal almost everywhere. Also, recently, I received notice from Verizon that the upgrade to 4G is now available. Better still — it is free. (Not so good is that I do have to pack up the Xoom and send it off for a week to obtain the upgrade. What Verizon does not seem to understand is the trouble it is to find a week when I would not care if I had it and then pack it up and then head to a UPS store and then send it off.)

Thus far my experience is that a tablet is great for sitting on the sofa and, while, watching TV, looking up anything on the web that occurs to me — the name of an actor in the film I am watching, a historic fact, the weather report (if I hear thunder) or whatever. I have also enjoyed watching movies and TV shows on it, especially when I am stuck in an airport somewhere. Please note that, aside from browsing the web, these are not the primarily business activities that I had hoped to use.

Contrasts with my Kindle

A major new distraction is the fact that Amazon has announced its new 'tablet', the Kindle Fire. Please understand that I am already a Kindle-junky of long-standing. I do not go anywhere without it (I may forget to charge my cell phone, but I never forget to charge my Kindle).

For me it was an easy decision to buy one (or rather order one — they will not be available until mid-November). Even better, it only costs $199, way less than my Xoom cost me.

I know that the Kindle Fire is not a full-function tablet like the Xoom. For starters, it does not have 3G or even 4G — only a WiFi connection. I can, however, usually 'get around' this constraint by accessing the Web via a WiFi hotspot plugged into my laptop:

but this only works for me if I also take my laptop along.

The key difference is that I will use the Kindle Fire mainly for consuming — Web content and buying anything from Amazon (especially content like movies, music and books) which can be consumed offline on the Fire. Equally I know that without a keyboard, I cannot write anything with it. The Kindle Fire is no full-function tablet (not that it claims to be).

Overall

So far I am disappointed with my tablet experience. I had hoped for a small, lightweight device that let me do pretty much do everything, albeit knowing in advance that there would be limits to storage and so forth. I was consciously trading off function in favor of size.

In retrospect, for me, tablets are great so far for communication and web content consumption. But they are not a replacement for many of the other (particularly business-related) tasks I need to do. I especially need the ability to use a tablet as a small, lightweight laptop — preferably it should be one with an operating system that has a huge ecosystem of relevant (to me) applications.

So I have been asking analyst colleagues what they take on the road. The answer: many of them carry a tablet, most usually an iPad, around to meetings. But almost always they have a laptop in their bag for doing 'real' work.

I guess I must go off to find a lightweight laptop — but one which is significantly nicer than the two netbooks I currently own. In particular any alternative must be better in terms of user experience, battery life and business applications. I am thinking now about a lightweight Lenovo or even a MacBook Air…

Management conclusion

One tablet constraint that Ms. Wohl describes is (arguably) that which affects a 'certain generation' which has come to expect to use a keyboard (just as its predecessors expected a typewriter). But there are school children and students today who are more than happy to touch-type (or 'thumb-type', as on a phone when creating an SMS) on a tablet screen. Tablets may be for different for different generations.

Nevertheless, there is a vitally important related point to this. Even if you are happy with typing onto a virtual keyboard on glass, the typical (like that offered by Office) functionality that is found on most PCs is yet not on tablets in a readily exploitable way. This diminishes the attraction of the Xoom, and many other tablets (including the iPad). Until this is addressed coherently — and 'doing this in the cloud' is not yet good enough — tablets have their weak spots.

Amy Wohl
Wohl Associates
www.wohl.com

Why understanding what IT costs matters

Peter Bye, Bye Associates

Management introduction

Over recent months Peter Bye has been looking at IT costs and at developing a TCO (Total Cost of Ownership) model 'with a difference'. When working on this he has spoken to IT executives and managers and examined a variety of sources of information on IT costs.

In the course of undertaking this work he has made a number of observations, which he discusses in this analysis. He starts with a review of the components of cost (and references sources used) before diving deeper into his analysis.

Initial thoughts

It seems to me to be only common sense that senior IT and other management should know what their IT

systems cost. More particularly, they need to understand the contribution of IT to the cost of delivering products — the 'business items' that their enterprise or organization produces. In this a 'product' could be a physical entity, such as a vehicle, or a person supported in an army. It might also be less tangible, for example a bank account managed or an insurance policy sold. It could even be a public sector service delivered — like processing a benefit claim, for instance. In practice each organization and even sector — whether public or private — will have a view of what constitutes 'their products'.

Having an accurate picture of all IT costs and a breakdown of the total into its constituent components has obvious benefits. These include:

- a detailed understanding for benchmarking against peers and industry averages, as well comparison with examples of best practice (for it is cost/performance that matters): if an organization's IT costs are twice the industry average, that should be a cause for concern (unless, of course, it can show that it is delivering much better and/or more products as a result — because the IT investment has given it a competitive edge)
- enabling management to focus on the biggest cost 'contributions' in order to identify the larger potential savings that might be made (and not, thereby, wasting time on the smaller items)
- providing a rational basis for investment: strategic decisions are impossible without this knowledge: if the data is not available, an organization is working in the dark.

These are, therefore the major justifications for measuring IT cost. Beyond this it is necessary to allocate per product. It is simply not good enough just to lump the overall cost of IT together and then spread it arbitrarily across all products. The spread must be by what each product consumes to be meaningful.

The components of cost and information sources

In my investigations I divided IT costs into three categories:

- system costs, excluding applications
- application costs
- risk costs.

Using annual costs enables a consistent cost per product to be calculated. Once established as a discipline, an organization can keep track of the IT costs incurred on a time-consistent basis. In this, people costs should be full-time equivalents (FTEs) — and include the cost of managers and group supervisors.

Unsurprisingly, there is a much material available about IT system costs. Amongst others, I have discussed the subject with a major consultancy and have used a number of sources on the Web. I have found Rubin Worldwide (Note 1) of particular interest. This site contains valuable comparative information about average and optimal IT costs per product for a number of sectors, both public and private.

System costs

These costs are for the equipment and system software used. They should include operating systems, DBMSs, application servers and so on. They should also reflect the cost of system support personnel.

System costs should include production, service continuity (e.g. for disaster recovery), development and test systems. The relevant annual system cost components are summarized below as:

- hardware: the server hardware costs for the application, allowing for more than one application in a server and more than one server for an application (e.g. that found in a tiered or distributed environment)
- storage: not only for what is online and that for backup/recovery but also for 'record keeping'
- system software costs, including licence fees and the cost of upgrades
- maintenance: this should include all maintenance charges applicable
- environmental operations — the costs of power used to drive the server(s), the cost for cooling over and above the power required to drive the physical systems and other related facility costs (such as that for floor space, communications, specialized facilities, etc.)
- system support personnel: these should reflect the people costs for system support, problem solving, new release installation, help-desks, tuning, training (and should include all of operators, shift leaders and management attributable to these activities)

- business resumption: the cost of those additional resource dedicated to enabling business resumption following a significant failure
- any other costs, for example those related to specific systems management products or other capabilities.

Application costs

Application costs include development, maintenance and testing groups. If these handle more than one application, the costs should be divided across applications. The application cost components will include:

- all software licence fees, plus upgrades and new releases
- developer staff costs, including all development and maintenance people
- application testing, and reflect all costs dedicated to application test resourcing

Risk-related costs

In some cases, when considering risk costs, the cost implications are readily understood — for example the cost of downtime for an online financial exchange or flight departure delays due to a failed check-in system. In other instances, risk costs may be hard to quantify, especially for non-commercial operations.

Some of the risk factors that can be calculated are shown below:

- planned or scheduled unavailability — the cost of any planned unavailability (for example, to install new releases or reorganize databases)
- unplanned unavailability costs, based on specific figures obtained or expected.
- security violations: these are difficult to precalculate but something must be included to reflect the threat.

Observations

It proves easy in some cases to obtain accurate cost figures for some components. This should not be a surprise as it should not be hard to put a figure on particular items. The cost of some risks or unplanned availability or that of mainframe computing (see below) are examples. In other cases, the costs are simply not known — or not known accurately. A better understanding is often expected yet does not materialize.

One positive side-effect of developing a TCO model is that it raises questions about costs and forces the relevant people to go and find the information. Somebody, somewhere usually knows the answers, or at least a decent enough approximation that can be refined later if needed. If, on the other hand, it turns out that nobody knows, an organization in this position should immediately be concerned and act swiftly to work out the unknown costs as quickly as possible. Not knowing is a broad indicator that something is probably awry.

A related point is that the level of knowledge about the costs of different parts of the IT environment varies. Typically, the understanding of the costs of mainframe systems is better quantified than for what most call 'open or distributed' systems. This may be because it is easier to draw a box around the cost components of mainframes. The hardware, software and maintenance costs are well-known as there is usually a single source for all hardware and software — and there are not many mainframes when compared with distributed server populations. In addition, mainframe computing has typically been in place for some time and has well-developed operations and support structures with clearly understood costs (and years of people asking cost questions).

In contrast, the situation with 'open or distributed' systems is frequently far harder to pin down. There may be multiple sources for software and hardware, making information gathering that much more complex. In particular operational costs are harder to establish as many of the costs may be hidden (for example, individuals who are paid for a quite different job may have ancillary responsibilities for 'looking after' systems and these costs may not immediately be apparent).

The result is often an unbalanced view of costs of different parts of the environment, a phenomenon consistently reported in studies over the years. New purchase decisions are often made without real understanding or based on a belief that one type of technology is more expensive than another. Because mainframe costs are almost always better known, this is known to translate to a desire to move off mainframes to some other technology perceived to be cheaper.

Aside from the fact that the costs of making the move are often ignored and/or optimistic assumptions are made about such a move, the 'steady-state' costs of the mainframe compared to any new platform may not be what is expected, as shown by of Rubin's research. He obtained the average IT costs per product produced for a number of industries in both public and private sectors, represented by 133 organizations. The IT environment was divided into servers and MIPS (which represent mainframes). He then looked at costs where there was a bias towards mainframes or a bias towards servers and found that in almost all cases the mainframe was cheaper than the average (Note 1).

New TCO model

As a result of investigating all this I decided to build a new TCO model. This is now being tested with three separate organizations. Although three is, thus far, a small sample, the breakdown into component costs has been in line with expectations:

- hardware is a small proportion of the total costs, typically 4-5%
- direct software costs consume a rather higher proportion, of the order of 25-30%
- people costs continue to be the single largest part of the total, and most of the balance.

Power consumption, while another interesting area, is somewhat of a side aspect or even a 'modern distraction'. While the cost of power is significant in relation to hardware costs, it is usually not a major factor in the TCO of IT or of the organization's total costs. This finding does not mean that there are not good reasons for reducing power consumption: the price of electricity will rise significantly in coming years and supply may be difficult in some areas, and there are wider environmental issues at stake. Nevertheless, while reducing power consumption does reduce costs, it is rarely a significant proportion of the enterprise total. Too much time today is focused on what is a comparatively minor area for obtaining savings.

Finally, risk was — as expected — the most difficult item to cost. Although in some cases it may be well-known, in others it is hard to define a financial value (how for instance, does one put a value on a life lost because of a system failure in an emergency service?).

Costing risk stands out, both as an unknown and as a potential business killer. Think of unexpected events — tsunamis/earthquakes at the worst (Japan or Christchurch), hacking (Sony) or even just service unavailability (most recently Amazon, BT and Microsoft) and the challenge is apparent.

Management conclusion

Mr Bye confirms what he expected — that the understanding of IT costs by most organizations is not as good as it ought to be. He had many of the same difficulties in obtaining cost information as that reported in some of the sources he used. This directly suggests that the benefits listed (at the start — focused cost reduction, benchmarking and rational investment decisions) may not be realizable, or realized in full or (if they are realized) it may be more by accident than by design.

The breakdown of costs into components suggests where attention should be focused: people. As is well known (but IT seems all too able willing to 'avoid'), more automation would significantly reduce IT costs — especially people costs.

Peter Bye
Consultant, Bye Associates

Note 1: For the paper discussing results, see: http://www.rubinworldwide.com/files/Mainframe_Economics.pdf

INSIGHT-SPECTRA

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C3B Consulting Ltd.
19 St. Michael's Road
Winchester SO23 9JE
UK

Telephone:
+44 787 233 4000
+34 686 116 993

Email:
insight-spectra@
insight-spectra.com
or
charles.brett
@c3bconsulting.com

World Wide Web:
www.insight-spectra.com