Cloud Adoption Playbook – How Cloud Services can Best be Deployed for Business Gain

A leadership perspectives white paper
Recommended next steps for business and industry executives

Issue 12 in a series
Executive Summary

Organisations in the UAE are fast moving past the early-adopter stage with cloud, attracted by the operational and cost benefits it has over traditional IT systems. The speed of deployment of cloud is particularly appreciated by business, as is the way it helps reduce IT capex obligations. Instead of having wholesale reliance on in-house and on-premise IT systems and resources, cloud-based applications and services, storage and processing can be provisioned remotely across a secured fixed or mobile du connection.

Ease of access is a key aspect of cloud computing, which means that access over standard business networking options is an important part of the cloud computing proposition. Public internet access is the most common option for cloud computing today. Where security is required, this will be combined with IPsec or SSL. However, many customers will prefer accessing cloud computing services over a private IP or layer-2 network, so that other options such as MPLS-based VPN or VPLS access will increasingly become important, especially to support quality of service, security, and high availability requirements. This places telco cloud computing providers like du as an obvious choice of service partner.

The quality and robustness of du’s managed MPLS network, and the high-speed and excellent bandwidth capability of broadband services in the UAE ensure that cloud is now a practicable solution for organisations of all sizes, from multi-national corporation to fast growing start-up.

The appeal of cloud-based business services

Cloud services appear to be most commonly adopted by small to medium-sized enterprises (SMEs) or individual business units within larger organisations. Another typical adopter would be a newly formed, rapidly growing entity with constrained resources seeking cost-effective new IT solutions. Typical SaaS applications include:

- messaging and collaboration
- CRM
- office productivity
- accounting/ERP

Typical uses for cloud platform and infrastructure services include:

- application development and testing
- public website hosting and content delivery
- online application hosting
- disaster recovery and remote storage
- periodic, computer-intensive applications.

As Table 1 demonstrates, there are so many cloud app types to choose from that it can be difficult to decide on where to get started with cloud. So we will consider ten options for cloud services which will provide organisations with an easy on-ramp to cloud and quantifiable business gains.
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Source: Ovum
1. In the Data Centre with IaaS-PaaS-SaaS

The ‘cloud’ in cloud computing refers to the Internet. In this public space, cloud computing started as software-as-a-service or SaaS, with Salesforce.com as the flag-bearer of this new software delivery model. It then moved to infrastructure-as-a-service (IaaS), with Amazon as the key pioneer of remote storage services, and then came along platform-as-a-service (known as PaaS), with Google and Salesforce.com leading the way with a faster, more cost-effective model for application development and delivery.

SaaS combines application-functionality delivery via a web browser with data encryption, transmission, access, and storage services. It can be consumer-centric (e.g. Flickr photo storage, management and sharing offering), enterprise-centric (e.g. Salesforce.com’s and Microsoft’s CRM offering), or both (e.g. Google’s Gmail email offering). There are now SaaS alternatives to many, if not most, enterprise software products.

SaaS offerings vary not just in terms of the type of application functionality delivered but also the breadth and depth of configurability and customisation allowed as well as the back-end infrastructure that underpins this functionality. For example, some have a multi-tenant design, while others use virtualisation to achieve a one-to-many deliver model.

IaaS provides pay-as-you-go data centre capacity, and combines compute or storage or both with network resources based on standardised hardware (servers, switches, routers, etc.) and software components (hypervisor, operating system, management, etc.) and associated services (Internet addressing, directory and security services, etc.). There is a wide variety of IaaS offerings, and among other things, these offerings vary in the following ways:

- **Scope**: some are limited to one area (e.g. storage with Nivanix) while others offer a broad range of services (e.g. Amazon Web services include compute, storage, database, and message-queuing services, among others).

- **Focus**: some are generic (e.g. Amazon Elastic Compute Cloud or EC2, which is the de facto standard IaaS provider), others are specific (e.g. IBM’s offering focuses on workloads such as application development and testing).

- **Configuration**: some enable users to do some configuration (e.g. central processing unit and memory configuration for servers). Others do not offer configurable options.

- **Technology**: some limit themselves to support for Linux and Windows. Others support a wider range of operating systems such as Solaris. Some support custom virtual machine images. Others don’t.
PaaS provides all of the infrastructure that is needed to develop and run applications over the internet by adding a new layer of software services on top of those usually found in IaaS to make it easier to develop and/or run (web) applications. While only some PaaS offerings feature development tools, they all offer run-time services usually found in application servers (e.g. transaction management, process enablement, scalability, user authentication, cache, etc.). For example, the PaaS run-time automatically takes responsibility for scaling cloud applications up and down, depending on usage levels. Developers do not have to hard-code this elasticity into their applications as they would in an IaaS environment.

2. Ensuring Information Security in the Cloud

Many companies have already extended the perimeter of their information security defences to cater to the security needs of mobile devices and customers, as well as to communicate within their supply chain partners. For them, public clouds allow security to be delivered more effectively across the extended organisation – in and beyond the usual office boundaries. The cloud does not extend internal security defences so much as deconstruct them, moving them towards a much more decentralised security model, which can make the fullest use of latest security technologies.

Cloud-base security services include vulnerability management, unified threat management and virus and spam scanning treatments that are applied much more rigorously than could be achieved by in-house IT teams. This fact is driving high levels of interest in managed security services that patrol the cloud and deliver information security using the cloud.

Enterprise IT security staffs continue to be hampered by not knowing when and from where business information systems could be attacked. This is because the threat landscape is constantly shifting, with different types of attack and new potential vulnerabilities appearing on a daily basis. The costs involved in guarding against such attacks with self-administered information security and on-premise staff using bought in data security tools and systems are considerable and getting bigger. Adoption of a managed security solution not only offers businesses a more comprehensive and proactive defence strategy against cyber threats, but can be more cost-effective than DIY procedures. It is a solution that promises to reduce both risk and expenditure.
The main differentiator of a cloud security service provider like du is the level of specialist expertise on hand, and the ability to deliver this expertise 24×7 to customers. A security service provider is constantly vigilant and well informed about the threat landscape, detecting and tracking each new threat as it develops. The sheer volume of potential malware dangers can become overpowering, if these threats are not dealt with diligently. Intelligence gathered by du shows that a staggering third of a trillion potential security incidents are typically detected across the globe in a year. Of these threats, spam is a major segment and around 6% of the world’s spam now stems from the Middle East region. Spam is only part of the problem. Dozens of sophisticated and well-targeted cyber attacks involving major corporations have been reported in the news in the past 18 months. Unless precautions are taken, then it’s a matter of when and not if a business will be targeted by cyber criminals.

Cloud-based email spam filtering and anti-virus solutions are perhaps the most well-developed cloud-based application type. They are easy to use, simple to switch on and highly cost-effective in operation. Cloud-based security gateways will automatically sieve out hundreds of thousands of spam messages that are normally found among incoming business email – before they hit any mailbox. It offers several hard and soft business benefits:

• A comprehensive security service founded on up to the minute threat intelligence.
• A proactive service bought at a fixed cost with a measurable return on prevention.
• Protection of the organisation’s fixed networked and wireless assets is taken care of by specialist staffs working 24 x 7 from a dedicated operations centre equipped with the latest software tools.
• Security software updates occur reliably and are distributed automatically by the service provider, which means the enterprise always has defences in place to deal with the latest threat type.
• The arrangement allows the organisation to retain complete control of Internet usage policies.
• The arrangement means that the in-house, on-premise IT security team is freed up and can reallocate time and resources to other business-critical processes.

Experts agree that the use of cloud-based security services not only improves network security, but helps lower the cost of security as well. These cloud services are great for organisations that want the facilities of a secure, fully integrated email management and archiving system, without incurring the administrative overhead of a locally maintained solution. They allow ancillary management tasks to be offloaded, but control of processing rules and policies remains with the customer.
3. Using the Cloud for Disaster Recover / Business Continuity

Business continuity has not been a large part of the public cloud story so far, because of difficulties connecting existing applications to storage clouds securely and with adequate performance. However, a range of gateway devices installed on customers’ premises now address those problems, and as a result promise to provide elastic cloud storage to customers of all sizes.

So just as cloud offers the opportunity to scale capacity up or down in response to potential peaks in demand for computing capacity, so it can be used to provide temporary capacity for an outage at a branch office or subsidiary or to ensure continued systems’ availability during planned down time for system maintenance or upgrades.

Currently the cloud is mostly being used to provide low-cost, offsite storage of backups for disaster recovery (DR). This promises major advantages over other methods of DR in terms of cost, ease of implementation, and speed and flexibility of recovery. As trust in the clouds improves, du is confident that more customers will use cloud storage for primary or working copies of data, rather than just backups. And as business data volumes continue to soar, the appeal of offloading primary storage to the cloud will increase.

Cloud storage does not suit all types of data, of course. Although gateways reduce the effect of network latencies, public clouds cannot be used to store performance-sensitive data – not unless entire applications are hosted in the cloud, so that servers and the data they process are running in the same location. However, the majority of business data is not performance-sensitive. For this type of data, public clouds represent a new lower layer of storage, sometimes called tier-n storage. Other than the gateway itself, this new storage tier consumes no data centre power or physical space, does not require customers to predict data growth rates, and does not need backing up by customers. Because backup is one of the biggest headaches for IT shops, that last quality will be one of the most attractive.
Archive data is also well suited to public cloud storage, mostly because it is not sensitive to performance. However, storing it in the cloud will allow faster retrieval than from tape. For data that does not fully qualify as archival because it is still subject to periodic access, the most important criteria is its locality of reference. That term refers to the likelihood that when one particular data object has been accessed, an adjacent object will also be accessed. Strong locality of reference allows caching algorithms to anticipate which data will be called upon, by pre-fetching it from the cloud into the gateway. File shares created by project-based workgroups, for example in engineering, accountancy, or law firms have this quality. File shares can be stored directly on cloud gateways, or stored on tier-one storage devices while projects are active, and later moved to a gateway. Over time, the gateway will automatically move the least frequently accessed files to the cloud. When a project is revisited by end users, the first download of a file from the cloud will be slow. But that file will then be in cache, and because of the locality of reference, so will others that are likely to be accessed. Email and data handled by content management systems such as SharePoint also exhibit strong temporal or time-based locality of reference.


The potential of M2M apps ranges across the full B2B to B2C spectrum

- Manufacturing (B2B) - Supply chain monitoring
- Logistics - Fleet and asset management
- Automotive - Vehicle telematics
- Insurance - Health asset management
- Healthcare (B2C) - Personal health monitoring, personal safety, drug compliance
- Home and consumer electronics (B2B to B2C) - Smart homes: appliance monitoring and diagnostics, home security
- Utilities - Smart grid
- Government - Public surveillance, road pricing
- Retail - Point-of-sale
- B2C - Delivery tracking, Where’s my parcel?
- Automotive - Smart cars: vehicle telemetry, entertainment, emergency services support, fuel efficiency monitoring
- Insurance - PAYD insurance, health insurance
- Healthcare (B2B to B2C) - Personal health monitoring, personal safety, drug compliance
- Home and consumer electronics - Smart homes: appliance monitoring and diagnostics, home security
- Utilities - Smart metering
- Government - Public surveillance, road pricing
- Retail - Point-of-sale
- B2C - Delivery tracking, Where’s my parcel?

The cloud connectivity underlying M2M is a consistent feature in every aspect of a market that extends right across the spectrum from specialised business applications to generic consumer apps.

M2M enables automated communication between remote machines, and centralised management of applications. It provides real-time monitoring and control without the need for human intervention. M2M solutions are the fastest-growing offering in the telecom space, delivering innovations at a staggering pace and catalysing the growth of the industrial internet.
The consumer market is beginning to take off as e-readers, digital picture frames, vehicle telematics and entertainment systems, and home appliances become increasingly connected to a fixed/wireless network or are shipped with embedded SIMs for diagnostics and remote servicing.

The B2B market will continue to show steady growth. It will also continue to be highly customised. The market will be vertically oriented around certain industry sectors where there is a clear business need for M2M, including transport and logistics, healthcare, utilities and manufacturing. Some of these opportunities, such as smart grid in utilities, are substantial and distinctly national in nature. Others may be slower to emerge, but look more promising in terms of future development. As Figure 1 shows, there are opportunities for B2C as well as B2B applications in many verticals. du believe major growth markets will be in automotive, healthcare, smart homes (including security and consumer energy services) and consumer electronics.

A key focus for du in the M2M scenario will be in service enablement on behalf of business customers, who then act as service provider to many more consumer end users. Included in this new and innovative solution set are applications that include connected fleet management, smart job management, smart transportation and smart waste management. A great example of the benefits of M2M is in logistics.

The efficient management of company vehicles and lorry fleets is fundamental to the growth of the economy in the region, with road transport being a major element in everything from construction to the timely delivery of food to supermarkets. M2M-based vehicle tracking and management solutions exploit the full potential of cloud-based mapping apps and the mobile location services powered by du’s wireless network to display on-screen the position of an individual vehicle, or the status of an entire fleet. In real time, logistics managers can monitor the location, speed and status of any vehicle in an M2M-enabled fleet – each vehicle being fitted with a special du SIM. Managers can set rules on speed and routes, allowing operations staff to see when speed limits are broken or vehicles stray outside pre-determined areas, triggering alerts by email or SMS message. More importantly perhaps, the accurate and up-to-the-moment information that is provided by the system enables businesses to better coordinate the movement of company vehicles between sites, optimising resources and providing customers with more precise scheduling information.
5. SaaS-based ERP-CRM Business Gains

Software-as-a-service (SaaS) is an attractive alternative to on-premise computing, and many suppliers now use the SaaS model to deliver applications such as sales-force automation, customer relationship management (CRM) and human resource management. A smaller, but growing, number of providers also use SaaS for more complex applications, such as enterprise resource planning (ERP) and supply chain management.

Salesforce.com is the poster child for SaaS, and began life renting CRM applications (it now also hosts other suppliers’ applications at its data centres). This has given SaaS a very strong connection with CRM, and certainly CRM suits SaaS well. CRM is non-critical and non mission-critical, in the sense that businesses can withstand CRM outages. It is also horizontal – the same application suits a large number of potential customers in multiple industries. But SaaS is far from limited to CRM, as evidenced by the take-up of the model for other applications such as HR, or Google’s office productivity applications. The applications that best suit SaaS are:

- Non-critical, limiting the risk taken by customers when they hand the operation of applications to the care of a third-party SaaS provider. As confidence in SaaS improves, this is becoming less of a factor, as demonstrated by the rental of even core ERP applications by many customers.
- Not highly sensitive to the latencies of wide-area connections. Unless there is a technical breakthrough that sidesteps the laws of physics, SaaS is not going to suit high-speed trading systems that feature two-phase commits, or graphics-rich applications.
- Horizontal, allowing the same application code to be used by customers in multiple industries. Currently this is important to ensure a large potential market for providers, allowing them to realise the economies of scale of SaaS. This may change as more niche SaaS providers rent their raw computing resources from the likes of Amazon, and so indirectly gain economies of scale.

Cloud ERP specialist and du partner Ramco has identified ten benefits of cloud-based ERP:

1. Zero investments on server hardware, system software, building, IT staff, etc.
2. Ability to access the solution through multiple devices like iPad, PDAs and mobile phones.
3. Predictable IT costs and lower Total Cost of Ownership (TCO).
4. Integrated view of the entire supply chain along with powerful end-to-end analytics.
5. 360-degree visibility of all process with online, real-time updates.
6. Seamless integration across all the different departments.
7. Traceability of items, promotions / discounts, stock transfers, returns and claim management.
8. Improved cash flow and reduction in overheads.
9. Improved Service Management and Service – Level Agreements (SLA), resulting in increased productivity and happier customers.

We have seen cloud-based applications develop an established foothold across several vertical industries, and the adoption trends are becoming clear:

- **Manufacturing**: The manufacturing industry is keenly interested in vertical-specific ERP solutions that offer requisite functionality, and lately there have been some positive moves in this direction. For example, Ramco Systems has launched SaaS-based ERP solutions for the aviation manufacturing industry. Various manufacturing sub-industries are more or less comfortable with less-specific and customisable SaaS applications in the areas of CRM and HRM. In the current operating environment, manufacturers realise the need for access to the CADCAM systems that provide them with the means to test their digital models in a virtual manner so they can produce more cutting-edge products, and SaaS applications are expected to help in this regard.

- **Healthcare**: SaaS has seen some adoption in the provisions of EMR (electronic medical record), HIS (healthcare information system), PACS (picture archiving and communication systems), and other healthcare applications. SaaS-based registration, billing, scheduling, and reimbursement solutions are also expected to see good adoption. Rural areas, where even basic healthcare facilities are missing, also offer the opportunity for scalable and cost-effective provisions of healthcare solutions that need minimal setup time – remote diagnostics and other healthcare applications fit the bill in this regard.

- **Retail**: Large retail players have adopted SaaS suites in areas such as inventory management, accounting, and payroll. With the surge of online retailers and the ever-increasing e-commerce user base, large retailers have been forced to think about building their online presence. In the near term, we can expect online retailers to adopt SaaS-based SCM solutions to increase efficiency of their supply chain processes; they are also inclined to use SaaS CRM applications for providing better customer support services and for ensuring more efficient customer relationship management.

- **Education**: the market is at a turning point, and the lists in Table 2 show a growing number of options available to institutions (this is representative of the landscape and not an exhaustive list). In particular, the higher education market has expressed interest in using CRM to manage student relationships more strategically throughout the entire student lifecycle. Cloud app functionality and features are continuously upgraded and SaaS can be used to deliver a technology solution that must be updated frequently with new features as the institutional landscape changes.

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7. Business Meetings Made up in the Cloud

Hotel chains, business centres, and retail banks are among those installing telepresence rooms, joining a good many multi-national companies who have rolled out hi-definition video-conferencing systems that deliver life-like virtual meetings. These systems create the illusion that meeting participants are in the same room, when in fact they may be in different cities or continents. Telepresence solutions like du’s OmniPresence deliver high-impact, realistic meetings, using HD video and audio, and large display devices. The service is offered on a pay-as-you-go opex model for enterprises to save on capex upfront investment, and promises a clear ROI and productivity gain.

One of the most important factors in video-conferencing systems purchasing is the prospect of savings on travel, but once installed many companies report that improved staff productivity is the biggest gain. Speed of decision making and business velocity has in du’s opinion been at least as important an incentive to corporate adoption. In fact, proponents of the technology say that it has transformed business, because it has changed the way business people think about what network-based communications can do for them and their companies.

In all its forms, video conferencing can help an organisation inject higher impact into meetings and conference calls, especially when compared to an audio-only meeting. Higher impact during meetings translates into shorter, more effective meetings with minimal workflow disruption. Studies have shown that video conferencing meetings tend to be shorter than in-person meetings, leading to less wasted time. Large companies have subject matter experts and qualified resources located around the world. Video conferencing allows them to more easily deploy and manage those globally dispersed resources by allowing impromptu, face-to-face meetings between managers, subordinates, and remote peers.

OmniPresence customers can also take advantage of simplified scheduling, and round the clock assistance. In terms of reach, the service offers global connect, recording or streaming on a pay-as-you-use basis. Currently, most businesses can only video conference with sites belonging to their own company, and only after those sites are set up by technical staff. In only a few cases can businesses call their customers, suppliers, or business partners. These problems are being address, however, with managed cloud-based solutions. du video exchange is a managed visual communication service that enables users to call one another regardless of their video equipment, network or technology. With assisted open access to du’s hosted video infrastructure and services, video conferencing or telepresence between companies is dramatically simplified.
8. Collaboration and Cloud-based Unified Comms

Popular tools such as Microsoft Exchange, SharePoint and LiveMeeting are proven tools for team collaboration, document storage, workflow and business process management. But one of the biggest challenges for organisations of all size is the cost and complexity of implementation, installation, start-up and on-going management of the software and hardware infrastructure. By using versions of the software that are hosted in the cloud, organisations can considerably ease or eliminate many of these hurdles.

Telcos are unique in their ability to offer communications and collaboration applications from the cloud. The SaaS model lends itself particularly well to Unified Communications, where a suite of integrated office communications and collaboration applications can be provided from a cloud service.

The terms CaaS (communications as a service), UCaaS (Unified Communications as a service), and other variants are increasingly being used to describe suites of cloud-based UC and business collaboration applications, which can include (but are not limited to) the following components:

- audio and web conferencing
- desktop videoconferencing
- email
- instant messaging
- enterprise IP telephony (e.g. IP PBX features) and IP contact centre
- mobility features, e.g. fixed–mobile integration features
- document-sharing and workspaces
- enterprise-grade social networking.
Applications are supported by common directories and presence features, and can be accessed from a variety of fixed and mobile devices. The benefits of UC are wide and varied, and allow employees to:

- Get real-time presence information – including photos, availability status, and location – and enhanced instant messaging (IM) to connect efficiently and effectively.
- Make voice calls through a PC to colleagues or people in other organisations that use the same UC system.
- Create, moderate, and join pre-planned and on-the-fly audio, video, and web meetings with people inside and outside the company walls.
- Enhance online presentations with screen-sharing and virtual whiteboards.

Many standalone CaaS applications have been available for a number of years, such as WebEx for audio and web conferencing. Suites of communications and collaboration applications have also emerged; one example is Microsoft’s Business Productivity Online Suite (BPOS), and its successor Office 365, which incorporate several applications including email, web conferencing, instant messaging, and document collaboration.

Voice features in CaaS offerings have so far been mainly limited to audio conferencing, but we will increasingly see further voice features added, including enterprise-grade IP telephony (i.e. IP PBX features). We can also expect to see a proliferation of enterprise-grade CaaS applications suites launched in the next few years that combine the features of enterprise IP telephony with other enterprise collaboration applications. These will come from many different players including CSPs, software vendors, communications technology vendors (e.g. Cisco Systems), and newer IT market challengers such as Google.

9. Cloud-Powered Office Productivity

Cloud computing is transforming office automation across every sector, and at the forefront of this movement are companies such as Google, which are reinventing the way employees access and share information, and the way work gets done.

Cloud-based office productivity apps are delivered as an integrated set of web-based tools which enable employees to communicate and collaborate using a range of devices, from PCs to smartphones or tablets. No new server hardware or software support is required, and there is very good support for all major web browsers and mobile devices.

Typically, the primary components of these offerings are email, calendaring, video, document management, spreadsheets, and presentations. As a hosted cloud-based service they are intended to offer cost-effective functionality with straightforward per-user per-year licensing. Email security, archiving, and compliance capabilities are also available from some suppliers, as is extensive advice and support on migration from existing on-premise systems such as Microsoft Exchange or Lotus Notes.

Small to medium-sized organisations which need to expand along with business demands will find the cloud-based tools approach accessible and potentially more affordable than the deployment of in-house solutions.
Mobile information workers need access to many of the same applications that office-based employees use, only perhaps in a different form factor and context. This is where cloud-based office productivity apps offer businesses a major benefit, as the very same apps can be accessed outside the office as can be from a desktop machine.

The importance of office automation tools in the running of daily business operations is something that is easy to overlook. But office automation tools, email and messaging capabilities are so critical, they have in some respects become like a utility: like electricity, for example. These tools are so widely deployed that they have become almost invisible, except when they do not work or are unavailable between companies. So the goal is to ensure these service remains available as close to 100% of the time as possible while simultaneously being provided as inexpensively as possible. And cloud-based office apps is the best way of achieving this. As a hosted cloud service, a remote service provider manages all back-end services for a flat monthly per user fee. Research shows that up-time of the service provider infrastructure is very high and the cost of managing the apps can be reduced significantly – typically by more than 50% compared to on-premises management. Also in the context of mobility, for organisations that currently deploy BlackBerry devices, a cloud solution can provide further cost savings since it eliminates the need to manage a BlackBerry Enterprise Server infrastructure on-premise.

10. Mobility Management Made Easy

Over a decade ago, mobile telephones entered the enterprise through the back door: employees who could afford mobiles occasionally used them for business; specific business units budgeted for employee devices and then procured them locally; policies surrounding the usage of mobile phones for work were – where they existed at all – haphazard; there was little means of policy enforcement; and in no case were these mobile phones integrated into a business’s fixed telephony strategy, let alone its IT strategy. Fast forward to the present, and the picture painted above still applies to a majority of businesses, large and small. In short, most companies do not manage their mobile estate as if it were an asset and, therefore, miss out not only on opportunities to save costs, but also on the benefits which a strategic approach to mobile management can bring about.
This is surprising, because:

- Mobile expenditure continues to rise in a corporate environment.
- Service providers like du are beginning to offer more comprehensive, managed mobility services, giving organisations a real choice in how they approach managed mobility and procure the services they deem most important.
- The perception of the handset as a device has changed: mobile devices are now mini-computers, capable of providing remote employees with access to critical enterprise applications, not just messaging.

It is not surprising then that use of mobile device management (MDM) software has seen phenomenal growth over the last 24 months. du’s mobile device management offer is powered by MobileIron. Its solutions are built to address specific needs in many diverse industries including financial services, healthcare, high technology, retail, and manufacturing.

In all cases the system is used to control and monitor corporate data while keeping everyone working smoothly and securely, by exchanging data with third party systems such as helpdesk, business intelligence and security information management systems. MDM is available as both a cloud and on-premise solution, and brings multi-OS mobile operations under the control of the service desk.

Most vendors provide a choice between on-premise delivery and SaaS delivery, and an increasing number of customers prefer the more flexible, rapidly deployed cloud solution. For example, around 98% of new MobileIron deployments are SaaS-based. Some other vendors, notably Fiberlink with its MaaS360 product, offer entirely cloud-based services.

**Making the Next Steps to the Cloud**

As proof of the increased popularity of cloud, in a survey of 60 CIOs carried out for du around one-third of UAE organisations said they had already looked into and/or had adopted some form of cloud service. Another third of the survey respondents plan to explore the suitability of cloud this coming year.

A good place to start gaining some hands-on experience of cloud computing is in relatively well-bounded applications, or computing workloads that require urgent solutions with minimal investment. Cloud computing naturally supports collaboration across business units or organisations, but users must be prepared to accept a standardised (though configurable) solution. Areas to avoid, at least in the first instance, are those which are complex in terms of application functionality and integration requirements, and applications with sensitive data requiring high security.

There is no better time to start with cloud than now, and this review of its potential will help shape some easy to make first steps.