IT Best Practices Audit™

Cloud Computing Readiness™ - Background

Cloud based offerings are maturing and finally taking off after a long period (e.g. Software as a Service offerings have been available for at least 10 years). The range of viable options increases monthly with terminology such as Infrastructure/Platform as a Service ("IaaS" and "PaaS"), and Private Cloud becoming recognized.

CEOs are starting to ask their CIOs about "The Cloud" which has become "the next big thing".

However many organizations do not appreciate the diverse range of impacts that adopting cloud solutions can have on the enterprise, both positive and negative. In particular there are many types of risks that have to be understood, assessed, managed and mitigated by both IT and the Business if the organization is to gain the greatest value from such technologies and practices.

Cloud advantages include:

- Subscription models enabling flexible pay-per-use pricing
- No or minimal upfront capital expenditure
- Minimal implementation time and cost
- "Frees up" IT resources for other activities
- Upgrade or downgrade services, scope, or volumes as required with no exit fees
- Flexible access, software designed to optimize internet technologies, and ease of use
- Continuous patch/fix/upgrade with single instances of live code that are always up to date

However for every advantage there is a disadvantage AND there are issues and concerns about:

- Reliability, availability and security aspects have prompted great debate within organizations
- End Users often feel that they can evaluate Cloud Solutions without the involvement of Corporate IT
- Standard (non-negotiable) contracts are the norm
- Enterprise wide aspects such as architecture, control, stranded costs, data security, data integration and ownership, complex legal issues (e.g. jurisdiction, liability), etc., are often neglected until too late

So, Cloud Solutions and their adoption by organizations is new, rapidly evolving, lacking technical and commercial standards, uses non-negotiable contracts, has minimal case law in key areas and it's complex. Hmmm........

"We need a disciplined, quantified approach to cloud decision making"

The TCS IT Best Practices Cloud Computing Readiness Audit[TM] enables:

- Organizations considering Cloud Solutions to understand 'what they don't know' and what elements are needed for successful implementation, integration, management, controlling of costs, and managing risks.
- Organizations that have partially adopted such solutions to evaluate their current practices, identify needs, and risks.

The following pages contain sample Cloud Computing Readiness reports and Audit content.

TCS offers a wide range of IT Best Practices Audit content covering 15 subjects and over 2200 topics, including:

1. IT Cost Containment — 84 topics
2. Cloud Computing Readiness — 225 topics
3. Networks — 185 topics
4. Desktops and Printers — 208 topics
5. Storage — 130 topics
6. Microsoft Servers — 191 topics
7. iSeries Servers — 116 topics
8. Web Servers — 119 topics
9. Unix and Linux Servers — 134 topics
10. Database — 115 topics
11. Software Licensing — 24 topics
12. Telephony — 82 topics
13. Data Center — 253 topics
14. IT Leadership and Governance — 185 topics
15. Compliance and Security — 296 topics

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Cloud Computing Readiness™ - Sample Report

IT Best Practices Audit

Northwest Medical Center

Audit Date: 5/11/2011   Environment Audited: All Systems

Subject Name: Cloud Readiness   **Category Name:** Cloud Cost Model Components

Audit Topic:	Financial Model of Current IT Costs

Importance & Discussion: Calculations of the direct and indirect costs of the existing application(s) - infrastructure, staff, software, assets, support contracts, etc.

Common Symptoms of Issues: Limited understanding of current spending; poor ability to compute unit costs; poor ability to compute ROI, etc.

Key		Peer Averages		Client Scores		Client vs. Peer Averages	
0 - 29 Good		Subject Score:	53	Subject Score:	37	Subjects:	Better
30-49 Needs Improvement		Category Score:	45	Category Score:	36	Category:	Better
51 - 100 Significant Impact		Topic Score:	45	Topic Score:	84	Topic:	Worse

Current Practice: No model of current IT costs.

Next Incremental Improvement: Very high level model of OPEX and CAPEX costs by major application.

Best Practice: Comprehensive, accurate model and allocation of direct and indirect IT OPEX and CAPEX costs - use of tools like APPTIO, ComSci, Nicus, Digital Fuel, etc.

Opportunity/benefit of using Best Practice: Improved IT spending visability, improved budgeting, and more accuarate allocation of costs based upon consumption. Improved data for forecasting and estimating.

Recommendation: Begin to assemble the base cost components using budget data, invoice data, and estimates where needed.

How/Where to Inspect: Review the calculations of the direct and indirect costs.

Audit Notes:

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Cloud Computing Readiness Options Matrix™ - Sample Report

The Consultants Source Cloud Computing Options Matrix™				Cloud Options				Other Options	
Category	Action Score™		Description of Current State	SaaS - Software as a Service	PaaS - Platform as a Service	IaaS - Infrastructure as a Service	Private Cloud	Short Term	Longer term
Business Preparedness	22	PROACTIVE	Few, low impact issues with existing processes, training, change management, clearly articulating requirements, etc.	Migrate existing app (COTS or custom) to SaaS	Migrate existing app (COTS or custom) to PaaS	Move existing app (COTS or custom) to IaaS	Move to a private cloud using existing infrastructure	Optimize existing applications and business processes	Examine cloud options; research; R&D
Client IT Staff Preparedness	35	REACTIVE	Skill and experience levels of current IT staff/support needs some improvement	Migrate existing app (COTS or custom) to SaaS		Move existing app (COTS or custom) to IaaS		Fix/stabilize existing infrastructure; invest in staff and training. Consider use of external resources	Replace existing infrastructure
Cloud Cost Model Components	25	PROACTIVE	Identification and quantification of components of current costs and expected cloud related costs is complete	Proceed with decision and/or selection	Proceed with decision and/or selection	Proceed with decision and/or selection	Proceed with decision and/or selection	Identify costs of performing upgrades of current systems	Measure and monitor costs as the projects progress
Cloud Services Provider (CSP) Vendor Research	78	REACTIVE	Identification of key vendor services, pricing, financial stability, customer satisfaction and support, billing policies, etc. needs significant improvement					Invest staff time and effort to compete the research to identify available providers and compare the products and services.	
Current Technology Infrastructure	47	REACTIVE	Current infrastructure needs some improvement	Implement new apps as SaaS to minimize infrastructure impact		Move existing app (COTS or custom) to IaaS		Fix/stabilize existing infrastructure; consider use of external resources	Replace existing infrastructure
Peak Capacity Requirements	80	REACTIVE	High peak volume requirements	Migrate existing app (COTS or custom) to SaaS	Convert and/or rewrite custom app to PaaS	Move existing app (COTS or custom) to IaaS	Implement a private cloud to provide needed peak capacity	Increase capacity of existing infrastructure	Replace existing infrastructure to add capacity

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Cloud Computing Readiness™ Audit Categories and Topics

Category	Topic
Current Technology Infrastructure	Regular assessment/benchmarking of the health, reliability, utilization, capacity, performance, and cost of the infrastructure against Best Practices
Current Technology Infrastructure	Alignment of current infrastructure with Organizations current and future Technology Strategy
Current Technology Infrastructure	Age of Infrastructure
Current Technology Infrastructure	Documentation of current technology environment - hardware, software, and processes
Current Technology Infrastructure	Capacity management and planning skills and processes
Current Technology Infrastructure	Infrastructure Reliability
Current Technology Infrastructure	Infrastructure Performance
Current Technology Infrastructure	Infrastructure Utilization
Current Technology Infrastructure	Ability of infrastructure to scale and handle peak loads
Current Technology Infrastructure	How well is the organizations data protected?
Current Technology Infrastructure	Security and access controls in use
Current Technology Infrastructure	Business continuity / disaster recovery plans
Current Technology Infrastructure	Use and support of multiple systems environments
Current Technology Infrastructure	Use and support of multiple versions/instances of applications
Current Technology Infrastructure	Software License management
Current Technology Infrastructure	Experience with Server Virtualization
Current Technology Infrastructure	Experience with Storage Virtualization
Current Technology Infrastructure	Network capacity planning
Client IT Staff	Support of current infrastructure and applications
Client IT Staff	Major project implementation and application/platform migration skills and experience
Client IT Staff	Security management across multiple platforms
Client IT Staff	Project Management skills to plan and manage changes to infrastructure and applications
Client IT Staff	Business Continuity planning and management
Client IT Staff	Availability of IT Staff for new projects
Client IT Staff	IT Staff Training
Client IT Staff	IT Staff Experience with Cloud Technology and Applications
Client IT Staff	Vendor Management skills, experience, and staff
State of Current Business Applications	Ability of current application to meet the features and functions needed to support the organization
State of Current Business Applications	Reliability of current software/application(s)
State of Current Business Applications	User training requirements for current applications
State of Current Business Applications	Performance/User productivity of current applications
State of Current Business Applications	Usability of current applications
State of Current Business Applications	Regulatory/compliance of current applications vs. requirements/needs
State of Current Business Applications	Application Architecture(s) of current application(s)

Category	Topic
State of Current Business Applications	Software technology (platform) in use for current application(s)
State of Current Business Applications	Data quality of current applications
State of Current Business Applications	Integration with other applications and data sources
State of Current Business Applications	Scalability of current applications
State of Current Business Applications	Availability and cost of application support/development skills for current applications
State of Current Business Applications	Lead time required to add or change functions to current applications
Software Development Staff Preparedness	Ability of current Software Development Staff to develop and support the current application portfolio and related technologies
Software Development Staff Preparedness	Availability of Software Development Staff for the cloud project
Software Development Staff Preparedness	Training of Software Development Staff for the cloud project
Software Development Staff Preparedness	Availability of experienced Consultants to guide Project Staff on technology selection, architecture, processes, applications, and infrastructure
Software Development Staff Preparedness	Cloud Architecture skills
Software Development Staff Preparedness	Knowledge of Cloud technology platform and required programming languages
Software Development Staff Preparedness	Skills and experience of software staff to implement controls to ensure high data quality
Software Development Staff Preparedness	Skills and experience of the Software Development Staff to plan and execute the migration and/or loading of data to the new platform?
Software Development Staff Preparedness	Skills and experience of the Software Development Staff to plan and execute the integration of multiple systems across multiple platforms and security domains?
Software Development Staff Preparedness	Web Services design and implementation skills and experience of software development staff
Selection Criteria	Use of a formal Business Case to evaluate cloud options
Selection Criteria	Expected change in Total IT costs from use of cloud technology
Selection Criteria	Expected change in Fixed IT costs
Selection Criteria	Expected change in IT operations (OPEX) costs
Selection Criteria	Expected change in IT related implementation costs (project management, business requirements, design, testing, etc)
Selection Criteria	Expected change in Capital requirements for cloud based systems
Selection Criteria	Expected change in Software License costs for cloud based systems
Selection Criteria	Expected payment model for cloud based systems
Selection Criteria	Expected change to "normal" Project Timelines/schedules for first Cloud Projects
Selection Criteria	Expectations of access to "pre-integrated" cloud based applications by the primary vendor
Selection Criteria	Expected changes to IT support skills, staffing levels, support costs
Selection Criteria	Expected scope of organization's first Cloud project
Selection Criteria	Application integration requirements
Selection Criteria	Expectations of cloud systems to be "Vendor Independent"
Selection Criteria	Expected complexity of cloud applications
Selection Criteria	Expected risk of cloud based solutions
Selection Criteria	Expected changes to protection of organizational data
Selection Criteria	Expectations of disaster recovery capability of a cloud based system
Selection Criteria	Expected benefits of a cloud based software development platform

Category	Topic
Selection Criteria	Expectations of vendor capabilities for cloud solutions or components
Selection Criteria	Expected security of cloud based solutions and components
Selection Criteria	Who (what function or role) is expected to administer cloud based systems or components
Selection Criteria	Ability of cloud technology to support/execute the organization's defined technology strategy
Selection Criteria	Expected changes to software development costs
Selection Criteria	Expected changes to software development productivity
Selection Criteria	Expected changes to data quality
Selection Criteria	Expected ability to use cloud based technology to handle peak demands/to scale
Selection Criteria	Reliability of cloud based systems
Selection Criteria	Expected changes to application performance
Selection Criteria	Expectations on obtaining access to and/or extracting cloud based data
Selection Criteria	Expectations on the ability to create/modify reports
Selection Criteria	Expectations of cloud based systems to simplify the application development process
Selection Criteria	Expected changes to existing Applications
Selection Criteria	Expectations of Cloud Software to be "self updating"/always current
Selection Criteria	Economies of scale by the cloud provider and benefits to customers
Selection Criteria	Expected support of multiple currencies
Selection Criteria	Expectations on multi-language support (English, Spanish, French, German, Chinese, etc.)
Selection Criteria	Expectations of required desktop devices to access the cloud
Selection Criteria	Expected self service capabilities
Selection Criteria	Usability of the applications for end-users
Selection Criteria	Software functions and security controls "provided" by the vendor
Selection Criteria	Expected available features and general maturity of cloud technology
Selection Criteria	Cloud's impact on ROI versus on-premise solutions
Selection Criteria	Availability and features for application monitoring and instrumentation
Selection Criteria	Availability of 3rd parties (not supported by the primary vendor) to offer of mashups, add-ons, integration services, and extensions of the chosen application and/or platform
Selection Criteria	CSP service level reports
Selection Criteria	Expectations for support of mobile access
Selection Criteria	Expectations that the vendor code base was designed from "the ground up" to be Cloud ready
Selection Criteria	Expected elapsed time to implement a cloud based project
Selection Criteria	Expected software quality of cloud based applications
Selection Criteria	Support for Thin client access to the solutions
Selection Criteria	Expected support for the SaaS Customer Bill of Rights by cloud provider
Selection Criteria	Expected regulatory compliance from cloud technology; Support of multiple, global regulatory jurisdictions (US, Europe, Asia, etc.) by the cloud technology
Selection Criteria	Provider track record and published/committed roadmap of future functions/direction
Selection Criteria	Use of Operational Service Level Metrics to measure cloud provider success
Selection Criteria	Use of Key Performance Indicators (KPIs) to measure cloud provider success
Selection Criteria	Use of Transformational Metrics to measure cloud provider success

Category	Topic
Selection Criteria	Service Levels and measurements
Selection Criteria	Use of Multi-tenancy based systems
Selection Criteria	Expected use of Assertion
Selection Criteria	Expected ability to conduct Security Assessments
Selection Criteria	Expected available Security Controls
Selection Criteria	Expected available documentation
Selection Criteria	Availability of Independent User Groups
Business Preparedness	Documentation of existing processes and methods
Business Preparedness	Investments needed
Business Preparedness	Project Planning and Management Skills
Business Preparedness	Change management skills and processes
Business Preparedness	Availability of Business Staff for new projects
Business Preparedness	Baseline metrics for current solution costs and staff productivity
Business Preparedness	Impact of new solution on User Productivity
Business Preparedness	Impact of new solution on Customer Service levels
Business Preparedness	Business Leader participation in projects
Business Preparedness	Decision to freeze or slow changes to older systems
Business Preparedness	Development and Implementation of new Business Processes
Business Preparedness	Training of Business users on new processes and the applications
Business Preparedness	Testing of new business processes and applications
Peak Capacity Requirements	The number of business days per year that significant peak capacity is needed or could be beneficial
Peak Capacity Requirements	Business value of handling peak loads
Peak Capacity Requirements	% of annual revenues generated from peak volume
Peak Capacity Requirements	Predictability of peak demand, and ability to plan and execute to meet demand
Peak Capacity Requirements	The amount of peak capacity (above "normal" levels) needed
Peak Capacity Requirements	Amount of "excess" capacity available (i.e. above normal usage levels) to meet some or all peak needs
Peak Capacity Requirements	Current approach to provide peak capacity
Peak Capacity Requirements	Ability to re-purpose or "borrow" capacity from non critical systems to handle peak loads without significant negative impact to the business
Peak Capacity Requirements	Financial analysis of IT Costs required to provide/provision additional capacity
Peak Capacity Requirements	Complexity and risk to provide/provision additional capacity to handle peak demand
Peak Capacity Requirements	Advance notice and amount of time required to provide/provision additional capacity
Web Services Readiness and Use	Anticipated use of Web Services for integration
Web Services Readiness and Use	Scope of deployment of Web Services
Web Services Readiness and Use	Analysis of technical alternatives to Web Services
Web Services Readiness and Use	Reuse of standardized Web Services definitions or XML schemas
Web Services Readiness and Use	Complexity of semantic content required for integration
Web Services Readiness and Use	Retrofitting of existing applications for Web Services
Web Services Readiness and Use	Governance of Web Services interactions
Web Services Readiness and Use	Understanding of emerging Web Services standards

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Category	Topic
Legal/Contract Topics for Cloud Solutions	Legal/Contract expectations for Cloud solutions
Legal/Contract Topics for Cloud Solutions	Source of Legal Counsel for Cloud Projects
Legal/Contract Topics for Cloud Solutions	Skills and resources to handle legal issues and risks of each cloud deployment model (public, private, hybrid)
Legal/Contract Topics for Cloud Solutions	Skills and resources to handle legal issues and risks of data flows between different jurisdictions
Legal/Contract Topics for Cloud Solutions	Skills and resources to handle privacy and national security (Patriot act) issues, impact, and risks on data flows between different jurisdictions
Legal/Contract Topics for Cloud Solutions	Skills and resources to handle cloud related tax issues
Legal/Contract Topics for Cloud Solutions	Skills and resources to manage export controls on technology between different legal jurisdictions
Legal/Contract Topics for Cloud Solutions	Skills and resources to manage the effects on current software licenses when moving to the cloud
Legal/Contract Topics for Cloud Solutions	Skills and resources to manage the effects on current services agreements when moving to the cloud
Legal/Contract Topics for Cloud Solutions	Skills and resources to manage the outsourcing legal issues and risks
Legal/Contract Topics for Cloud Solutions	Skills and resources and processes for record retention requirements for cloud computing
Legal/Contract Topics for Cloud Solutions	Skills and resources to manage data retention and destruction; and how to do so in a defensible manner
Legal/Contract Topics for Cloud Solutions	Skills and resources to manage e-discovery issues involving cloud based systems
Legal/Contract Topics for Cloud Solutions	Skills and resources to manage the labor and labor contract issues of cloud based projects and outsourcing
Cloud Cost Model Components	Financial Model of Current IT Costs
Cloud Cost Model Components	OPEX and CAPEX Investments needed; ROI/TCO costs defined
Cloud Cost Model Components	Training of staff
Cloud Cost Model Components	Development tools, monitoring tools
Cloud Cost Model Components	Additional Datacomm bandwidth
Cloud Cost Model Components	Hiring of Staff
Cloud Cost Model Components	Hiring of contractors/consultants to help
Cloud Cost Model Components	Costs of Development Staff productivity during ramp-up/learning curve
Cloud Cost Model Components	Costs of new development environment (pay as you go)
Cloud Cost Model Components	Costs of mistakes
Cloud Cost Model Components	Remaining book value of current solutions
Cloud Cost Model Components	Testing costs
Cloud Cost Model Components	Project management costs
Cloud Cost Model Components	Integration costs
Cloud Cost Model Components	Software licensing costs
Cloud Cost Model Components	Availability of capital
Cloud Cost Model Components	Costs to upgrade client devices
Cloud Cost Model Components	Data center OPEX costs staff, (power, space, cooling) for new applications or CAPEX costs to expand capacity
Cloud Cost Model Components	Costs to migrate assets to technology supported by the vendor/service provider
Cloud Cost Model Components	Vendor Management costs
Cloud Cost Model Components	Impact of expiring tax incentives on vendor pricing

Category	Topic
Cloud Cost Model Components	Impact of Labor rates on cloud vendor pricing
Cloud Cost Model Components	Impact of foreign currency exchange rates on cloud pricing and costs
CSP Vendor Research/ Due Diligence	Identification and due diligence of potential CSP's - Google, Amazon, Microsoft, Singlehop, Hostway, Rackspace, GoGrid, Softlayer, etc.
CSP Vendor Research/ Due Diligence	Customer Service and Support
CSP Vendor Research/ Due Diligence	Billing tactics
CSP Vendor Research/ Due Diligence	Support for a Hybrid (CSP and client side) Solution
CSP Vendor Research/ Due Diligence	Support for Private LANS
CSP Vendor Research/ Due Diligence	VPN access
CSP Vendor Research/ Due Diligence	Virtual NOC capability
CSP Vendor Research/ Due Diligence	CSP reliability, scalability, flexibility
CSP Vendor Research/ Due Diligence	CSP Financial Strength
CSP Vendor Research/ Due Diligence	Pricing
CSP Vendor Research/ Due Diligence	Innovation
CSP Vendor Research/ Due Diligence	References
CSP Vendor Research/ Due Diligence	Availability of Sample code
CSP Vendor Research/ Due Diligence	Support partners - consultants
CSP Vendor Research/ Due Diligence	Training
CSP Vendor Research/ Due Diligence	HIPPA/PHR
CSP Vendor Research/ Due Diligence	Payment Card Industry Data Security Standard (PCI/DSS)
CSP Vendor Research/ Due Diligence	Sarbanes-Oxley (SOX)
CSP Vendor Research/ Due Diligence	SAS70 Audits/Reports
CSP Vendor Research/ Due Diligence	SIG Version 5 (Standardized Information Gathering) questionnaire and Agreed Upon Procedures (AUP)
CSP Vendor Research/ Due Diligence	ISO 27000 series security controls
CSP Vendor Research/ Due Diligence	IFRS - International Financial Reporting Standards
CSP Vendor, Solution, and Services Sourcing	Responsibility for sourcing
CSP Vendor, Solution, and Services Sourcing	Start of sourcing
CSP Vendor, Solution, and Services Sourcing	Use of referrals
CSP Vendor, Solution, and Services Sourcing	Use of industry analyst expertise
CSP Vendor, Solution, and Services Sourcing	Use of RFIs
CSP Vendor, Solution, and Services Sourcing	Use of RFI authorship and evaluation tools
CSP Vendor, Solution, and Services Sourcing	RFI approach
CSP Vendor, Solution, and Services Sourcing	Vendor or consultant references sought in RFI
CSP Vendor, Solution, and Services Sourcing	Sufficient time allotted for sourcing
CSP Vendor, Solution, and Services Sourcing	Frequency of sole sourcing
CSP Vendor, Solution, and Services Sourcing	Objective evaluation criteria are established prior to a sourcing phase
CSP Vendor, Solution, and Services Sourcing	Objective evaluation criteria are prioritized before a sourcing phase begins
CSP Vendor, Solution, and Services Sourcing	Vendor or consultant financial condition evaluated during sourcing phase
CSP Vendor, Solution, and Services Sourcing	Vendor or consultant operational methodology evaluated during sourcing phase
CSP Vendor, Solution, and Services Sourcing	Vendor or consultant technical competence evaluated during sourcing phase