Using Best Practices to Solve Problems, Free up Resources, and Reduce IT Costs

June 2011

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About TCS and the Best Practices Audit

- ✔ **TCS was founded in 2008**
- ✔ **We are former CIO's and consultants with over 60 years of experience**
- ✔ **We have directly experienced the effects of infrastructure – good and bad!**
- ✔ **Many new IT leaders come from software development or the business – many have limited infrastructure experience**
- ✔ **We have observed the declining use of "mainframe style" tuning skills and operations discipline – especially for PC/Web/Open Systems based applications**
- ✔ **We see increased reliance on processes to "manage" problems vs. identify and permanently solve the root cause**
- ✔ **We have "bottled" our knowledge and techniques to unlock the HUGE potential from existing IT assets (hardware, software, and people)**

Our Mission:

Help the CIO improve the use and value of technology to the organization.

Through our products and services, we share our experience, and provide unbiased, comprehensive, objective tools to identify the sources and root causes of technology issues, and provide detailed techniques and unbiased recommendations to permanently solve 100's of technology problems.
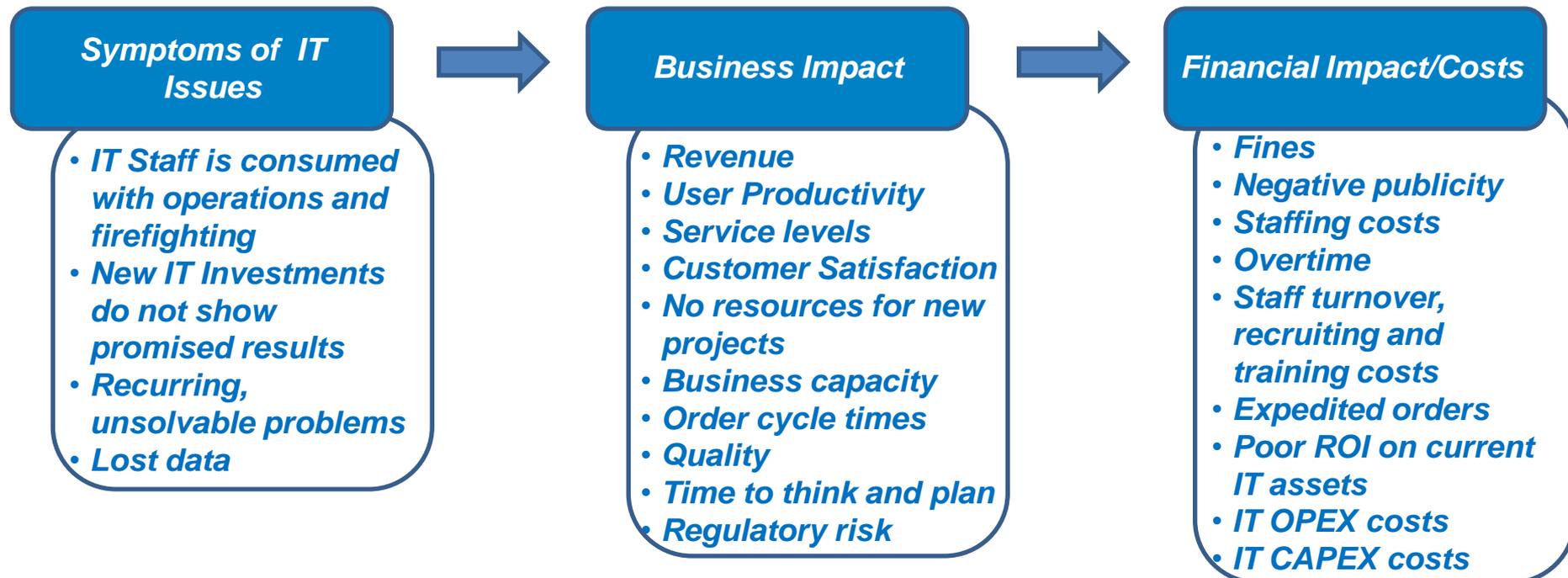

Identify the Issues; Assess the Impact
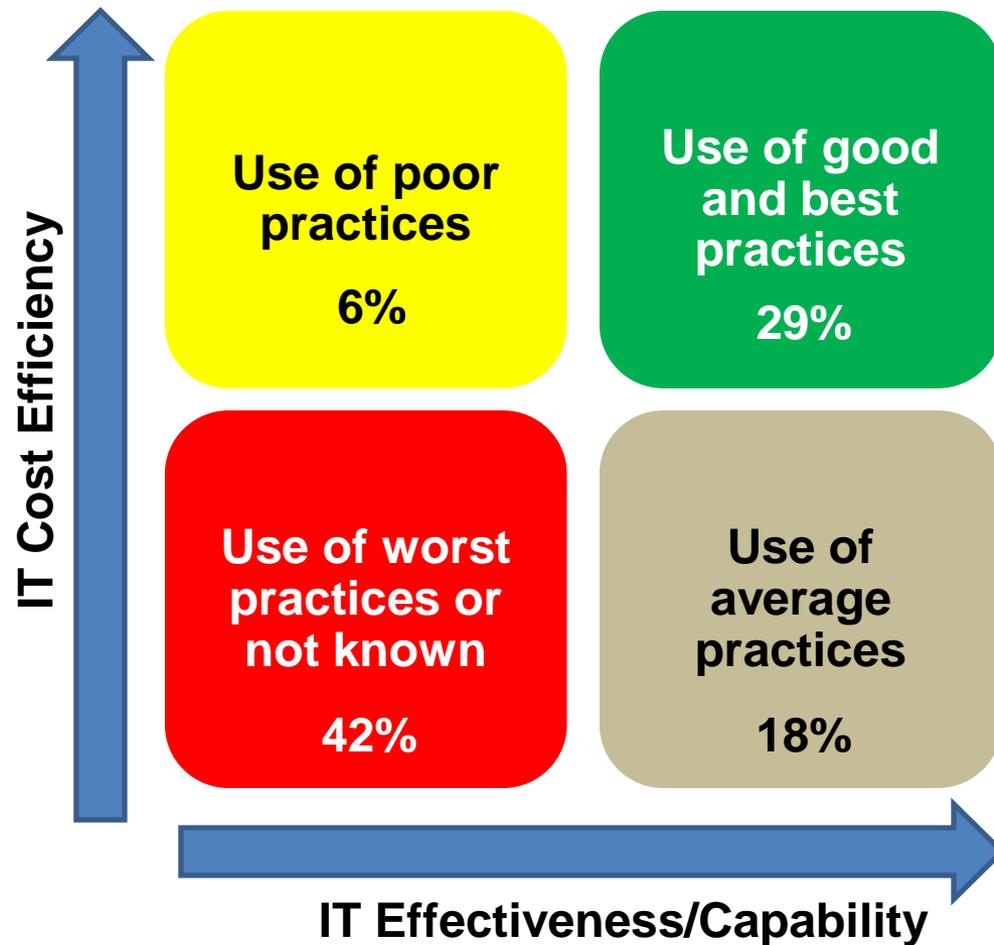
Qualitative Indicators

- "Our ERP systems aren't working - I'll have to call you back…"
- "I'm sorry – SAP is really slow today…"
- "Our EMR system can't handle the volume"
- "We're using an older version – we can't do that yet"

Quantitative Indicators

- "Our cost per desktop is 20% higher than our peers"
- "IT Help Desk FTE is 25% higher than our peers"
- "Our web site can't handle more than 100 users "

Symptoms of IT Issues

- IT Staff is consumed with operations and firefighting
- New IT Investments do not show promised results
- Recurring, unsolvable problems
- Lost data

→

Business Impact

- Revenue
- User Productivity
- Service levels
- Customer Satisfaction
- No resources for new projects
- Business capacity
- Order cycle times
- Quality
- Time to think and plan
- Regulatory risk

→

Financial Impact/Costs

- Fines
- Negative publicity
- Staffing costs
- Overtime
- Staff turnover, recruiting and training costs
- Expedited orders
- Poor ROI on current IT assets
- IT OPEX costs
- IT CAPEX costs

Average Audit Findings

IT Cost Efficiency (vertical axis)

IT Effectiveness/Capability (horizontal axis)

Use of poor practices **6%**	Use of good and best practices **29%**
Use of worst practices or not known **42%**	Use of average practices **18%**

(5% of topics were not applicable Data from TCS)

Q: What percent of your practices are in each quadrant?
Q: Can you be World Class if 66% of your practices are not Good or Best Practice?

Identify the Root Causes of Risk, Reliability, Utilization, Performance, and TCO/ROI Issues

Hardware
- ✔ Old firmware
- ✔ Default parameters
- ✔ Incorrect parameters
- ✔ Under configured
- ✔ Architecture & design
- ✔ Bandwidth
- ✔ I/O capacity
- ✔ Latency
- ✔ High demand
- ✔ Low utilization
- ✔ Poor Maintenance
- ✔ Equipment Age
- ✔ Power, cooling, security
- ✔ Data protection

Software
- ✔ Software versions and updates; licensing
- ✔ Default parameters
- ✔ Incorrect parameters
- ✔ Configuration
- ✔ Architecture
- ✔ Database design
- ✔ Database queries
- ✔ Maintenance
- ✔ Dev and test platforms
- ✔ Data Protection
- ✔ Compatibility of software and tools
- ✔ Drivers/Patches
- ✔ Security/Anti-virus

Staffing
- ✔ Availability
- ✔ Staff skills, training, and experience
- ✔ Mistakes, errors
- ✔ Use of obsolete knowledge
- ✔ Processes
  - ✔ Job Scheduling
  - ✔ Troubleshooting
  - ✔ Project Management
  - ✔ Change Management
  - ✔ Service Management,
  - ✔ Documentation
  - ✔ Monitoring

Many IT organizations have their staff 100% focused on daily operations.

The TCS Best Practices Audit identifies the root causes of 100's of issues, and provides the Best Practices and actionable solutions to permanently solve bottlenecks and recurring problems.

The result? IT resources can be re-deployed for new initiatives!

Best Practices Effects on OPEX and CAPEX

Example: Customer needs Web site/e-Commerce capacity for 2000 users

Common Configuration
10 users per web server

- 200 physical servers
- 200 OS licenses
- 200 Tools licenses
- DC infrastructure
- DC operating costs
- Staffing
- Reliability issues

$5,787,436

Server Virtualization
10 users per web server

- 20 physical servers
- 200 OS licenses
- 200 Tools licenses + Hypervisor costs
- 10% DC infrastructure
- 10% DC operating costs
- 100% Staffing (but higher complexity)
- Same or worse reliability issues

$3,777,365 (35% savings)

Use of Best Practices
100 users per web server

- 20 physical servers
- 20 OS licenses
- 20 Tools licenses
- 10% DC infrastructure
- 10% DC operating costs
- 10% Staffing
- Improved reliability and performance

$578,744 (90% savings)

Best Practices Make a Difference!
Results of using Best Practices at a Life Insurance Company

Metric	Before	After	Annual Value
Work Environment	• Frequent downtime • Poor application performance • Frustrated users, agents, and policyholders • Technology is limiting everything • Reactive/No fun	• No limits on user productivity • High employee morale • Industry leading customer service • Technology is strategic • Proactive/fun	• Organic, profitable growth • No changes to products or commissions • Forward looking
Sales	$67M	$512M	$445M increase
Employees (FTE)	676	454	$13.3M reduction (60K each)
Operating Expenses	$95M	$76M	$19M reduction
Employee Turnover	67% annually	12% annually	$5M; 55% reduction; higher quality data and service
Backlog of transactions	6 months	none	Reduce regulatory risk; eliminate duplicate work; improved customer service
Avg Minutes/Trans	2.82	1.92	32% improvement
Marketing Staff FTE	104	25	75% reduction
IT budget	$16M	$13M	$3M reduction
IT Staff FTE	49	35	29% reduction
% of IT time on new projects	0%	80%	Development of automated and self service capabilities

The TCS Best Practices Audit

For IT Leaders:

- A comprehensive, objective <u>baseline</u> of the current Infrastructure and practices in use

- <u>Identify sources and impact</u> of infrastructure problems, and symptoms across 12 dimensions

- Compare the current state against proven <u>Best Practices and Peer results</u>

- <u>Identify and prioritize the topics to improve</u>, according to your unique needs

For IT Staff:

- A detailed, actionable plan with specific knowledge and recommendations to permanently solve the root causes of 100's of IT problems

Audit Content

Environment (Application, Location, etc.)

15 Subjects

- Cloud Computing Readiness
- Cost Containment
- Data Center
- Networks
- Desktops and Printing
- IT Governance
- iSeries Servers
- Microsoft Servers
- Web Servers
- Unix Servers
- Compliance and Security
- Storage
- Telephony
- Database
- Software Licensing

Categories

- Documentation
- Staffing
- HW Configuration
- SW Configuration
- Parameters/Tuning
- Tools
- Utilization
- Reliability
- Data Center Equipment
- Security
- Operations
- Maintenance

2200+ Topics

- Symptoms
- Current state
- Topic Importance
- Suggestions on where to find supporting data
- Relative importance to other topics
- Current Impact
- Best Practice of the topic
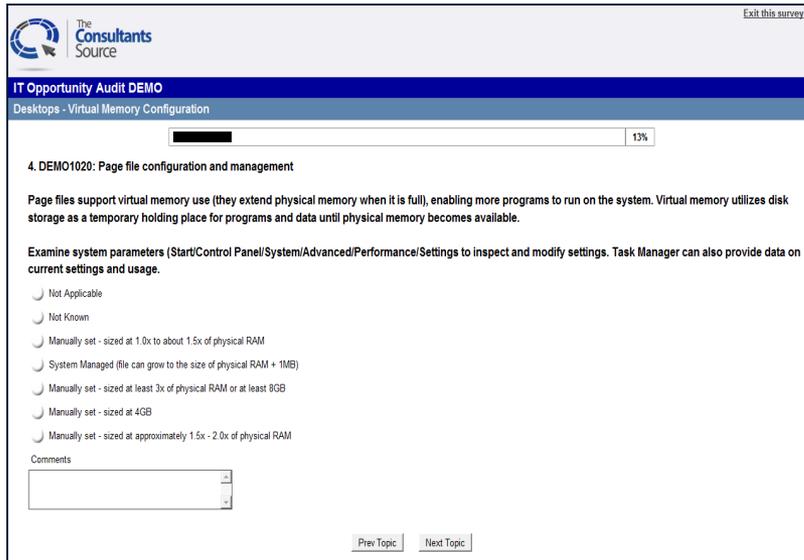- Specific recommendations to improve results

Subjects can be selected for each Review

Example Best Practices Topics

Topic	Poor Practice	Average Practice	Best Practice	Importance	Opportunity
IIS Metabase settings	Defaults used	Some changes to defaults	All related settings modified and tested prior to implementation	Affects the capacity of a single web server, eliminate timeouts and provide faster response.	May increase # of users per server by 10X
Operating System Partition Size	15GB	50GB	500GB	Affects available disk space for system and user files.; a key to system reliability.	Significant reduction in server outages and IT staff efforts to purge and restart servers.
Use of Multi-Path I/O (MPIO)	Not used	Configured as Active/Passive	Configured as Active/Active	Affects available bandwidth and write performance for multiple disk channels.	Can increase I/O throughput by 100%+. Provides some fault tolerance.
Fiber Channel HBA tuning	No tuning performed	Frame size modified	Frame size , interrupt coalesce settings, and max outstanding requests modified	Affects CPU use, I/O rates and data throughput. May increase throughput by 100%.	May increase I/O throughput by 100%
RAID levels for databases	None - JBOD	Raid 5 or 6	Raid10	Affects read and write performance; and fault tolerance	May increase write performance by 100% or more
Use of a common time service	None	Some servers use a common time service	All servers, desktops, etc. use time.windows.com	Affects data quality of programs and databases that use date/time fields and filenames.	Eliminates issues with time base services (DB journal files, backups, etc.)
Use of Print Servers	Not used	Most printers – server in data center	All printers; servers are local to printers	Affects server CPU loads and can reduce network bandwidth use.	May reduce WAN bandwidth needs by 75%

Audit Process

1. Structured, non-invasive Interview

The Consultants Source

Exit this survey

IT Opportunity Audit DEMO

Desktops - Virtual Memory Configuration

13%

4. DEMO1020: Page file configuration and management

Page files support virtual memory use (they extend physical memory when it is full), enabling more programs to run on the system. Virtual memory utilizes disk storage as a temporary holding place for programs and data until physical memory becomes available.

Examine system parameters (Start/Control Panel/System/Advanced/Performance/Settings to inspect and modify settings. Task Manager can also provide data on current settings and usage.

- Not Applicable
- Not Known
- Manually set - sized at 1.0x to about 1.5x of physical RAM
- System Managed (file can grow to the size of physical RAM + 1MB)
- Manually set - sized at least 3x of physical RAM or at least 8GB
- Manually set - sized at 4GB
- Manually set - sized at approximately 1.5x - 2.0x of physical RAM

Comments

Prev Topic   Next Topic

2. Identify Issues and sources of problems

Subject	Category	Topic and Sub-topic	Common Symptoms of Issues	Current Practice
Desktops Standard	Citrix/Term Servers/VDI	Citrix and Remote Desktop - local drive mapping onto Citrix and Terminal servers -	High resource usage; poor performance; poor user productivity	No changes have been made from default settings
Desktops Standard	Cost Metrics	IT Cost Metrics - Total Annual Cost Per Desktop -	No data to assess current state and evaluate options and	No calculation available
Desktops Standard	Disks/Storage	Average disk busy % for Drive/volume C -	System performance and reliability issues	100% typical
Desktops Standard	Ethernet NICS	NIC speed	Slow performance	10 Mb
Desktops Standard	Ethernet NICS	NIC send and receive buffers -	Slow performance	No changes have been made from default settings
Desktops Standard	Operations	Alerts to IT staff and management when utilization is beyond defined thresholds -	Slow performance; no historical data for troubleshooting	No use of alerts
Desktops Standard	Applications	Large email boxes and/or shared email boxes -	Poor performance and reliability; limits of sharing data;	Many PC e-mail folders are larger than 1.5GB, and/or no

3. Identify impact of the current practices

Subject and Category	Category Action Score	Subject and Category	Category Action Score	Subject and Category	Category Action Score
Data Center	33	Desktops	35	Networks	45
Auxiliary equipment	48	Anti Virus Protection	35	Application Development S	40
Building/space	35	Applications	64	Configuration	50
Cabling	18	Citrix/Term Servers/VDI	24	General/Info	79
Fire safety/suppression	60	General/Info	18	Security	47
Power	26	Hardware	18	Staffing	100
Reliability (average for data	40	Printing	64	Utilization	43
Security	29	Reliability (average per desk	60		
Staffing	0	Staffing	50	Printing	35
Waste management	36			Acquisition	24
		Storage	38	Configuration	32
Servers	35	Backups	45	Operations	40
Anti Virus Protection	45	Configuration	34		
Ethernet NICS	42	Fibre Channel	31	Telephony	8
General/Info	13	Fragmentation	58	Call routing	11
OS	27	General/Info	11	Circuits	4
Reliability (average per serv	25	Reliability (average for the s	50	FAX	13
Staffing	75	Utilization	41	PBX Management	17
Storage	41			Staffing	11
		Web Servers	38	Vendor management	8
		General/Info	28	VOIP	4
		Reliability (average per web	42		
		Reliability (average per web	42		
		Staffing	80		

4. Prioritize topics by impact and business needs; identify detailed solutions and recommend sequencing
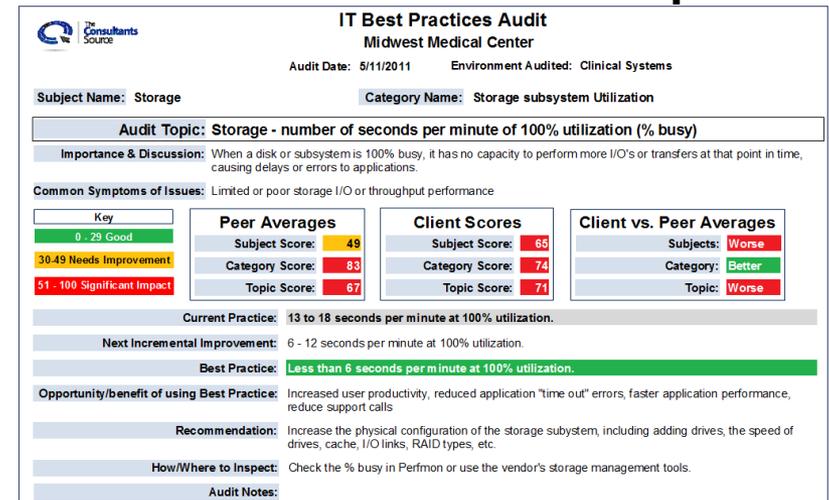
IT Best Practices Audit

Midwest Medical Center

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

Subject Name: Storage   Category Name: Storage subsystem Utilization

Audit Topic: Storage - number of seconds per minute of 100% utilization (% busy)

Importance & Discussion: When a disk or subsystem is 100% busy, it has no capacity to perform more I/O's or transfers at that point in time, causing delays or errors to applications.

Common Symptoms of Issues: Limited or poor storage I/O or throughput performance

Key		Peer Averages		Client Scores		Client vs. Peer Averages	
0 - 29 Good		Subject Score:	49	Subject Score:	65	Subjects:	Worse
30-49 Needs Improvement		Category Score:	83	Category Score:	74	Category:	Better
51 - 100 Significant Impact		Topic Score:	67	Topic Score:	74	Topic:	Worse

Current Practice: 13 to 18 seconds per minute at 100% utilization.

Next Incremental Improvement: 6 - 12 seconds per minute at 100% utilization.

Best Practice: Less than 6 seconds per minute at 100% utilization.

Opportunity/benefit of using Best Practice: Increased user productivity, reduced application "time out" errors, faster application performance, reduce support calls

Recommendation: Increase the physical configuration of the storage subsystem, including adding drives, the speed of drives, cache, I/O links, RAID types, etc.

How/Where to Inspect: Check the % busy in Perfmon or use the vendor's storage management tools.

Audit Notes:

A Structured Interview to Collect Data

IT Opportunity Audit DEMO

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`13%`

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Examine system parameters (Start/Control Panel/System/Advanced/Performance/Settings to inspect and modify settings. Task Manager can also provide data on current settings and usage.

- ○ Not Applicable
- ○ Not Known
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Comments

[Prev Topic] [Next Topic]

Specific, Actionable Information

The Consultants Source

IT Best Practices Audit
Northwest Medical Center

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0 - 29 Good	Subject Score:	49	Subject Score:	68	Subjects:	Worse
30-49 Needs Improvement	Category Score:	83	Category Score:	74	Category:	Better
51 - 100 Significant Impact	Topic Score:	67	Topic Score:	71	Topic:	Worse

Current Practice:	13 to 18 seconds per minute at 100% utilization.
Next Incremental Improvement:	6 - 12 seconds per minute at 100% utilization.
Best Practice:	Less than 6 seconds per minute at 100% utilization.
Opportunity/benefit of using Best Practice:	I/O and Throughput can increase up to 1000%
Recommendation:	Decrease the demand, or increase the physical configuration of the storage subsystem, including adding drives, the speed of drives, cache, I/O links, RAID types, etc.
How/Where to Inspect:	Check the % busy in Perfmon or use the vendor's storage management tools.
Audit Notes:	

The TCS Best Practices Audit

CIO Need	How TCS Helps
Comprehensive review	15 subjects, over 2200 available topics. We are former CIO's with over 60 years of technology and business experience.
Objective	The review is industry, vendor and technology neutral. TCS does not recommend, sell or represent ANY product or service.
Proven Content	We have direct experience with EVERY topic; use of each topic's Best Practice has proven to have significant, positive impact.
Specific	Includes descriptions of the importance of each topic, where to find supporting evidence, examples for each topic – illustrating poor practices to best practices, and specific recommendations.
Actionable	Color- and numeric coded reports prioritize and recommend what topics to tackle, starting with highest impact. Many topics can be improved by your IT staff.
Repeatable	The structured interview process and comprehensive content ensures that all topics are consistently addressed. Results can be directly compared against peers, different environments, locations, or timeframes. Some clients perform annual reviews, or use the process for M&A deals.

Our mission: Help the CIO improve the use and value of IT to the business

The TCS Best Practices Audit

CIO Need	How TCS Helps
Minimal impact on IT staff	Only 1-2 staff members are needed for 2-3 hours for each subject. A typical review requires less than 1 week to complete.
Fast	Detailed reports are available within 5 days of the interview, improvement activities can begin immediately following the delivery of reports.
Help to permanently solve recurring issues	The review identifies many of the root causes of recurring issues, and communicates the recommended Best Practices/solutions to permanently solve the problem.
Maximize the value in the existing IT assets we own	Is designed to identify opportunities to improve reliability, utilization, performance, and ROI of existing hardware, software, and IT staff.
Customizable to my needs	You select the subjects to be covered, and the depth of each subject.
Non-invasive	No software is installed. No devices are connected to your network. No data extracts are required.
Cost effective	Fixed price per assessment + travel expenses
Confidential and no pressure	The reports are delivered directly to the CIO.

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Recent Clients

American Italian Pasta Corp., a division of RALCORP

Industry	Food (Pasta) Manufacturing
Company Size	$628M Revenue, 675 employees, 13+ locations; Worldwide
Environment	IBM iSeries, Microsoft Servers, Microsoft Desktops, Cisco, VOIP
Client Contact(s)	CIO, Director of IT, lead IT staff
Key Benefits	Assess current health, input for budgeting, prioritization, implementing best practices to optimize infrastructure

Metropolitan Family Services

Industry	Non Government Organization (NGO), Community Services
Company Size	$75M Revenue, 700 employees, 8 locations in the Chicago metro area
Environment	Microsoft Servers, Microsoft Desktops, Cisco
Client Contact(s)	CIO, Directors of IT, lead IT staff
Key Benefits	Assess current health, identify urgent actions, input for budgeting, prioritization, extend life of IT assets

MERCY — Mercy Hospital & Medical Center

Industry	Healthcare; Hospital and Clinics
Company Size	$233M Revenue, 1518, employees, 13 locations in the Chicago metro area
Environment	IBM iSeries, Microsoft Servers, Microsoft Desktops, Lucent PBX, Cisco; some systems remotely managed by Cerner
Client Contact(s)	CIO, Director of IT, lead IT staff
Key Benefits	Assess current health, identify urgent actions, input for budgeting, prioritization, implementing best practices to reduce IT costs

NORTHWESTERN UNIVERSITY

Industry	Education
Org. Size	1200 employees, Chicago metro area
Environment	Linux, Microsoft Servers, Microsoft Desktops, NAS
Client Contact(s)	Director of IT, IT Managers, lead IT staff
Key Benefits	Assess current health, identify urgent actions, input for budgeting, prioritization, extend life of IT assets

Sample Reports

What's New in Version 3.0

✓**New Web based survey platform**

✓**New Content**

- A 4th level of content – "sub topics"
- Peer Action Score database with averages for each Subject, Category and Topic
- Common Symptoms for each issue
- Separate topic recommendations by Action Score
- 10 Impact Action Scores: assess each topic by it's impact on:
    Reliability, utilization, capacity, performance, user productivity, Financials, IT staffing levels, Risk, IT service levels, Customer Impact
- 5 Implementation Priorities: sort selected implementation topics by:
    Time to implement, cost to implement, IT staff effort, risk, and complexity
- Links by topic to iTHC financial statistics (planned for V3.1)
- Links to Technology Business Management Chart of Accounts (planned for V3.1)

✓ **New Subjects (now 15 total subjects and 2200+ topics):**

- IT Leadership and Governance
- Compliance and Security (ISO 27001 checklist)
- Unix and Linux Servers

✓**Enhanced Reports:**

- Action Roadmap – now includes Peer comparisons and recommendations
- Current State – now includes Common Symptoms for each topic

TCS Best Practices Audit
Peer Averages by Subject and Category (sales tool)

Subjects

Subject	Not Known	Worst Practice	Poor Practice	Average Practice	Good Practice	Best Practice	Total
Cloud Computing	3%	44%	9%	28%	3%	12%	100%
Data Center	25%	18%	6%	22%	5%	23%	100%
Database	20%	26%	7%	11%	9%	27%	100%
Desktops	10%	35%	8%	20%	4%	23%	100%
iSeries Servers	15%	33%	4%	22%	7%	19%	100%
IT Cost Containment	15%	40%	4%	27%	10%	5%	100%
IT Leadership and Governance	0%	18%	0%	30%	0%	52%	100%
MS Servers	12%	16%	10%	22%	9%	31%	100%
Networks	11%	23%	3%	21%	10%	32%	100%
Software Licensing	13%	33%	3%	35%	0%	17%	100%
Storage	13%	22%	9%	19%	9%	29%	100%
Telephony	14%	24%	6%	16%	6%	34%	100%
Unix and Linux Servers	18%	10%	7%	16%	12%	37%	100%
Web Servers	6%	63%	4%	13%	3%	11%	100%
Average Across All Subjects	13%	27%	7%	21%	7%	25%	100%

Subject/Category

Subject	Not Known	Worst Practice	Poor Practice	Average Practice	Good Practice	Best Practice	Total
MS Servers	12%	16%	10%	22%	9%	31%	100%
Anti Virus Protection	28%	7%	0%	0%	0%	66%	100%
Cost Metrics	0%	50%	0%	0%	0%	50%	100%
Error Logging	33%	67%	0%	0%	0%	0%	100%
Ethernet NICS	13%	33%	6%	0%	9%	39%	100%
External Dependencies	67%	0%	0%	33%	0%	0%	100%
General/Info	5%	15%	10%	48%	0%	23%	100%
Hardware	6%	13%	18%	21%	17%	24%	100%
Key Registry Parameters	17%	42%	3%	15%	6%	17%	100%
Operations	6%	24%	9%	30%	3%	27%	100%
OS	13%	25%	7%	23%	5%	28%	100%
Reliability (average per server)	0%	0%	13%	38%	0%	50%	100%
Staffing	0%	0%	23%	41%	5%	32%	100%
Storage	15%	9%	9%	23%	15%	28%	100%
Virtualization	25%	25%	0%	0%	0%	50%	100%

Best Practices Audit
Client Reports for IT Leaders - Summary of Current State

Subject	Not Known	Not Optimized	Needs Improvement	Average	Good	Best Practice	Grand Total
Cloud Computing	5	14	2	54	4	25	104
Data Center	2	50	7	31	7	42	139
Desktops	9	30	18	21	5	22	105
IT Cost Containment	1	9	4	38	13	2	67
MS Servers	20	36	11	20	11	23	121
Software Licensing	1	7	1	9		2	20
Storage	15	23	8	19	6	27	98
Unix and Linux Servers	4	12	9	20	15	46	106
Web Servers	1	5	1	9	1	11	28
Grand Total	58	186	61	221	62	200	788

Subject	Not Known	Not Optimized	Needs Improvement	Average	Good	Best Practice	Grand Total
Cloud Computing	5%	13%	2%	52%	4%	24%	100%
Data Center	1%	36%	5%	22%	5%	30%	100%
Desktops	9%	29%	17%	20%	5%	21%	100%
IT Cost Containment	1%	13%	6%	57%	19%	3%	100%
MS Servers	17%	30%	9%	17%	9%	19%	100%
Software Licensing	5%	35%	5%	45%	0%	10%	100%
Storage	15%	23%	8%	19%	6%	28%	100%
Unix and Linux Servers	4%	11%	8%	19%	14%	43%	100%
Web Servers	4%	18%	4%	32%	4%	39%	100%
Grand Total	7%	24%	8%	28%	8%	25%	100%

67% of Topics are Not Known, Not Optimized, Need Improvement, or Average
33% of Topics are Good or Best Practice

Best Practices Audit
Reports for IT Leaders
Details of Current State – Action Scores™, Sources of Problems, Symptoms, and Current Practices

Topic Action Score	Subject	Category	Topic and Sub-topic	Common Symptoms of Issues	Current Practice
80	Desktops	Disks/Sto	Data Backup Policy -	Lost data	No defined data backup policy.
80	Desktops	Disks/Sto	Defragmenting PC Storage -	Slow performance; may limit	No defragmentation of local
80	Desktops	Ethernet	NIC power management	Network reliability; lost data	No changes have been made
80	Desktops	Ethernet	TCP/IP Tuned - Selective	Poor performance; applications	No TCP/IP tuning performed
80	Desktops	Operatin	Operating System in use -	Compatibility issues; available	In use by 1 - 19% of users
80	Desktops	Operatio	Alerts to IT staff and	Slow performance; no historical	No use of alerts
80	Desktops	Operatio	PC Disaster Recovery Plan -	Rebuilding a single machine is a	No recovery plan for desktop
80	Desktops	Printers -	Engineered printer	Slow printing; poor reliability;	Use of basic printer
80	Desktops	Printers -	Printer Firmware levels -	Printing may crash; inconsistent	Not updated since acquisition
80	Desktops	Printers -	Use of Print Servers -	Printing may be slow; other	Print servers are not used.
80	Desktops	Reliabilit	Capture and review of PC	No data available; no time to	No capture of PC reliability data
64	Desktops	Applicati	Instrumentation of key	Lack of data to diagnose issues	No applications are
64	Desktops	Applicati	Large email boxes and/or	Poor performance and	Many PC e-mail folders are
64	Desktops	Disks/Sto	Drive rotation speed in RPM -	System performance and	5400 rpm
64	Desktops	Disks/Sto	Indexing of files by OS for fast	Slow performance	Enabled
48	Desktops	Disks/Sto	eSATA and SATA disk ports -	Unauthorized access to data;	ESATA and SATA ports are
48	Desktops	Disks/Sto	USB Storage - Use of Chipset	Unauthorized access to data;	USB ports are available for all
48	Desktops	Hardware	% of desktops and thin clients	Slow systems; unreliable	In use by 20 - 39% of users
48	Desktops	Hardware	RAM provisioned/installed -	Slow systems; unreliable	1 - 2GB of RAM
48	Desktops	Hardware	Spare equipment inventory -	Systems are down while waiting	Limited, older equipment may

Action Scores™ identify the subjects, categories, and individual topics that have the highest impact.

Action Scores™ are color coded to quickly identify the current state and identify improvement opportunities:
- 0 to 29 = Green (some improvement possible)
- 30 – 50 = Yellow (significant improvement possible)
- 51 – 100 = Red (major improvement possible)

TCS Best Practices Audit
Reports for IT Leaders

Business Impact Action Scores™ of the Current State/Practices

Overall Topic Action Score Env 1	Subject	Category	Topic and Sub-topic	Reliability Impact Env 1	Utilization Impact Env 1	Capacity Impact Env 1	Performance Impact Env 1	User Productivity Impact Env 1	Financial Impact Env 1	IT Staff Utilization Impact Env 1	Risk Impact Env 1	IT Service Impact Env 1	Customer Impact Env 1
80	Desktops Premium	Printing	Use of Print Servers for print queues -	80	80	80	0	80	80	0	80	80	80
48	Desktops Premium	Printing	Logging of print traffic -	80	48	48	48	48	48	48	48	48	48
48	Desktops Premium	Printing	Restart of printing/restart of print queues -	64	48	48	48	48	48	48	48	48	48
64	Desktops Premium	Reliability	Tracking of Hardware Failures -	64	64	64	0	64	64	64	64	64	64
48	Desktops Premium	Staffing	Staff Selection practices -	64	48	48	48	48	48	48	48	48	48
0	Desktops Standard	Anti Virus Protection	Status of Virus checking software -	48		0		0	0	0	0	0	
0	Desktops Standard	Anti Virus Protection	Frequency of updates -	20				0	0	0	0	0	
20	Desktops Standard	Anti Virus Protection	Frequency of scans -	20				20	12	16	20	16	

TCS Best Practices Audit
Reports for IT Leaders

Action Scores™ Prioritize and Sequence the Implementation Tasks

Topic Action Score Env 1	Subject	Category	Topic and Sub-topic	Relative Elapsed Time to Implement Env 1	Relative Cost to Implement Env 1	Relative Complexity to Implement Env 1	Relative Staff effort to Implement Env 1	Relative Risk to Implement Env 1
80	Desktops Standard	Cost Metrics	IT Cost Metrics - Total Annual Cost Per Desktop -	32	32	32	32	32
80	Desktops Standard	Disks/Storage	Average disk busy % for Drive/volume C -	16	32	16	16	16
64	Desktops Standard	Applications	Large email boxes and/or shared email boxes -	32	40	32	32	32
60	Desktops Standard	OS	Page file configuration and	12	4	12	12	12
60	Desktops Standard	Disks/Storage	C Volume Size -	12	8	12	12	12
48	Desktops Standard	Disks/Storage	Drive rotation speed in RPM -	12	24	12	12	12
32	Desktops Standard	Hardware	% of desktops and thin clients less than 24 months old -	16	16	16	16	16
24	Desktops Standard	OS	Windows 7 deployment Strategy -	8	8	24	60	8
24	Desktops Standard	OS	Use of DW20.exe – Dr Watson -	20	8	8	8	8
20	Desktops Standard	Anti Virus Protection	Frequency of scans -	4	4	32	4	4
20	Desktops Standard	Disks/Storage	C Free disk space as percent of drive	20	4	4	4	4

TCS Best Practices Audit
Reports for IT Staff
Action Roadmap™ – Task Plan and Specific Recommendations

IT Opportunity Audit - Action Roadmap
Midwest Medical Center
Assessment Date: 5/9/2011

Subject Name: Assessment Demo

Category Name: Storage - Fibre Channel

Audit Topic: HBA interrupt collalesce

Importance & Discussion: Common HBA parameter that controls the amount of time that the HBA waits before starting another operation. A higher value adds more wait time, and decreases throughput. Some default values will limit throughput.

Common Symptoms of Issues: Limited or poor storage I/O or throughput performance

Key
0 - 29 Green - Good
30-49 Yellow - Needs Improvement
51 - 100 RED Significant Impact

Peer Averages	
Subject Score:	68
Category Score:	83
Topic Score:	100

Client Averages	
Subject Score:	63
Category Score:	83
Topic Score:	100

Client vs. Peer Averages	
Subjects:	Better
Category:	Equal
Topic:	Equal

Current Practice: Default parameters are in use.

Next Incremental Improvement: -

Best Practice: Off - this maximizes FC throughput at the expense of additional CPU use

Opportunity/benefit of using Best Practice: I/O and Throughput can increase up to 100%

Recommendation: Set the HBA interrupt collalesce parameter to the value that equals "off"

How/Where to Inspect: See the vendor specific management tools and configuration documentation for details.

Audit Notes:

TCS Best Practices Audit
Sample Reports
Cloud Computing Readiness Options Matrix™

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

Financial Benchmarking Content

Subjects	Example Categories	Example Statistics

Subjects

- **Desktops**
- **Servers**
- **Network**
- **Mid-Range**
- **Mainframe**
- **Telephony**
- **Wireline (circuits)**
- **Wireless**
- **Help Desk**
- **Application Development**
- **Application Support**

Example Categories

- **Total Costs**
- **Cost Per user**
- **Costs per device**
- **Salary Costs**
- **Staffing Counts – in-house**
- **Comparable Staffing Counts including outsourced functions**
- **Users per staff**
- **Employee vs Contractors**

Example Statistics

Total Hardware Cost
Total Software Cost
Total Staffing Cost
Total Transmission Cost
Total Facilities Cost
Total Outsourcing Cost

Cost Per User

Hardware Cost Per User
Software Cost Per User
Staffing Cost Per User
Transmission Cost Per User
Facilities Cost Per User
Sourcing Cost Per User

Average Cost Per Staff

Average Cost Per Management Staff
Average Cost Per Desktop Support Staff
Average Cost Per Training Staff
Average Cost Per Plan & Process Staff
Average Cost Per Administration Staff
Average Cost Per LAN Support Staff
Average Cost Per Server Support Staff
Average Cost Per DB Admin Staff

Total Management Staff Count
Total Desktop Support Staff Count
Total Training Staff Count
Total Plan & Process Staff Count
Total Administration Staff Count
Total LAN Support Staff Count
Total Server Support Staff Count
Total DB Admin Staff Count

Total Adjusted Staffing Count

Users Per Staff

Users Per Adjusted Staff

Over 1200 statistics are available

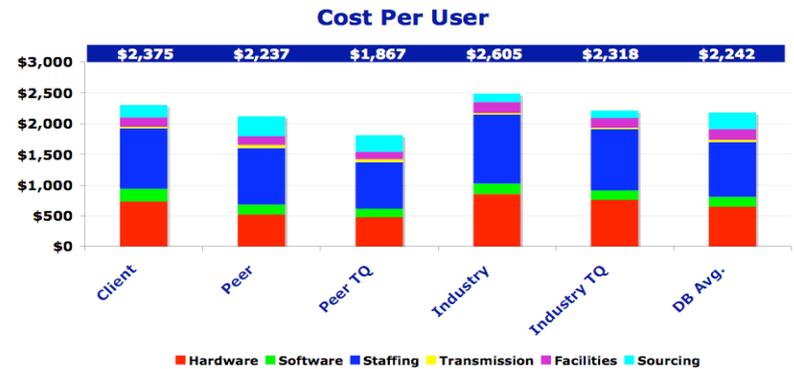*A database of over 3000 data points collected over 6 years*

Compare the client against peers of similar complexity

Comparison of Total IT costs compared against Peers, Industry, and Averages

Total Costs (000's)

(Stacked bar chart showing Thousands from $0 to $25,000 for Client, Peer, Industry, DB Avg. Legend: Hardware, Software, Staffing, Transmission, Disaster Rec., Facilities, Sourcing)
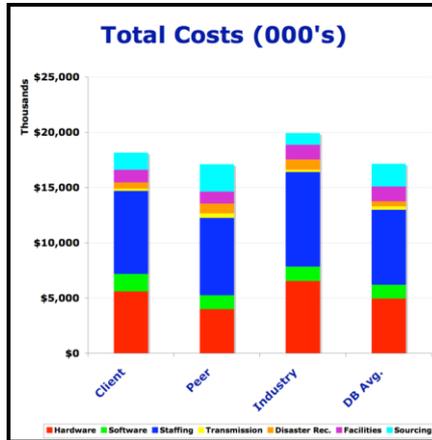
Comparison of IT Cost per User compared against Peers, Industry, and Averages

Cost Per User

$2,375	$2,237	$1,867	$2,605	$2,318	$2,242

(Stacked bar chart $0 to $3,000 for Client, Peer, Peer TQ, Industry, Industry TQ, DB Avg. Legend: Hardware, Software, Staffing, Transmission, Facilities, Sourcing)

HOW DOES YOUR COST PER USER COMPARE?

Your Cost per User is the prime metric for the Distributed computing module. The metric is calculated by taking the total of all costs in this area and dividing it by your total end user count. The results provide a concise breakout of the costs, by category, for each user. The chart provides a comparison to the Peer Group, the Peer Top Quartile, Industry Average, Industry Top Quartile, and the DB Average for the given client

Cost per User is:

X % [higher/lower] than the Peer Group
X % [higher/lower] than the Peer TQ
X % [higher/lower] than the Industry Avg.
X % [higher/lower] than the Industry TQ
X % [higher/lower] than the DB Avg.

Comparison of Client IT costs compared against Peers, Industry, and Averages by Subject and key Metrics

Key Metrics by Module

	Client	Peer Groups	Peer TQ	Industry Avg.	Industry TQ	Database Avg.
Distributed Cost per User	$2,375	$2,237	$1,867	$2,605	$2,318	$2,242
Help Desk Cost per Contact	$21.2	$20.4	$17.7	$23.2	$21.5	$20.4
Midrange Cost per Server	$13,460	$12,677	$10,580	$14,762	$13,138	$12,703
Wide Area Data Cost per Device	$524	$494	$412	$575	$512	$495
Mainframe Cost per MIPS	$1,474	$1,388	$1,158	$1,616	$1,438	$1,391
Telecom Wireline Cost per Minute	$0.106	$0.100	$0.084	$0.117	$0.104	$0.100
Telecom Wireless Cost per Device	$1,758	$1,618	$1,351	$1,884	$1,677	$1,622
Telecom PBX Cost per Extension	$385	$362	$302	$422	$375	$363
App Development Cost per Function Point	$918	$864	$721	$1,006	$896	$866
App Support Cost per Function Point	$40.8	$38.4	$32.1	$44.7	$39.8	$38.5

Comparison of Client IT complexity
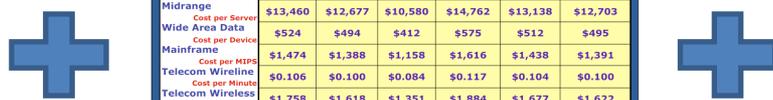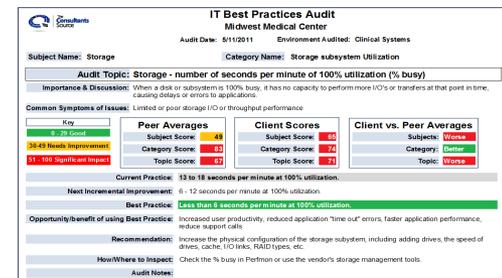
Complexity Scores

Module	Score
Distributed	66
Help Desk	30
Midrange	56
WAD	49
Mainframe	81
Wireline	63
Wireless	83
PBX	71

Thank You!

Questions?

More Information:
WWW.TheConsultantsSource.com