

Chapter 7

Process Catalog

The Process Catalog is an IT organization's single source of the definition of IT operations processes. The Process Catalog is invaluable in the management and continuous improvement of these processes.

How to use this Catalog

Readers should mold this Process Catalog to meet the needs of their IT organizations. The number of processes included, and the extent of detail in describing them, depends upon what is reasonable for a specific IT organization in striving to achieve excellence. At a minimum, each process should be measured according to automation and stability levels. And the current process should be compared against best practices as detailed in this catalog. Readers are encouraged to delete, rename, expand, or collapse the processes that require modification in their analysis.

Each process within the process catalog is broken down according into the following data points:

- *Automation Balance* is a scale indicating the current automation level of a process (1=manual 10=automated). Highlight the number that represents the current level of automation for each process at your site.
- *Stability Balance* is a scale indicating the current stability level of a process (1=dynamic 10=stable). Highlight the number that represents the current level of stability for each process.
- *Tasks* are the activities that typically make up the process as it is implemented at many large firms today.
- *Skills* itemizes the typically required skills and abilities to implement this process. Not all skills are listed, only those viewed as especially important or easily overlooked.

- *Staffing* indicates typical staffing at large IT organizations. At smaller sites, one employee might perform the functions of several staff members. For sites pursuing best practices, all positions mentioned in this section should have counterparts in current staff responsibilities.

- *Automation Technology* is a list of representative technologies. Inclusion in the list does not constitute an endorsement, nor is absence from the list a tacit comment.

- *Best Practices* are the activities that make up best practices at leading sites. These items should be compared to activities at your site as part of the gap analysis.

- *Metrics* are the quantifiable aspects of operations that should be tracked for purposes of measuring quality of deliverables and success or failure of the implementation of best practices.

- *Process Integration* refers to other processes that integrate with the current process. This information is useful when making changes in the current process as it indicates other processes that might be affected.

- *Futures* indicates any likely advances in technology that could affect the way that this process is performed at IT sites.

Note

Some lists use regular, square bullet marks (■); others use the arrow symbol (⇒) to indicate items that should be compared to current processes at your site and checked off if they are implemented.

Application Optimization

This process seeks to enhance application efficiency and performance, while minimizing cost. For new applications, it seeks enforcement of the tenets of the production-acceptance process and assurance that customer service expectations are met in these areas: operational procedures, run-time improvement, connectivity and middleware optimization, and tuning of internal logic.

Automation Balance		Stability Balance	
Varies		Varies	
Manual	Automated	Dynamic	Stable
Tasks		Skills	
<ul style="list-style-type: none"> ■ Training entry-level personnel ■ Defining standards for applications ■ Tuning job control and programs ■ Writing recommendations to application owners ■ Ensuring compliance with production acceptance processes 		<ul style="list-style-type: none"> ■ Expertise in using various application tuning tools ■ Expert knowledge of JCL, scripts, processes and their optimization ■ Familiarity with the performance characteristics of all storage media ■ Working knowledge of change, ADLC and SCM processes, and of common programming languages, such as Cobol, C, C++, Fortran, and Java, and of environments such as Visual Studio.NET ■ Good communications skills ■ Working knowledge of business processes and application flow 	
Staffing		Automation Technology	
<ul style="list-style-type: none"> Quality control specialist Production coordinator Tuning specialist 		<ul style="list-style-type: none"> Tuning tools (such as Strobe, TSA/PPE, Architeck) JCL generation and optimization tools 	
Best Practices		Metrics	
<ul style="list-style-type: none"> Consistent, cross-platform approach 		<ul style="list-style-type: none"> Percentage improvement in tuned 	

Automation Balance		Stability Balance	
Varies		Varies	
Manual	Automated	Dynamic	Stable
to application optimization		applications	
Periodic review of new technology impacts on business applications		Number of errors in changed applications	
Regular re-assessment of technology needs over time:		Amount of investment relative to degree of improvement	
Will older hardware and software do the job?		Person effort	
Can new technology provide a stepwise improvement in performance?		Resources consumed	
Continuous application performance improvement		Number of emergency optimization needs/requests	
Defining must-have requirements for application areas to include in new and enhanced applications		Average time to respond to new requests	
		Staffing metrics	
		Number of tuning efforts/analyst	
Process Integration		Futures	
		Automated tuning and self-optimizing applications	
		Application componentization and reuse	

IT Asset Management

This process aims to manage and optimize the cost, retention, and ultimate disposal of IT assets including hardware, software, communications infrastructure.

Automation Balance					Stability Balance				
1	2	3	4	5	1	2	3	4	5
Manual		Automated			Dynamic		Stable		
Tasks					Skills				
Maintain and manage the acquisition, maintenance (costs) and disposal of all IT assets					Basic knowledge of accounting principles				
Manage vendor contracts and associated terms and conditions					Ability to define processes and procedures for acquisition/disposal				
Manage portfolios based on optimal "refresh cycles"					Ability to develop approaches to simplify customer involvement				
Track actual vs. projected for IT equipment and staff									
Staffing					Automation Technology				
Asset management specialist					CA-MICS, IBM SLR, Merrill				
Customer liaison					Consultants' MXG				
Financial analyst									
Best Practices					Metrics				
Integrated process and automation for managing IT assets					#products/#staff				
Integration with corporate processes/automation					Budget \$/#staff				
Use of defined standards for asset life, disposal, and so forth.					Savings (by category)/year				
Efficient corporate process for ordering/acquisition									

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual		Automated			Dynamic		Stable		
Process Integration					Futures				
Inventory management					Seamless integration with corporate tools/processes				
Configuration management					Higher reporting relationship (directly to CIO)				
Asset tracking					More direct tie-in to Customer Advocacy COE (including BRM)				
					Participation in go/no-go buying scenarios				

Budget Management

In addition, to tracking costs vs. budgets and reporting variances, this process aims to manage and reconcile incurred costs with cost recovery, plus provide out-year estimates and modeling for new budgets.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual		Automated			Dynamic		Stable		
Tasks					Skills				
• Maintain budget actual vs. planned					• Maintain budget actual vs. planned				
• Define processes for budget compliance					• Define processes for budget compliance				
• Enforce spending limits based on policies/standards					• Enforce spending limits based on policies/standards				
Staffing					Automation Technology				
• Maintain budget actual vs. planned					• Financial systems for budget planning				
• Define processes for budget compliance					• Cost accounting systems				
• Enforce spending limits based on policies/standards					• Forecasting systems				

Automation Balance

Stability Balance

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

Manual

Automated

Dynamic

Stable

Best Practices

Metrics

- Use of automated systems that track actual and budgeted monies
- Semi-annual budget iterations

- Actual vs. planned costs
- Group costs/budget value
- Quantity of resources/cost

Process Integration

Futures

- Automated system to track budgets and actual
- Linkage with forecast systems
- Automatic budget planning based on forecast
- "What if" modeling for various technology/business alternatives

Business Continuity

This process aims to provide continuous availability or contingent business processes as required in emergencies and extraordinary events. It develops business-continuity strategies and tactics (disaster recovery), identifies document recovery requirements for critical business applications, and also manages backup and archival processes for critical data.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> Prepare and maintain a business continuity plan (BCP) <ul style="list-style-type: none"> Use automated tools to develop/maintain plans Communicate with customers regarding disaster-recovery requirements Arrange and coordinate with hot-site providers Test and evaluate recovery processes at least twice a year Integrate BCP with production acceptance processes to ensure that new applications have appropriate contingency plans Employ e-vaulting and other techniques for 24-hour recovery requirements Define standards around business continuity for customers: <ul style="list-style-type: none"> Level of disaster-recovery required for categories of applications “ Frequency of required testing by platform and application. 					<ul style="list-style-type: none"> Expertise in scenario planning 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Staffing					Automation Technology				
<ul style="list-style-type: none"> Disaster-recovery specialist Project manager Business/IT liaison 					<ul style="list-style-type: none"> Disaster-recovery management software (sunrise, arise) Disaster-recovery planning software (PC-based) 				
Best Practices					Metrics				
<ul style="list-style-type: none"> Common continuity plans for the enterprise addressing systems and applications that can afford no outages, two-hour outages, 12-24 hour outage, and so on. Update plan twice a year Test plan three times per year, with one actual, one simulated, and one unplanned test BCP has equal emphasis on business recovery and technology recovery Optimize use of third-party disaster-recovery facilities to handle peak processing requirements BCP prescribes techniques for identifying disaster-recovery requirements that are incorporated within production acceptance process Ability to perform integrated testing/recovery across IT platforms 					Year-to-year improvements in: <ul style="list-style-type: none"> Mean-time-to-recovery (in relation to pattern) Cost of disaster-recovery <ul style="list-style-type: none"> Per business segment Per volume of technology protected Stratified cost structure by pattern for systems and applications with availability requirements as follows: <ul style="list-style-type: none"> Instantaneous Within 24 hours 24-72 hours 5-7 days Cost/MB of archived data 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Stable				
Automated					Dynamic				
Process Integration					Futures				
Disk storage management					<ul style="list-style-type: none"> • Technology <ul style="list-style-type: none"> • Integration with tape/storage subsystems • Built-in disaster recovery DR services within packaged applications • Better cross-platform software for disaster-recovery • Improved simulation (scripting) software to minimize the need for business area involvement in disaster-recovery testing • Electronic-commerce recovery <ul style="list-style-type: none"> • Continuous operations for web-based applications • Interface with ASPs and ISPs to provide recoveries • Regulatory requirements for business continuity different for different industries 				
Tape management									

Business Relationship Management

This process aims to act as a liaison between IT operations and customers, providing the contact point for: service-level administration, services marketing, customer satisfaction, and ongoing customer communications.

Automation Balance										Stability Balance									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automated					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> Interact with customers regarding questions/problems/requirements Define tenets of service level agreements Translate business needs into IT support service fulfillment Perform regular customer satisfaction reviews Tie customer satisfaction to IT planning activities Identify IT priorities based on customer feedback Monitor results of help desk support Define processes and procedures for business relationship management. 										<ul style="list-style-type: none"> Strong communications skills Ability to address both IT and business issues 									
Staffing										Automation Technology									
<ul style="list-style-type: none"> Business relationship manager Business/IT liaison Customer account representative 										<ul style="list-style-type: none"> Service level management/reporting tools Customer satisfaction survey "application" Automated project/plan management tools 									
Best Practices										Metrics									
<ul style="list-style-type: none"> Identified primary point of contact for 										<ul style="list-style-type: none"> Year-to-year improvements in: 									

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual	Automated				Dynamic			Stable	
customers					<ul style="list-style-type: none"> Customer satisfaction survey results 				
<ul style="list-style-type: none"> Business relationship manager clear accountable for customer satisfaction 					<ul style="list-style-type: none"> Service-level attainment 				
<ul style="list-style-type: none"> Business relationship manager participates in IT/business planning processes 					<ul style="list-style-type: none"> Cost vs. value comparisons for IT services 				
<ul style="list-style-type: none"> Process for improving customer service is iterative 									
<ul style="list-style-type: none"> Business relationship manager identifies of new and improved services to customers 									
Process Integration					Futures				
					<ul style="list-style-type: none"> Business relationship manager plays a leading role in IT project prioritization 				
					<ul style="list-style-type: none"> Business relationship manager oversee help-desk service and results 				
					<ul style="list-style-type: none"> Business relationship manager defined new customer-oriented metrics for measuring improvement 				

Capacity Planning

This process aims to predict future resource requirements and provide a capacity plan for all environments. This process involves gathering and analyzing forecast data from customers, trend analysis of historical data, and workload modeling to predict outcome of growth and upgrades.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual		Automated			Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> Define processes for determining capacity requirements 1-2 years out Develop equipment plan and associated cost information Recommend workload balancing options to avoid upgrades Identify individual components (such as memory and cache) to improve performance and thus eliminate/avoid upgrades 					<ul style="list-style-type: none"> Understanding of key platform, operating-system, and subsystem components Understanding system measurement data Basic knowledge of statistical analysis Understand performance characteristics for all resources Familiarity with modeling and statistics Working knowledge of system/subsystem (such as I/O subsystems) tuning 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> Capacity planner Statistical analyst Operations research analyst 					<ul style="list-style-type: none"> Capacity planning software (for example, BMC, IBM, Compuware, and others) <ul style="list-style-type: none"> Statistical trend analysis Simulation tools Analytical modeling tools Operating-system support utilities 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Best Practices					Metrics				
<ul style="list-style-type: none"> • Common organization and management process for all capacity evaluations • Occasional, temporary use of additional resources • Proactive evaluation of all resources • Ongoing tracking of actual vs. planned usage <ul style="list-style-type: none"> • By environment • By customer • Tie-in to performance management processes <ul style="list-style-type: none"> • Service-level attainment • Bulk purchases (for example, on a quarterly basis) for cost-effectiveness • Selective out-tasking of activities to third-party providers • Use of simple business metrics where feasible • Map of capacity requirements onto application infrastructure patterns 					<ul style="list-style-type: none"> • Year-to-year improvements in: <ul style="list-style-type: none"> • IT planned vs. actual utilization • Customer forecast vs. actual • Number and size of unplanned acquisitions 				
Process Integration					Futures				
<ul style="list-style-type: none"> • Performance Management 					<ul style="list-style-type: none"> • Capacity on demand • Cross-platform/domain modeling • Integration of service level and performance processes 				

Change Management

This process aims to expedite change while minimizing business risk. It rationalizes changed impact, sets IT organizational change policies, and coordinates all changes to systems, networks, and applications.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> Maintain ongoing process of accepting requests, analyzing them, submitting to management, and processing according to feedback Develop integrated processes for all aspects of change management Ensure back-out provisions exist for all changes Provide reasonable technical orientation to assess changes and back-outs 					<ul style="list-style-type: none"> Strong process orientation/discipline Detail oriented Familiar with all major operational disciplines Relationship/arbitration skills (people skills) Familiarity with existing inventory and trouble ticketing systems 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> Change specialist Change coordinator Impact assessment specialist Business/IT liaison 					<ul style="list-style-type: none"> Mostly build your own/internal currently -- but shifting to vendor tools Tends to break across software configuration management and infrastructure change / service request management tools. Change management systems or add-ons such as Peregrine, HP, Tivoli, IBM, and others Application change management (often focused more on configuration rather than change, such as CA-Endevor, ChangeMan, MicroFocus/InterSolv, Rational Atria, Continuuus and others.) Vendor proprietary, such as SAP CTS 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual		Automated			Dynamic		Stable		
Best Practices					Metrics				
<ul style="list-style-type: none"> • Mostly build your own/internal currently -- but shifting to vendor tools • Tends to break across software configuration management and infrastructure change / service request management tools. • Change management systems or add-ons such as Peregrine, HP, Tivoli, IBM, and others • Application change management (often focused more on configuration rather than change, such as CA-Endevor, ChangeMan, MicroFocus/InterSolv, Rational Atria, Continuous and others.) • Vendor proprietary, such as SAP CTS 					<ul style="list-style-type: none"> • Number of requests for change (RFCs) • Proportion of RFCs rejected • Gross numbers of changes and trends • % of system outages with change as the root cause • % changes scheduled and executed on time • % changes executed outside of normal change release schedule (that is, emergency changes) • Number of changes backed out • Number of support calls generated by executed changes • Proportion of implemented changes which were unsuccessful 				
Process Integration					Futures				
					<ul style="list-style-type: none"> • 				

Configuration Management

Configuration management provides enterprise-wide, real-time component information (about hardware, software, networking and other infrastructure) and incorporate new resources as required. In addition, it provides historical information.

Automation Balance										Stability Balance									
Manual					Automated					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> Define configurations for all upgrade requests Eliminate older technology when appropriate Optimize access and connectivity for all configurations Educate “customers” as to limitations of technology Maximize flexibility and provide “growth room” 										<ul style="list-style-type: none"> Knowledge of physical and architectural limitations for all devices Knowledge of IT infrastructure Understanding of automated configuration systems 									
Staffing										Automation Technology									
<ul style="list-style-type: none"> Configuration specialist Workload planning analyst Facilities planner 										<ul style="list-style-type: none"> Network configurations (such as CONTEL) System configurations (vendor-supplied) 									
Best Practices										Metrics									
<ul style="list-style-type: none"> New hardware configurations created automatically Integration of new technology and infrastructure specified automatically 										<ul style="list-style-type: none"> \$/change \$/inventory Group costs/configuration value 									
Process Integration										Futures									
None										<ul style="list-style-type: none"> Configuration tools that include all enterprise devices within the same model Built-in performance tolerances for specific configurations Self-configuring automation based on technology parameters 									

Contract Management

Contract management handles contract design, negotiation, formalization and inventory of contract terms and conditions so as to ensure the company’s needs are best served. It also requires work the development of strategies for asset acquisition and disposal.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> Maintain all IT contracts Evaluate terms and conditions to maximize corporate advantage Develop and modify contracts for new/existing vendors Provide regular status of contracts to IT management 					<ul style="list-style-type: none"> Paralegal skills for contracts Basic IT background in all major enterprise resources Knowledge of lease and amortization processes Ability to cull information from asset tracking systems 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> Contract specialist Financial analyst Administration specialist 					<ul style="list-style-type: none"> Asset tracking systems Automatic contract storage, retrieval and search engines 				
Best Practices					Metrics				
<ul style="list-style-type: none"> Automated systems that map contracts to IT components Aggressive contract negotiation a part of data center operations 					<ul style="list-style-type: none"> \$/contract Group cost/number of contracts in place (and new) 				
Process Integration					Futures				
					<ul style="list-style-type: none"> Fully integrated, cross-platform systems for contracts that map to enterprise-wide asset tracking systems 				

Contractor Management

This process manages the activities and deliverables of all IT vendors as they relate to products and services. It is similar to the functions of a business relationship manager, but directed towards vendors to the IT organization.

Automation Balance										Stability Balance									
Manual					Automated					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> • Coordinate activities with internal IT groups • Define communications channels for each contractor • Define processes/procedures for contractor management • Eliminate unnecessary processes put in place by vendors • Determine appropriate level of vendor involvement in IT projects 										<ul style="list-style-type: none"> • Understanding of vendors and vendor deliverables • Ability to manage projects with minimal supervision • Ability to optimize added value from vendors/contractors 									
Staffing										Automation Technology									
<ul style="list-style-type: none"> • Vendor specialist <ul style="list-style-type: none"> • Relationship Managers • Project coordinator/manager <ul style="list-style-type: none"> • Service Delivery Manager • Hardware/software specialist • Relationship Manager • Service Delivery Manager 										<ul style="list-style-type: none"> • Extensions to various asset-management tools • Miscellaneous project management tools • Excel spreadsheets 									
Best Practices										Metrics									
<ul style="list-style-type: none"> • Use of a single approach and process for all vendors and contractors • Use of work statements and other communication to define the role of contractors accurately 										<ul style="list-style-type: none"> • #contracts/staff • #projects/staff • Project results (# errors, delays) 									
Process Integration										Futures									
										<ul style="list-style-type: none"> • Highly automated process for 									

Automation Balance

Stability Balance

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

Manual

Automated

Dynamic

Stable

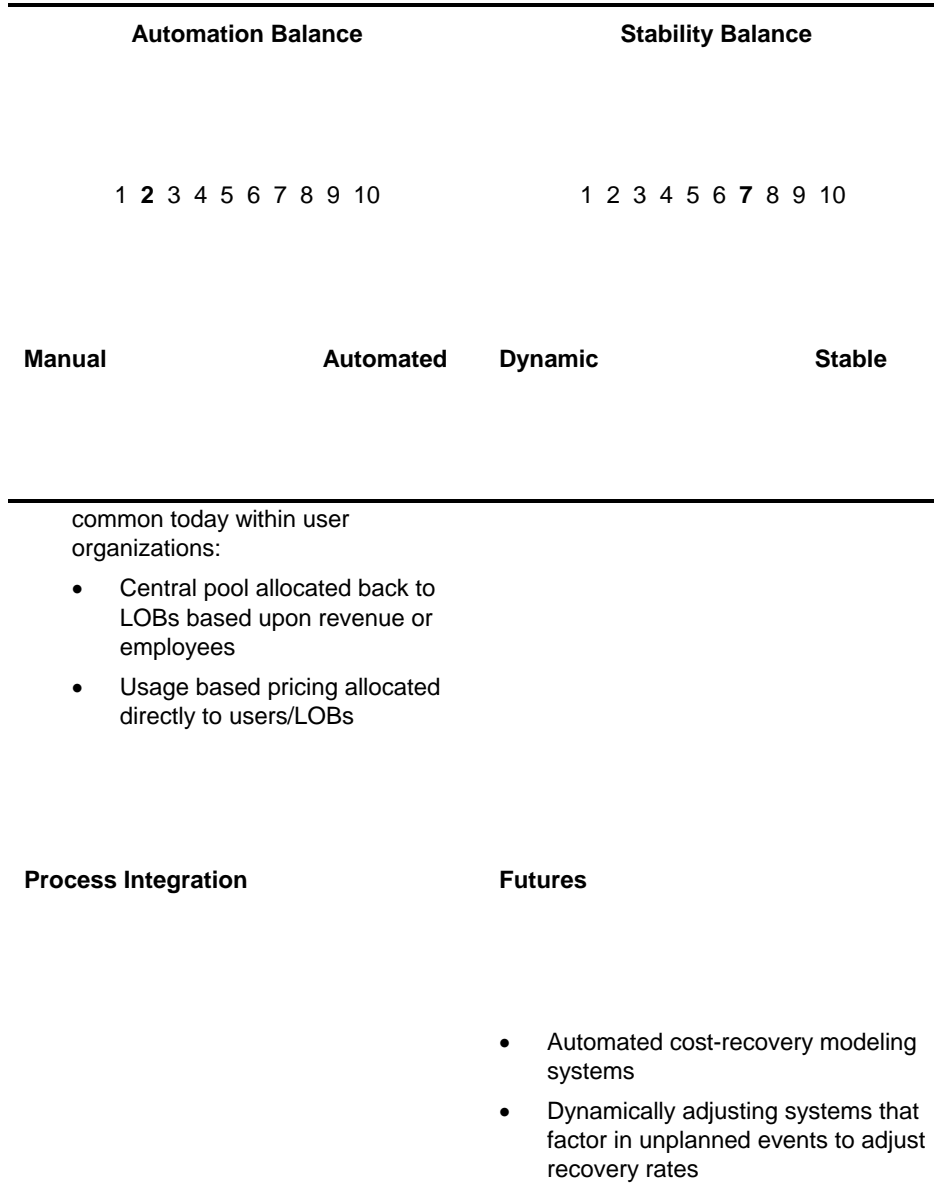
dealing with contractors (similar to internal management processes)

- Defined processes for vendor interaction within IT
 - Establishment of vendor risk/reward for each major activity
-

Cost Recovery

This process is a provides a cost-accounting framework that maps the costs of components and other resources to drivers and customers

Automation Balance										Stability Balance									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automated					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> Develop cost centers and rates for 100% cost recovery Define processes/procedures for submitting forecasts Develop financial models to perform what-if rate scenarios Abide by generally accepted cost-accounting principles Utilize costing metrics 										<ul style="list-style-type: none"> Infrastructure knowledge 									
Staffing										Automation Technology									
<ul style="list-style-type: none"> Chargeback specialist Budget analyst Cost accounting specialist 										<ul style="list-style-type: none"> Automated utilization collection systems (such as CA, Merrill Associates, Komand) Chargeback tools (such as Komand, CA, IBM) 									
Best Practices										Metrics									
<ul style="list-style-type: none"> Deployment of fully automated cost recovery and rate generation system Use of chargeback pricing methods with the following attributes: <ul style="list-style-type: none"> Understandable to users Predictable for planning purposes Related to value received Priced competitively with open market services 										<ul style="list-style-type: none"> Group cost/cost pools Degree of accuracy in actual recoveries 									
Best Practices (continued)																			
<ul style="list-style-type: none"> Use of one of the two models 																			



Disk Storage Management

This process aims to assure optimal use of storage resources and reduce long-term storage-unit cost by improving performance through policies for availability, location, versioning; keeping enough (but not too much storage available on the floor); provide backup/recovery operations for critical data; and by data-set placement and compaction,

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> • Test/verification of backup/restore versions • Maintain access and integrity of all corporate data on disk/DASD • Deploy compression/compaction utilities • Implement storage management automation tools • Assess appropriate level of RAID technology • Institute Hierarchical Storage Management procedures • Evaluate storage performance tradeoffs (disk placement, cache control) 					<ul style="list-style-type: none"> • Experience with storage area networking configuration and management • Knowledge of key vendors: EMC, Hitachi Data Systems, IBM 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> • Storage management specialist • DASD specialist • Backup/recovery specialist 					<ul style="list-style-type: none"> • Storage area networks • Storage systems • Back-up and recovery • Storage Management 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Best Practices					Metrics				
<ul style="list-style-type: none"> • A validated tested backup/recovery system is in place • A consolidated storage management architecture that is completely cross-platform • Up-to-date back-up and recovery plans for which all applications have been prioritized based on business-driven recovery requirements, including a list of what should be recovered and how long it should take • On-going, regularly scheduled performance management/optimization plan that includes the following activities: Which databases should be re-organized next? <ul style="list-style-type: none"> • Which volumes should be compressed/compacted next? • What is the maximum utilization that also minimizes the risk of application failures due to space allocation? 					<ul style="list-style-type: none"> • Time to restore/recover/backup • Year-to-year improvements in: <ul style="list-style-type: none"> • Utilization • \$/GB • Staffing/unit capacity (staffing/terabyte) • Mean-time-between-failures: How many applications were affected how often, and for how long? 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual									

Process Integration	Futures
Tape management	<ul style="list-style-type: none"> • Point-in-time replication deployed across enterprise to eliminate the need for batch and preventative maintenance windows • Storage technology improvements, including <ul style="list-style-type: none"> • Storage area networks providing consolidated storage over a dedicated networks • Network attached storage providing consolidated storage packaged as appliances connected to shared networks • Media commoditization lowering the price of storage devices • Intelligent storage controllers and managers that derstand characteristics of data and its/usage and automate decisions about where data is stored

Facilities Management

This process aims to keep the facilities that house and support IT operations running correctly. It seeks to eliminate single points of failure and to continuously maintain and upgrade the facilities to keep them at the level required by agreed-to levels of performance and availability.

Automation Balance										Stability Balance									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automated					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> • Facilities evaluation • Network analysis • Space planning • Systems planning 										<ul style="list-style-type: none"> • Knowledge of architectural design • Engineering experience in specialties including civil, communications, electrical, electrical, mechanical/HVAC, fire protection, security 									
Staffing										Automation Technology									
<ul style="list-style-type: none"> • Facilities manager • Space planner • Site planner 										<ul style="list-style-type: none"> • Configuration modeling tools • Homegrown 									
Best Practices										Metrics									
<ul style="list-style-type: none"> • Use of third-party outsource providers • Use of a single organization and a uniform process for enterprise-wide facilities management • Methods for reducing single points of failure at the facilities level, e.g., redundant sources of electrical power, redundant connections for internetworking. 										Year-to-year improvements in: <ul style="list-style-type: none"> • Staffing/major resource requests • # of service / maintenance requests • Time to service requests • Actual availability of facilities 									
Process Integration										Futures									
										<ul style="list-style-type: none"> • Facilities technology improvements <ul style="list-style-type: none"> • Higher availability (24x7x365) • Increased redundancy of external utilities (e.g., power, communication) • Greater modularity and flexibility of base facility 									

Inventory Management

This process aims to provide detailed, accurate, real-time information listing the type, quantity, and location of all IT components.

Automation Balance										Stability Balance									
1 2 3 4 5 6 7 8 9 10					1 2 3 4 5 6 7 8 9 10					1 2 3 4 5 6 7 8 9 10					1 2 3 4 5 6 7 8 9 10				
Manual					Automated					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> • Use automation (auto discovery) and manual procedures for maintaining full corporate IT inventory • Integrate inventory information with asset management, configuration management, and personnel management systems • Develop ways to identify inventory opportunities (such as unused items) 										<ul style="list-style-type: none"> • Basic understanding of corporate hardware/software • Ability to use automated inventory gathering and tracking tools • Use of both internal and external cost systems 									
Staffing										Automation Technology									
<ul style="list-style-type: none"> • Inventory specialist • Asset specialist • Contract specialist • Configuration specialist 										<ul style="list-style-type: none"> • Tracking tools • Auto-discovery tools such as SNMP 									
Best Practices										Metrics									
<ul style="list-style-type: none"> • Use of real-time information systems for all IT inventories • Use of automatic warnings regarding lease expirations and other life-cycle events 										<ul style="list-style-type: none"> • Group costs/inventory costs • Transaction/portfolio exchange costs • # of defects in configurations produced 									
Process Integration										Futures									
										<ul style="list-style-type: none"> • More automation that includes portfolio analysis to evaluate whether it is feasible to swap out older resources with newer components at a lower cost, higher performance 									

Job Scheduling

This process aims to implement and maintain job schedules for all production and special production workloads. It includes interacting with customers to determine requirements, evaluating run-time requirements in relation to existing workloads, and ensuring timely completion—both in relation to the application itself and its neighbors in the execution queue.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> • Develop schedules for all corporate workloads • Perform “what-if” scheduling simulations as required • Evaluate and maximize workload balancing options • Define processes for changes and new submissions 					<ul style="list-style-type: none"> • Understanding of application system flow, including all aspects of input, output, and cross-application dependencies • Familiarity with the performance characteristics of all storage media (tape, disk, and so forth) and how they apply to processing of various workload types • Expertise in using various scheduling tools including schedulers, simulation tools and accounting systems for run-time analysis 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> • Scheduling coordinator • Workload analyst 					<ul style="list-style-type: none"> • Host-based schedulers • Distributed schedulers • Platform specific schedulers 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual		Automated			Dynamic		Stable		
Best Practices					Metrics				
<ul style="list-style-type: none"> • Use of a single scheduling tool across the enterprise • Use of a dynamically adjusting schedule based on self-analysis • Integration of job scheduling with workload management and other policy-based management tools • Periodic review of actual vs. scheduled run-times • Use of enhanced policy-based schedulers that enable customers (or application areas) to define parameters for scheduling 					<ul style="list-style-type: none"> • % of jobs meeting schedule • # of errors in defining schedule parameters • # of emergency scheduling needs/requests <ul style="list-style-type: none"> • Average time to respond to new requests • Staffing metrics <ul style="list-style-type: none"> • Number of jobs/processes per analyst 				
Process Integration					Futures				
Workload monitoring					<ul style="list-style-type: none"> • Integration of service level agreements and objectives with job schedulers • Policy-based scheduling systems for all IT resources 				

Negotiation Management

This process aims to negotiate the best terms with all vendors and to provide negotiation skills and a framework for ongoing interaction with IT suppliers

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
					<ul style="list-style-type: none"> • Strong understanding of IT strategy and external IT market • Understanding of industry best practices in negotiating • For each major vendor • Corporate rules for each vendor • Ability to integrate technological, financial and legal information needed for successful negotiations • 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> • Vendor manager • Contract specialist • Contract administrator 					<ul style="list-style-type: none"> • Electronic access to legal, technological, supplier and market information 				
Best Practices					Metrics				
<ul style="list-style-type: none"> • Strong integration of negotiation management with the contract management process • Ability to negotiate with vendors whose products are commodities (i.e., vary only in price, not functionality) and therefore whose margins are small. 					<ul style="list-style-type: none"> • % discount vs. industry average • Scope of negotiation <ul style="list-style-type: none"> • # enterprise-wide vs. customer specific contracts • Multi-year vs. one-time iterations 				
Process Integration					Futures				
Contract management					<ul style="list-style-type: none"> • Improved, automated mapping of IT requirements to market and technology trends 				

Network Monitoring

This process aims to provide reliable networking. It does this through continuous and consistent knowledge of network availability and health. It uses automated monitoring of all network resources, automated correlation of data, automatic notification of trouble, and rapid diagnosis and resolution of network availability problems.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Stable				
Automated					Dynamic				
Tasks					Skills				
<ul style="list-style-type: none"> • Provide first-level network support using selected tool-sets • Evaluate health of network and perform level one analysis • Define the processes and procedures for network monitoring • Enforce network usage standards -- bandwidth requirements • Monitor OLTP and other transactional systems from a network view 					<ul style="list-style-type: none"> • Familiarity with networking protocols and topology • Understanding of SNA and IP network protocols • Knowledge of IP and SNMP • Knowledge of network devices and relationships 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> • Network control specialist • Online systems specialist • Network support products (such as enterprise management tools) 					<ul style="list-style-type: none"> • Embedded instrumentation in network equipment (SNMP-based) • Network management platforms • OEM tool • Correlation tools • Configuration tools • Service-level management tools 				
Best Practices					Metrics				
<ul style="list-style-type: none"> • Highly automated network monitoring 					<ul style="list-style-type: none"> • ratio of personnel versus 				

Automation Balance										Stability Balance									
Manual					Automated					Dynamic					Stable				
systems in place										infrastructure elements (such as IP addresses)									
<ul style="list-style-type: none"> Local customization to leverage standard instrumentation Use of event integration with cross-processes Integrated presentation of network status information to differing operational groups Use of monitoring to drive automation, notification, and problem management applications Use of automated service-level agreement reporting tools Ongoing documentation and evaluation of network characteristics, as follows: <ul style="list-style-type: none"> Topology - a description of the physical and logical topology of the entire LAN/WAN. Performance – the ability to measure, predict, and model network activity. This includes the ability to collect statistics and trend data for segments, devices, interfaces, etc. Standards—the ability to ensure compliance with networking standards and regulatory agencies (where applicable). In addition, this metric is used to characterize the organization's security management practices 										<ul style="list-style-type: none"> % events processed automatically network up-time (availability), component availability network latency, data delivery rate, throughput tracking of chronic problem groupings typical core performance measures Include: <ul style="list-style-type: none"> Recoverability: Mean Time to isolate a link failure, repair it, and restore service <ul style="list-style-type: none"> —repair link failure —isolate —restore 									

Best Practices (continued)

- Network Configuration—the ability to maintain the configuration of network devices

Automation Balance					Stability Balance														
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automated					Dynamic					Stable				
<p>via remote operation and/or automated processes.</p> <ul style="list-style-type: none"> • Network Change Control—the ability to centrally monitor and log all changes to the network infrastructure. • Fault—the ability to automatically detect, log, and notify when warnings/faults occur within the networking infrastructure. • Accounting—the ability to track resources from a cost perspective. 																			
Process Integration										Futures									
<ul style="list-style-type: none"> • Configuration Management • Problem Management 										<ul style="list-style-type: none"> • Better assessment of business operational impact of network problems • Consolidation all resource-centric data (event, problem, asset, change) • Directory-enabled network management (for example, directories with policy content to drive Quality of Service tuning of network flows). • Better discovery technology for deriving device relationships 									

Output Management

This process aims at timely delivery of computer-generated output to appropriate distribution devices or users.

Automation Balance										Stability Balance									
Manual					Automated					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> • Operation of various output technologies • Output management software tools • Interface to mail room and interoffice delivery • Burst, sort, and de-leave operations • Restart/rerun of output as required • Use of print utilities to reproduce output as needed • Routing of output to various locations • Evaluat appropriateness of output medium <ul style="list-style-type: none"> • Identify ways to eliminate hardcopy print • Lower cost by using alternative media 										<ul style="list-style-type: none"> • Understanding of user needs • Understanding of system configuration 									
Staffing										Automation Technology									
<ul style="list-style-type: none"> • Print operator • Output manager 										<ul style="list-style-type: none"> • Output management software • Print protocols 									
Best Practices										Metrics									
<ul style="list-style-type: none"> • Using a single output management process for the enterprise • Integration of print, output and 										<ul style="list-style-type: none"> • Year-to-year tracking in: <ul style="list-style-type: none"> • Cost/printed page normalized for media fluctuations 									

Automation Balance					Stability Balance																			
1	2	3	4	5	6	7	8	9	10															
Manual					Automated					Dynamic					Stable									
document management functions					<ul style="list-style-type: none"> • Decentralized output processing to departments where possible • Benchmark annually to evaluate competitiveness of output operations with competitors, industry standards • Systematic reduction of hardcopy output 					<ul style="list-style-type: none"> • % decrease in internal use hardcopy output • # of lost or missing outputs • # of reruns to reproduce lost/damaged output • Stratified cost structure for hard copy, electronic, departmentally printed, fiche, and optical output options 														
Process Integration										Futures														
<ul style="list-style-type: none"> • Integration of print, output and document management 										<ul style="list-style-type: none"> • Integration of output with tape/storage subsystems • Customer-defined parameters for delivery, copies, frequency • Common output management software for the enterprise • Built-in archival based on business continuity/criticality • Increased use of color technology 														

Performance Management

The aim of this process is to manage and maintain end-to-end performance for all workloads and environments.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> Analyze performance of IT systems, storage and networks Define processes and procedures for performance management Define thresholds and rules of thumb for optimal performance 					<ul style="list-style-type: none"> Knowledge of all application processes and relationships Ability to utilize performance tools Understand performance of infrastructure components Ability to adjust tuning parameters within each environment 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> Performance analyst Systems tuning specialist Network optimization specialist 					<ul style="list-style-type: none"> Performance-monitoring tools Application-modeling tools Performance diagnostic tools All major operating systems, databases, transaction-processing subsystems, and hardware assist features (such as caching) 				

Best Practices

- Use of a common organization and performance management process

Metrics

- Consistent and repeatable:

Automation Balance										Stability Balance									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automated					Dynamic					Stable				
for all enterprise environments										<ul style="list-style-type: none"> • CPU service times • Response times • Batch turnaround • Decision-support systems/database applications response times 									
<ul style="list-style-type: none"> • Development and maintenance of a mapping of business systems to performance patterns, using the following categories (patterns): <ul style="list-style-type: none"> • Systems requiring sub-second transaction response time • Collaborative systems • Decision support systems • Systems supporting remote users • Batch operations • Integration of performance management with production acceptance process • Use of policy-based objectives in the form of: <ul style="list-style-type: none"> • Workload managers • Service-level agreements 										<ul style="list-style-type: none"> • Continuous improvement in achieving performance service levels • Continuous improvement in performance processes 									
Process Integration										Futures									
<ul style="list-style-type: none"> • Capacity Planning • Problem Management 										<ul style="list-style-type: none"> • Dynamic (self-analyzing) tuning by application and cross-environments • Simulation/modeling of performance expectations for each of the seven patterns • Predictive performance problem identification 									

Problem Management

The aim of this process is to minimize the resolution time for problems by logging, tracking, and expediting problems as they occur, keeping stakeholders current as to resolution-status, exploring all factors that can lower *mean time to resolution* (MTTR) and maintain a high level of overall customer satisfaction.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> Escalate problems according to documented procedures Assess and resolve problems incurred among desktop, middle-tier, and mainframe systems (and associated networks) Define processes and procedures for automated problem management Optimize problem management techniques Ensure proper tracking and documentation for all problems Assure that help desk policy is followed 					<ul style="list-style-type: none"> Detail oriented with key relationship management skills Understand escalation and points of responsibility Expertise with the enterprise problem-management tools 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> Help desk specialist Service manager 					<ul style="list-style-type: none"> 				

Automation Balance					Stability Balance				
1	2	3	4	5	1	2	3	4	5
Manual		Automated			Dynamic		Stable		
Best Practices					Metrics				
<ul style="list-style-type: none"> • Provide problem management with a full-service help desk that has a single point of control in the enterprise. Move on from the legacy dispatch center and its associated problem desk. (For more information, consult the discussion of the customer advocacy COE.) • Create and communicate a well articulated vision and mission statement for the Help Desk • Create a Supported Products List and communicate that list to clients • Define points of escalation and delineate clear roles and responsibilities for next level support groups • Integrate the help desk into the IT value chain and promote proactivity. Act as the voice of the user in IT. • Maintain communication with all stakeholder groups: customers, IT managers and help-desk employees • Create an action plan for continuous improvement 					<ul style="list-style-type: none"> • Customer Satisfaction surveys • Average help desk queue time • Average # call abandonment • Average first call resolution rates • Mean time to resolution (MTTR) • Mean time to response • Support staff per 1000 supported users 				
Process Integration					Futures				
					<ul style="list-style-type: none"> • Improved systems that are self-healing • Increased use of the Web to support user help 				

Production Acceptance

This process aims at defining and enforcing criteria for the release and migration of new and modified applications into the production environment. It works with the application developers to facilitate migration by ensuring life-cycle milestones are achieved and by evaluating standards compliance in the applications.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> Understand application development life cycle (ADLC) Apply testing tools, such as <ul style="list-style-type: none"> Simulation and modeling tools Load generation tools Coordinate testing and upgrades between application areas and technical support/operations staff Define requirements for successful completion Develop documentation (with customers) to support operational requirements Receive scheduling criteria for input to production schedules 					<ul style="list-style-type: none"> Understanding must-have requirements—educating customers as to what is needed and why 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> Production acceptance specialist Application liaison Life cycle specialist 					<ul style="list-style-type: none"> Testing tools Life-cycle software Documentation tools for application processing 				
Best Practices					Metrics				
<ul style="list-style-type: none"> Use a common acceptance procedure across the enterprise Use a production acceptance “lab” mirroring infrastructure Define must-have requirements for any application that will be turned 					<ul style="list-style-type: none"> Average time to production acceptance, (by complexity) # of unsuccessful/partially failed applications implemented # of reverted deployments # of errors in scheduling new 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
over to operations					applications				
<ul style="list-style-type: none"> • Halt deliverables unless all requirements are met • Automate sign-off processes throughout the application development life cycle (ADLC) • Modify the ADLC to handle shorter the development cycles enabled by packaged software solutions 					<ul style="list-style-type: none"> • Time to estimate infrastructure cost of new applications (PCM model) • Average time to respond to new requests • Staffing Metrics <ul style="list-style-type: none"> • Number of applications accepted/analyst 				
Process Integration					Futures				
					<ul style="list-style-type: none"> • New production acceptance methods, as follows: <ul style="list-style-type: none"> • Integrated, enterprise-wide software configuration management • User interfaces for application developers that require conformance to ADLC checkpoints • Increased use of third-party service providers in the production assurance process. 				

Production Control

This process aims at assuring production integrity (often via audits) of the production-acceptance process and job-scheduling functions.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> Notify programmers of problems with jobs/transactions Define processes supporting production acceptance process 					<ul style="list-style-type: none"> Familiarity with restart/recovery procedures for production workloads Attention to detail Understanding of production environment sequences and mapping to business cycles Understand business checks, balances, and data tolerances 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> Production coordinator JCL/Script specialist LOB liaison 					<ul style="list-style-type: none"> Production control software Report balancing software 				
Best Practices					Metrics				
<ul style="list-style-type: none"> A uniform method for handling production control across the enterprise A focus on workflow processes to ensure comprehensive management without encumbering clients Systems that integrate scheduling tools and performance management (policy-based) software A focus on minimizing defects based on continuous improvement of testing and life-cycle processes 					<ul style="list-style-type: none"> # of failed applications/month Mean-time-to-resolution # of scheduling errors and invalid run-time projections # of applications accepted without proper documentation/testing/etc. <ul style="list-style-type: none"> Average time for handling application change requests, By request type 				

Best Practices (continued)

Automation Balance

Stability Balance

1 2 **3** 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

Manual

Automated

Dynamic

Stable

- Development of an ongoing schedule of application optimization
- A production control method that addresses electronic commerce, ERP, CRM, and other production processes
- A production method that integrates software configuration management processes to data center change processes

Process Integration

Futures

Production acceptance

- New application management technologies
 - Integrated, enterprise-wide software configuration management
 - Intelligent scheduling tools
 - Self-healing applications and databases (automated tuning)
- Use of third-party service providers for production control

Physical Database Management

This process aims to manage the physical design, integrity, performance and access to corporate database systems. It assists customers with implementation of database redesign, optimization, and recovery activities.

Automation Balance										Stability Balance									
Manual					Automated					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> Utilize database management software tools Utilities to extract, duplicate and back up databases Define and enforce standards around database design/usage Support ad hoc requests for temporary databases 										<ul style="list-style-type: none"> Understand physical characteristics of the major database vendors Knowledgeable about the redesign, optimization and recovery of database elements 									
Staffing										Automation Technology									
<ul style="list-style-type: none"> Storage administrators Storage management specialists Database specialist 										<ul style="list-style-type: none"> Database management software Support utilities for reorganization, data-set extraction, backup, and so forth. 									
Best Practices										Metrics									
<ul style="list-style-type: none"> Use of a common organization and management process for all enterprise database Proactive monitoring of databases for optimization Interface with Disk Storage Management process to ensure appropriate media selection and caching approach Achieving appropriate availability for production databases 										<ul style="list-style-type: none"> Year-to-year improvements in: <ul style="list-style-type: none"> Cost/MB of database data database availability Response time Mean time to recovery 									

Automation Balance

Stability Balance

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10

Manual

Automated

Dynamic

Stable

Process Integration

Futures

Disk management

- Self-analyzing database design software
- Tighter integration of databases and storage subsystems
- Policy-based management software
- Mirroring/vaulting technologies for continuous operations
- Better understanding of responsibilities for shared data among businesses

Quality Assurance

This process aims to establish, support, and enforce corporate quality standards associated with every process in the company. It is deeply involved with acceptance testing and it performs audits of applications, infrastructure, and life-cycle procedures. It also tracks trending of tolerance levels for operations.

Automation Balance					Stability Balance				
1	2	3	4	5	1	2	3	4	5
Manual					Dynamic				
Automated					Stable				
Tasks					Skills				
<ul style="list-style-type: none"> Evaluate company processes for efficiency, practicability, and so on Improve IT processes Support IT people in each process Evaluate workloads for production readiness Ensure appropriate testing/documentation prior to production release Define quality assurance processes for testing Assess completeness of testing (both logic testing and the appropriateness of the test bed) 					<ul style="list-style-type: none"> Expertise in using: <ul style="list-style-type: none"> Simulation tools quality-assurance tools Life cycle tools and processes Trending tools Understanding of application system flow, including all aspects of input, output, and cross-application dependencies Familiarity with all corporate standards for quality assurance Development of new quality assurance standards for “new age” workloads 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> Controller QA specialist Production coordinator LOB liaison 					<ul style="list-style-type: none"> QA tools 				
Best Practices					Metrics				
<ul style="list-style-type: none"> Use of interactive tool that enable customers to participate directly in quality assurance efforts 					<ul style="list-style-type: none"> Cost of quality (and non-quality) Customer satisfaction 				

Automation Balance					Stability Balance														
1	2	3	4	5	6	7	8	9	10										
Manual					Automated					Dynamic					Stable				
<ul style="list-style-type: none"> quality assurance efforts Periodic reporting and enforcement of level of compliance Use of quality assessment information to improve performance of application and infrastructure teams 										<ul style="list-style-type: none"> # failed processes % of jobs adhering to quality assurance policies/standards # of defects in applications that were compliant with quality-assurance principles # of emergency quality assurance review processes <ul style="list-style-type: none"> Average time to respond to new requests Staffing Metrics <ul style="list-style-type: none"> Number of jobs and processes per analyst 									
Process Integration										Futures									
All processes										<ul style="list-style-type: none"> QA integrated across all centers of excellence Automated tools for risk/complexity analysis <ul style="list-style-type: none"> Defect discovery 									

Security Management

This process aims to assure IT security by granting and enforcing the appropriate level of access to applications and data to internal and external personnel through the use of day-to-day administration of security policies and the use of a consistent security policy across all enterprise resources.

Automation Balance					Stability Balance				
1	2	3	4	5	1	2	3	4	5
Manual		Automated			Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> • Provide new user-id, password for customers • Reset passwords as required • Use automation to perform monitoring/administration tasks • Develop processes to improve security management processes 					<ul style="list-style-type: none"> • Understanding of all operational processes that deliver services and process interaction points • Expertise in service level reporting tools • Knowledge of customer applications/systems • Understanding of cost/performance trade-offs • Ability to communicate well • Knowledge of security technologies and products 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> • Security administrator • Security policy manager 					<ul style="list-style-type: none"> • General network and systems management (NSM) tools for monitoring (that is, availability management) • Reporting add-ons to general NSM tools • Firewall and virtual private network products for perimeter defense; intrusion detection products for defense within perimeter • Single sign-on and Kerberos products for efficient and secure use of password authentication 				
Best Practices					Metrics				
<ul style="list-style-type: none"> • Use of single signon technologies to streamline user access while 					<ul style="list-style-type: none"> • # of security breaches / time 				

Automation Balance										Stability Balance									
1 2 3 4 5 6 7 8 9 10										1 2 3 4 5 6 7 8 9 10									
Manual					Automated					Dynamic					Stable				
maintaining security										<ul style="list-style-type: none"> • Cost of security breaches / time • Level of customer satisfaction (survey feedback) • Cost of administering/number of service-level agreements (and customers) • Service availability • Service performance • Service quality (QOS) 									
<ul style="list-style-type: none"> • Use of Kerberos-style tokens to avoid transmitting passwords over insecure networks • Use of intrusion detection technologies within the boundaries of the enterprise • Service levels coupled to externalized metrics • End-to-end objectives reflecting business perception 																			
Process Integration										Futures									
Most processes										<ul style="list-style-type: none"> • End-to-end perspective • End-user perspective • Consolidated reporting • Feedback of service metrics to control management policy • "What if" analysis of suggested service-level agreements in relation to cost • Stronger tie-in of cost/service trade-offs 									

Service-Level Management

This process aims to ensure consistent delivery of services and accurate reporting of agreed-to service levels. This process implies management to an optimized level of availability, performance, and quality.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Dynamic				
Automated					Stable				
Tasks					Skills				
<ul style="list-style-type: none"> Document, monitor and perform corrective action to manage service-level agreements Define processes/procedures for management of service-level agreements 					<ul style="list-style-type: none"> Understanding of all operational processes that deliver services and process interaction points Expertise in service level reporting tools Knowledge of customer applications/systems Understanding of cost/performance trade-offs Ability to communicate well 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> Business relationship manager Reporting specialist for service-level agreements Service-level manager 					<ul style="list-style-type: none"> General network and systems-management (NSM) tools for monitoring (for example, of availability management) Reporting add-ons to general NSM tools Data consolidation and reporting tools End-user perspective tools Problem management (help desk) reporting tools 				
Best Practices					Metrics				
<ul style="list-style-type: none"> Escalation process for negative 					<ul style="list-style-type: none"> Parallel individual feedback loop 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
feedback					(individual feedback form)				
<ul style="list-style-type: none"> • Service levels coupled to externalized metrics • End-to-end objectives reflecting business focus • Use of automated service-level agreement reporting tools • High level of automation of reporting • Web-based customized service level reporting 					<ul style="list-style-type: none"> • Actual vs. target service levels • Level of customer satisfaction (survey feedback) • Cost of administering/number of service-level agreements (or / customers) • Service availability • Service performance • Service quality (QOS) 				
Process Integration					Futures				
					<ul style="list-style-type: none"> • End to end perspective • End-user perspective • Consolidated reporting • Streamlined feedback of service metrics to control management policy • What-if analysis of suggested service-level agreements in relation to cost • Stronger tie-in of cost/service trade-offs 				

Service-request Management

This process aims to ensure the timely acceptance, documentation, handling and close-out of service requests.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> Accept service requests and document accordingly Provide response according to pre-defined service-level requests Evaluate scope of request and define work effort to user Determine ways to better address core requirement because customers do not always know what they need Define processes/procedures to improve request process 					<ul style="list-style-type: none"> Attention to details Knowledge of service level agreement approach to IT management 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> Help desk specialist Line of business liaison Customer service representative 					<ul style="list-style-type: none"> Various point products to manage service requests Help desk tools 				
Best Practices					Metrics				
<ul style="list-style-type: none"> Management with clearly defined categories for service level request. Strictly defined service-level agreements for each category Automated process enabling customers to enter service requests Automated escalation)of overdue requests 					<ul style="list-style-type: none"> # requests/month # requests/staff MTTR for each request (by type) # late service events/# requests 				

Automation Balance

Stability Balance

1 2 3 4 **5** 6 7 8 9 10

1 2 3 4 5 6 7 **8** 9 10

Manual

Automated

Dynamic

Stable

Process Integration

Futures

Job scheduling

- Increased automation to enable quicker and cheaper management of servicing requests
 - Fully automated SR process
 - Ongoing improvement in the descriptions of service by type and escalation procedures.
-

Software Distribution

This process aims at preparing, scheduling, and executing the distribution of software throughout the enterprise in a secure and expeditious manner. It works closely with the change and service request management capabilities in the IT organization.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> Define deployment endpoints and software stack for software distribution with automation tools Evaluate success of distributions Execute fallback procedures if necessary Define processes and procedures for optimizing enterprise software distribution process 					<ul style="list-style-type: none"> Familiarity with configuration of target environments (such as registry, desktop structure, etc.) Understanding of change management and inventory management processes Expertise in chosen automation technology and products 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> Production coordinator Software distribution specialist 					<ul style="list-style-type: none"> Microsoft Systems Management Server Novadigm EDM Tivoli Software Distribution CA Unicenter TNG Software Distribution / ShipIT IBM LCCM Novell ZENWorks Intel Landesk Mobile user support: Callisto, Marimba, Mobile Automation, Sterling Software (Xcellnet) 				
Best Practices					Metrics				
<ul style="list-style-type: none"> Automated distribution of all major enterprise applications 					<ul style="list-style-type: none"> number of discrete distributions performed weekly / monthly 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
<ul style="list-style-type: none"> Minimal custom scripting of software distribution solutions Use of distribution tools that deliver to Multi-tiered, multi-platform architectures Tight integration between software distribution techniques and : <ul style="list-style-type: none"> change management configuration management inventory / asset management (distributions drive updates) problem management 					<ul style="list-style-type: none"> MB/GB transferred per week / month staff per target resources ratio staff per distributions ratio 				
Process Integration					Futures				
<ul style="list-style-type: none"> change management configuration management inventory / asset management (distributions drive updates) problem management 					<ul style="list-style-type: none"> Automated mirroring and end-user document version control (such as Microsoft Active Directory, Intellimirror) Complexity stratification (browser-based, e-mail based, multi-tiered operating systems) Increased support of mobile computing devices and technologies 				

System Monitoring

This process aims to provide continuous knowledge of systems availability, health, and status. It does so by monitoring all server, database, and application resources; response to system and application-generated requests and events; automation of monitored events; and rapid diagnosis and resolution of availability problems.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> • Monitor health of enterprise systems • Determine when problems exist and escalate as required • Ensure optimal availability, using pre-defined procedures to recover systems when problems occur • Define processes/procedures to optimize system monitoring process 					<ul style="list-style-type: none"> • Expertise with selected monitoring tools • Ability to determine Basic Level 1 problems • Knowledge of management protocols (such as SNMP) • Knowledge of component (operating system, databases, middleware, and so on) behavior 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> • Console specialist • Systems operations specialist • Availability specialist 					<ul style="list-style-type: none"> • OEM-supplied tools • Instrumentation • Suites 				
Best Practices					Metrics				
<ul style="list-style-type: none"> • Extremely high-level of automated monitoring 					<ul style="list-style-type: none"> • Class and aggregate resource availability 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
								Dynamic	
									Stable
<ul style="list-style-type: none"> • Use of standard instrumentation provided by system suppliers • Ability to integrate event data across processes • Ability to integrate and present system information to differing operational groups • Integration of system monitoring with automation, notification, and problem management systems • Integration of event data with service-level agreement reporting • Use of web-based user access to system management data 					<ul style="list-style-type: none"> • Number of elements monitored per employee • employees per 10,000 events • Unit cost of monitoring per 10,000 events • % events handled manually 				
Process Integration					Futures				
<ul style="list-style-type: none"> • Performance management • Problem management 					<ul style="list-style-type: none"> • Further consolidation of resource-centric data related to monitoring (event, problem, asset, change) • Additional cross-platform integration (and with console automation) into business process and application views • Derivative capabilities of business impact based on outages 				

Tape Management

This process manages and optimizes methods to allocate, store, administer, and optimize tape usage. It seeks to make sure enough (but not too much) operational tape is available, that various tape media including virtual tape are used as effectively as possible, and that manual tape mounts are kept to a minimum.

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Automated				
					Dynamic		Stable		
Tasks					Skills				
<ul style="list-style-type: none"> Retrieve, mount and replace tapes in tape library Manage automated tape loaders, virtual tape, silos, and all major vendor technologies in the tape family Manage tape systems with automation tools Improve performance by tuning tape parameters, including blocksize, compression, and caching 					<ul style="list-style-type: none"> Knowledge of utilities associated with copy, repair and various production support processes Basic understanding of tape library functions (retention, inventory, and so forth) Understanding of storage performance tradeoffs (disk vs. tape, near-line vs. offline) Experience with storage area networking management 				
Staffing					Automation Technology				
<ul style="list-style-type: none"> 					<ul style="list-style-type: none"> Tape transport subsystems Silos and virtual tape servers Tape-management software 				

Automation Balance					Stability Balance				
1	2	3	4	5	6	7	8	9	10
Manual					Dynamic				
Automated					Stable				
Best Practices					Metrics				
<ul style="list-style-type: none"> • Use of a common organization and management process for tape storage systems, across all platforms • Maintenance of a detailed inventory and catalog mechanism for all tape files • Use of automated software to manage business continuity tapes • Use of automatic placement of data to manage performance based on data criticality, access frequency, and so forth. • Ongoing performance management/optimization process that monitors tapes coming up for expiration, length of service for each tape, optimal file placement on tapes. • Ongoing investigation of how costs can be reduced both internally and externally? 					<ul style="list-style-type: none"> • Year-to-year improvements in: • Utilization per cartridge • Number of (manual) mounts • \$/GB (or cartridge) • Staffing per unit capacity (staffing/n-tapes/mounts/etc.) • Mean-time-between-failures (MTBF) <ul style="list-style-type: none"> - How many applications were affected for how long due to tape-related issues? 				
Process Integration					Futures				
Disk storage management					<ul style="list-style-type: none"> • Tape to become an element of a Storage Area Network • Virtual tape (data set indexing) • Transport independence • Inter-platform use of automated tape • Media commoditization • Intelligent storage controllers • Higher integration of tape and disk subsystems • Dynamic (and intelligent) data placement independent of media 				

Workload Monitoring

This process ensures consistent, stable, and predictable workflow cycles by monitoring all job streams for completion (and following up on job exceptions). It works with the Production Control process to optimize workflow and to facilitate the handling of ad hoc and emergency requests without disruption.

Automation Balance										Stability Balance									
1 2 3 4 5 6 7 8 9 10					1 2 3 4 5 6 7 8 9 10					1 2 3 4 5 6 7 8 9 10					1 2 3 4 5 6 7 8 9 10				
Manual					Automated					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> Evaluate the health of specific jobs/workloads as assigned Expedite workload processing to ensure service-level agreement compliance Define ways to better improve monitoring processes/automation 										<ul style="list-style-type: none"> Attention to detail Able to follow a methodology consistently Understanding of major, critical job streams and business functions they support Expertise in operating environments and chosen automation tool(s) 									
Staffing										Automation Technology									
<ul style="list-style-type: none"> Console operator Systems operations specialist Production coordinator 										<ul style="list-style-type: none"> BMC Control-M / Enterprise Console System (ECS) CA - Unicenter TNG Workload Management, (PLAT) AutoSys, CA-Jobtrac, CA-Scheduler, CA-7, CA-Jobwatch, FAQs/PCS Cybermation ESP Workload Manager ISA AppWorx SEA CSAR SMA The Scheduler, OpCon/XPS Tivoli Workload Manager (Maestro), (IBM) OPC/ESA 									
Best Practices										Metrics									
<ul style="list-style-type: none"> High degree of workload monitoring automation Eventual elimination of all manual job "set-ups" 										<ul style="list-style-type: none"> # of operators per 10,000 jobs % jobs run on time # ad hoc requests handled # exceptions per 10,000 jobs 									

Automation Balance

Stability Balance

1 2 3 4 5 6 7 **8** 9 10

1 2 3 4 5 6 **7** 8 9 10

Manual

Automated

Dynamic

Stable

-
- Ability to monitor jobs scheduled on different operating platforms
 - Integration of workload monitoring with event management

Process Integration

Futures

Production Control

- Additional automation
 - Better cross-platform integration
-