

Chapter 7

Process Catalog

The Process Catalog is an IT organization's single source for 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. We have included 38 sample processes in this chapter. The number of processes that an organization would include in its own catalog, as well as detail in which they are described, depends on the extent of the OE effort. Readers are encouraged to delete, rename, expand, or collapse the processes that require modification in their analysis.

At a minimum, each process should be measured according to automation and stability levels. Processes are a balance of manual and automated tasks. Stable or “commoditized” processes introduce opportunities for automation. Target values represent the automation or stability levels as implemented in best-practice organizations. Such values are subjective, but provide a baseline from which to begin gap analysis and process improvement.

A generic explanation of the Process Catalog entries is provided as a preface to the alphabetically ordered catalog entries.

Below this description you will find a scale indicating the current automation and stability levels of a process. You can highlight the numbers that represents the current level of automation and stability for each process at your site. Shading indicates typical values for best-practices organizations.

Items in the catalog use two styles of bullet. Solid bullets (■) serve only to mark the item. Open bullets (□) indicate items that you should compare to your site's current processes. You can mark the items that you have implemented.

1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
Manual Automatic	Dynamic Stable
<p>Tasks</p> <p><i>Tasks</i> are the activities that typically make up the process as it is implemented at many large firms today.</p> <ul style="list-style-type: none"> Not all tasks are listed—only those viewed as especially important or easily overlooked You should add tasks unique to your IT organization 	<p>Skills</p> <p><i>Skills</i> itemizes the typically required skills and abilities to implement this process.</p> <ul style="list-style-type: none"> Not all skills are listed—only those viewed as especially important or easily overlooked
<p>Staffing</p> <p><i>Staffing</i> indicates typical staffing in large IT organizations.</p> <ul style="list-style-type: none"> 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 	<p>Automation Technology</p> <p><i>Automation Technology</i> is a list of representative technologies that can automate the tasks that make up the IT process.</p> <ul style="list-style-type: none"> Inclusion in the list does not constitute an endorsement Nor is absence from the list a tacit comment

Best Practices

Best Practices are the activities that the best-run IT organizations use.

- Best-practice items should be compared to activities at your site as part of the gap analysis

Metrics

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.

- Metrics are commonly compared year after year
- Metrics can sometimes be compared to external benchmarks

Process Integration

Process Integration refers to other IT processes in this Catalog 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

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

- Futures may also include changes in the manner in which business is conducted, for example, a shift to e-Business transactions

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual										Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> ■ Train entry-level personnel ■ Define standards for applications ■ Tune job control language and programs ■ Write recommendations to application owners ■ Ensure 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 storage media ■ Working knowledge of change, ADLC and SCM processes, common programming languages (Cobol, C, C++, Fortran, and Java) and environments, e.g., Visual Studio.NET ■ Good communications skills ■ Working knowledge of business processes and application flow 									
Staffing										Automation Technology									
<ul style="list-style-type: none"> <input type="checkbox"/> Quality control specialist <input type="checkbox"/> Production coordinator <input type="checkbox"/> Tuning specialist 										<ul style="list-style-type: none"> <input type="checkbox"/> Tuning tools (such as Strobe, TSA/ PPE, Architeck) <input type="checkbox"/> JCL generation and optimization tools 									

Best Practices

- ☐ Consistent, cross-platform approach to application optimization
- ☐ Periodic review of new technology impacts on business applications
- ☐ Regular reassessment of technology needs over time to assure that (1) old hardware and software are performing adequately and (2) new technology may provide a stepwise improvement in performance
- ☐ Continuous application performance improvement
- ☐ Explicit definitions of critical requirements for new and enhanced applications

Metrics

- ☐ Percentage improvement in tuned applications
- ☐ Number of errors in changed applications
- ☐ Amount of investment relative to degree of improvement
- ☐ System resources consumed
- ☐ Number of emergency optimization needs/requests
- ☐ Average time to respond to new requests
- ☐ Number of tuning efforts/analyst

Process Integration

- No Items

Futures

- Automated tuning and self-optimizing applications
- Application componentization and reuse

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

Automation 1 2 3 4 5 6 7 8 9 10 Manual Automatic	Stability 1 2 3 4 5 6 7 8 9 10 Dynamic Stable
Tasks <ul style="list-style-type: none"> ■ Maintain and manage the acquisition, maintenance (costs) and disposal of all IT assets ■ Manage vendor contracts and associated terms and conditions ■ Manage portfolios based on optimal “refresh cycles” ■ Track actual versus projected for IT equipment and staff 	Skills <ul style="list-style-type: none"> ■ Basic knowledge of accounting principles ■ Ability to define processes and procedures for acquisition/disposal ■ Ability to develop approaches to simplify customer involvement
Staffing <ul style="list-style-type: none"> □ Asset management specialist □ Customer liaison □ Financial analyst 	Automation Technology <ul style="list-style-type: none"> □ CA-MICS, IBM SLR, Merrill Consultants’ MXG

Best Practices

- ☐ Integrated process and automation for managing IT assets
- ☐ Integration of asset management with corporate processes/automation
- ☐ Use of defined standards for asset life, disposal, and so forth
- ☐ Efficient corporate process for ordering/acquisition

Metrics

- ☐ Number of products/number of staff
- ☐ Budget/number of staff
- ☐ Savings (by category)/year

Process Integration

- Inventory management
- Configuration management
- Asset tracking

Futures

- Seamless integration with corporate tools/processes
- Higher reporting relationship (directly to CIO)
- More direct tie-in to Customer Advocacy COE (including BRM)
- Participation in go/no-go buying scenarios

process aims to manage and reconcile incurred costs with cost recovery, plus provide out-year estimates and modeling for new budgets.

Automation 1 2 3 4 5 6 7 8 9 10 Manual Automatic	Stability 1 2 3 4 5 6 7 8 9 10 Dynamic Stable
Tasks <ul style="list-style-type: none"> ■ Maintain budget, actual versus planned ■ Define and enforce processes for budget compliance ■ Enforce spending limits based on policies/standards 	Skills <ul style="list-style-type: none"> ■ Detailed understanding of full IT inventory and related processes ■ Basic financial/budgeting skills ■ Cost accounting knowledge ■ Familiarity with technology metrics and trends ■ Understanding of corporate budget process/rules
Staffing <ul style="list-style-type: none"> <input type="checkbox"/> Budget specialist <input type="checkbox"/> Accountant <input type="checkbox"/> Financial analyst 	Automation Technology <ul style="list-style-type: none"> <input type="checkbox"/> Financial systems for budget planning <input type="checkbox"/> Cost accounting systems <input type="checkbox"/> Forecasting systems

Best Practices	Metrics
<input type="checkbox"/> Use of automated systems that track actual and budgeted monies	<input type="checkbox"/> Actual versus planned costs
<input type="checkbox"/> Semi-annual budget iterations	<input type="checkbox"/> Group costs/budget value
	<input type="checkbox"/> Quantity of resources/cost
Process Integration	Futures
■ No Items	■ Automated system to tract budgets and actual costs
	■ Linkage with forecast systems
	■ Automatic budget planning based on forecast
	■ "What if" modeling for various technology business alternatives

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automatic					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> ■ Prepare and maintain a business continuity plan (BCP) ■ Communicate with suppliers and customers regarding disaster-recovery requirements ■ Arrange and coordinate with hot-site, e-vault providers ■ Integrate BCP with production acceptance processes ■ Define standards around business continuity for customers 										<ul style="list-style-type: none"> ■ Expertise in scenario planning ■ Knowledge of technologies critical to information recovery 									
Staffing										Automation Technology									
<ul style="list-style-type: none"> <input type="checkbox"/> Disaster-recovery specialist <input type="checkbox"/> Project manager <input type="checkbox"/> Business/IT liaison 										<ul style="list-style-type: none"> <input type="checkbox"/> Disaster-recovery management software (Sunrise, Arise) <input type="checkbox"/> Disaster-recovery planning software (PC-based) 									

Best Practices	Metrics
<ul style="list-style-type: none"> <input type="checkbox"/> Common continuity plans for the enterprise <input type="checkbox"/> Update plan twice a year <input type="checkbox"/> Test plan three times per year, with one actual, one simulated, and one unplanned test <input type="checkbox"/> BCP has equal emphasis on business recovery and technology recovery <input type="checkbox"/> Optimize use of third-party disaster-recovery facilities <input type="checkbox"/> Integrate disaster recovery requirements with production acceptance process <input type="checkbox"/> Ability to perform integrated testing/recovery across IT platforms 	<ul style="list-style-type: none"> <input type="checkbox"/> A mean time to recovery (in relation to pattern) <input type="checkbox"/> Cost per business segment, per volume of technology protected <input type="checkbox"/> Stratified cost structure by pattern for systems and application with availability requirements as follows: instantaneous, within 24 hours, 24–72 hours, 5–7 days <input type="checkbox"/> Cost /MB of archived data
Process Integration	Futures
<ul style="list-style-type: none"> ■ Disk storage management ■ Tape management 	<ul style="list-style-type: none"> ■ Disaster recovery built into tape/storage subsystems, 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 ■ Continuous operations for Web-based applications ■ Interface with ASPs and ISPs to provide recoveries

1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 10
Manual Automatic Dynamic Stable

Automation	Stability
1 2 3 4 5 6 7 8 9 10 Manual Automatic	1 2 3 4 5 6 7 8 9 10 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"> <input type="checkbox"/> Identify primary point of contact for customers <input type="checkbox"/> Business relationship manager is clearly accountable for customer satisfaction <input type="checkbox"/> Business relationship manager participates in IT/business planning processes <input type="checkbox"/> Process for improving customer service is iterative <input type="checkbox"/> Business relationship manager identifies new and improved services to customers 	<ul style="list-style-type: none"> <input type="checkbox"/> Customer satisfaction survey results <input type="checkbox"/> Service-level attainment <input type="checkbox"/> Cost versus value comparisons for IT services
Process Integration	Futures
<ul style="list-style-type: none"> ■ No Items 	<ul style="list-style-type: none"> ■ Business relationship manager plays a leading role in IT project prioritization ■ Business relationship manager oversees help-desk service and results ■ Business relationship manager defines new customer-oriented metrics for measuring improvement

1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 10
Manual Automatic Dynamic Stable

Automation	Stability
<div> <div>12345678910</div> <div>ManualAutomatic</div> </div>	<div> <div>12345678910</div> <div>DynamicStable</div> </div>
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 ■ Working knowledge of system/subsystem (such as I/O subsystems) tuning
Staffing	Automation Technology
<ul style="list-style-type: none"> <input type="checkbox"/> Capacity planner <input type="checkbox"/> Statistical analyst <input type="checkbox"/> Operations research analyst 	<ul style="list-style-type: none"> <input type="checkbox"/> Capacity planning software (for example, BMC, IBM, Compuware, and others) <input type="checkbox"/> Statistical trend analysis <input type="checkbox"/> Simulation tools <input type="checkbox"/> Analytical modeling tools <input type="checkbox"/> Operating-system support utilities

Best Practices	Metrics
<ul style="list-style-type: none"> <input type="checkbox"/> Common organization and management process for all capacity evaluations <input type="checkbox"/> Occasional, temporary use of additional resources <input type="checkbox"/> Proactive evaluation of all resources <input type="checkbox"/> Ongoing tracking of actual versus planned usage by environment and by customer <input type="checkbox"/> Tie-in to performance management processes <input type="checkbox"/> Service-level attainment <input type="checkbox"/> Bulk purchases (for example, on a quarterly basis) for cost-effectiveness <input type="checkbox"/> Selective out-tasking of activities to third-party providers <input type="checkbox"/> Use of simple business metrics where feasible <input type="checkbox"/> Map of capacity requirements onto application infrastructure patterns 	<ul style="list-style-type: none"> <input type="checkbox"/> IT planned versus actual utilization <input type="checkbox"/> Customer forecast versus actual <input type="checkbox"/> Number and size of unplanned system 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

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										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automatic					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 that 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"> <input type="checkbox"/> Change specialist <input type="checkbox"/> Change coordinator <input type="checkbox"/> Impact assessment specialist <input type="checkbox"/> Business/IT liaison 										<ul style="list-style-type: none"> <input type="checkbox"/> Configuration management and infrastructure change/service request management tools <input type="checkbox"/> Change management systems or add-ons such as Peregrine, HP, Tivoli, IBM <input type="checkbox"/> Application change management (often focused more on configuration rather than change, such as CA-Endevor, ChangeMan, MicroFocus/InterSolv, Rational Atria, Continuous, and others) <input type="checkbox"/> Vendor proprietary products, such as SAP CTS 									

Best Practices	Metrics
<ul style="list-style-type: none"> <input type="checkbox"/> Building your own/internal application currently, but shifting to vendor tools <input type="checkbox"/> Tends to break across software configuration management and infrastructure change/service request management tools <input type="checkbox"/> Change management systems or add-ons, such as Peregrine, HP, Tivoli, IBM, and others <input type="checkbox"/> Application change management (often focused more on configuration rather than change, such as CA Endevor, ChangeMan, MicroFocus/InterSolv, Rational Atria, Continuous, and others) <input type="checkbox"/> Vendor proprietary, such as SAP CTS 	<ul style="list-style-type: none"> <input type="checkbox"/> Number of requests for change (RFCs) <input type="checkbox"/> Proportion of RFCs rejected <input type="checkbox"/> Gross numbers of changes and trends <input type="checkbox"/> Percent of system outages with change as the root cause <input type="checkbox"/> Percent of changes scheduled that are executed on time <input type="checkbox"/> Percent of changes executed outside of normal change release schedule (that is, emergency changes) <input type="checkbox"/> Number of changes backed out <input type="checkbox"/> Number of support calls generated by executed changes <input type="checkbox"/> Proportion of implemented changes that were unsuccessful
Process Integration	Futures
<ul style="list-style-type: none"> ■ No Items 	<ul style="list-style-type: none"> ■ Development of quality-of-service metrics ■ Introduction of cost-recovery methodologies ■ New, more user-friendly technology

1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 10
Manual Automatic Dynamic Stable

Automation										Stability													
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10				
Manual										Automatic				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"><input type="checkbox"/> New hardware configurations created automatically<input type="checkbox"/> Integration of new technology and infrastructure specified automatically	<ul style="list-style-type: none"><input type="checkbox"/> Cost/change<input type="checkbox"/> Cost/inventory<input type="checkbox"/> Group costs/configuration value
Process Integration	Futures
<ul style="list-style-type: none">■ No Items	<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

1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 10
Manual Automatic Dynamic Stable

Automation 1 2 3 4 5 6 7 8 9 10 Manual Automatic	Stability 1 2 3 4 5 6 7 8 9 10 Dynamic Stable
Tasks <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 	Skills <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 <ul style="list-style-type: none"> <input type="checkbox"/> Contract specialist <input type="checkbox"/> Financial analyst <input type="checkbox"/> Administration specialist 	Automation Technology <ul style="list-style-type: none"> <input type="checkbox"/> Asset-tracking systems <input type="checkbox"/> 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 negotiations a part of data center operations	<ul style="list-style-type: none">❑ Cost/contract❑ Group cost/number of contracts in place (and new)
Process Integration	Futures
<ul style="list-style-type: none">■ No Items	<ul style="list-style-type: none">■ Fully integrated, cross-platform systems for contracts that map to enterprise-wide asset tracking systems

1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 10
Manual Automatic Dynamic Stable

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automatic					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 Relationship managers Project coordinator/manager Hardware/software specialist 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"><input type="checkbox"/> Use of a single approach and process for all vendors and contractors<input type="checkbox"/> Use of work statements and other communication to define the role of contractors accurately	<ul style="list-style-type: none"><input type="checkbox"/> Number of contracts/staff<input type="checkbox"/> Number of projects/staff<input type="checkbox"/> Project results (number of errors, delays)
Process Integration	Futures
<ul style="list-style-type: none">■ No Items	<ul style="list-style-type: none">■ Highly automated process for dealing with contractors (similar to internal management processes)■ Defined processes for vendor interaction within IT■ Establishment of vendor risk/reward for each major activity

Automation 1 2 3 4 5 6 7 8 9 10 Manual Automatic	Stability 1 2 3 4 5 6 7 8 9 10 Dynamic Stable
Tasks <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 	Skills <ul style="list-style-type: none"> ■ Infrastructure knowledge ■ Financial planning and cost management
Staffing <ul style="list-style-type: none"> <input type="checkbox"/> Charge-back specialist <input type="checkbox"/> Budget analyst <input type="checkbox"/> Cost accounting specialist 	Automation Technology <ul style="list-style-type: none"> <input type="checkbox"/> Automated utilization collection systems (such as CA, Merrill Associates, Komand) <input type="checkbox"/> Charge-back tools (such as Komand, CA, IBM)

Best Practices	Metrics
<ul style="list-style-type: none"> <input type="checkbox"/> Deployment of fully automated cost-recovery and rate-generation system <input type="checkbox"/> Use of charge-back pricing methods with the following attributes: <ul style="list-style-type: none"> <input type="checkbox"/> Understandable to users <input type="checkbox"/> Predictable for planning purposes <input type="checkbox"/> Related to value received <input type="checkbox"/> Priced competitively with open market services ■ Use of one of the two models common today within user organizations: <ul style="list-style-type: none"> – Central pool allocated back to LOBs based upon revenue or employees – Usage-based pricing allocated directly to users/LOBs 	<ul style="list-style-type: none"> <input type="checkbox"/> Group cost/cost pools <input type="checkbox"/> Degree of accuracy in actual recoveries
Process Integration	Futures
<ul style="list-style-type: none"> ■ No Items 	<ul style="list-style-type: none"> ■ Automated cost-recovery modeling systems ■ Dynamically adjusting systems that factor in unplanned events to adjust recovery rates

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual							Automatic			Dynamic							Stable		
Tasks										Skills									
<ul style="list-style-type: none">■ Test/verify 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 trade-offs (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"><input type="checkbox"/> Storage management specialist<input type="checkbox"/> DASD specialist<input type="checkbox"/> Backup/recovery specialist										<ul style="list-style-type: none"><input type="checkbox"/> Storage area networks<input type="checkbox"/> Storage systems<input type="checkbox"/> Backup and recovery<input type="checkbox"/> Storage management									

Best Practices

- ☐ A validated tested backup/recovery system is in place
- ☐ A consolidated storage management architecture that is completely cross-platform
- ☐ Up-to-date backup 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
- ☐ Ongoing, regularly scheduled performance management/optimization plan that includes determining which databases should be reorganized next, which volumes should be compressed/compacted next, and figuring the maximum utilization that also minimizes the risk of application failures due to space allocation

Metrics

- ☐ Time to restore/recover/backup
- Year-to-year improvements in:
 - Utilization
 - Cost/GB
 - Staffing/unit capacity (staffing/terabyte)
 - Mean-time-between-failures: How many applications were affected how often, and for how long?

Process Integration

- Tape management

Futures

- Point-in-time replication deployed across enterprise to eliminate the need for batch and preventative maintenance windows
- Storage technology improvements, including:
 - Storage area networks
 - Network attached storage
 - Media commoditization lowering the price of storage devices
 - Intelligent storage controllers and managers who understand characteristics of data and its usage, and automate decisions about where data is stored

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	Stability
<div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>6</div> <div>7</div> <div>8</div> <div>9</div> <div>10</div> </div> <div>ManualAutomatic</div>	<div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>6</div> <div>7</div> <div>8</div> <div>9</div> <div>10</div> </div> <div>DynamicStable</div>
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, mechanical/HVAC, fire protection, security
Staffing	Automation Technology
<ul style="list-style-type: none"> <input type="checkbox"/> Facilities manager <input type="checkbox"/> Space planner <input type="checkbox"/> Site planner 	<ul style="list-style-type: none"> <input type="checkbox"/> Configuration-modeling tools <input type="checkbox"/> 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 	<ul style="list-style-type: none"> ■ Year-to-year improvements in: <ul style="list-style-type: none"> – Staffing/major resource requests – Number of service / maintenance requests – Time to service requests – Actual availability of facilities
Process Integration	Futures
<ul style="list-style-type: none"> ■ No Items 	<ul style="list-style-type: none"> ■ Facilities technology improvements ■ Higher availability (24×7×365) ■ Increased redundancy of external utilities (e.g., power, communication) ■ Greater modularity and flexibility of base facility

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

Automation										Stability													
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10				
Manual										Automatic				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"><input type="checkbox"/> Inventory specialist<input type="checkbox"/> Asset specialist<input type="checkbox"/> Contract specialist<input type="checkbox"/> Configuration specialist										<ul style="list-style-type: none"><input type="checkbox"/> Tracking tools<input type="checkbox"/> Auto-discovery tools such as SNMP													

Best Practices

- ☐ Use of real-time information systems for all IT inventories
- ☐ Use of automatic warnings regarding lease expirations and other life-cycle events

Metrics

- ☐ Group costs/inventory costs
- ☐ Transaction/portfolio exchange costs
- ☐ Number of defects in configurations produced

Process Integration

- No Items

Futures

- More automation that includes portfolio analysis to evaluate whether it is feasible to swap out older resources for newer components with a lower cost and higher performance
-

Automation	Stability
1 2 3 4 5 6 7 8 9 10 Manual Automatic	1 2 3 4 5 6 7 8 9 10 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"> <input type="checkbox"/> Scheduling coordinator <input type="checkbox"/> Workload analyst 	<ul style="list-style-type: none"> <input type="checkbox"/> Host-based schedulers <input type="checkbox"/> Distributed schedulers <input type="checkbox"/> Platform-specific schedulers

Best Practices

- ☐ 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 versus scheduled run-times
- ☐ Use of enhanced policy-based schedulers that enable customers (or application areas) to define parameters for scheduling

Metrics

- ☐ Percent of jobs meeting schedule
- ☐ Number of errors in defining schedule parameters
- ☐ Number of emergency scheduling needs/requests
- ☐ Average time to respond to new requests
- ☐ Staffing metrics
- ☐ Number of jobs/processes per analyst

Process Integration

- Workload monitoring

Futures

- Integration of service-level agreements and objectives with job schedulers
- Policy-based scheduling systems for all IT resources

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	Stability
1 2 3 4 5 6 7 8 9 10 Manual Automatic	1 2 3 4 5 6 7 8 9 10 Dynamic Stable
Tasks	Skills
<ul style="list-style-type: none"> ■ Manage contract negotiations with hardware, software, and service providers ■ Align service levels with business objectives ■ Create favorable contractual terms for the IT organization 	<ul style="list-style-type: none"> ■ Strong understanding of IT strategy and external IT market ■ Understanding of industry best practices in negotiating: <ul style="list-style-type: none"> – 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"> <input type="checkbox"/> Vendor manager <input type="checkbox"/> Contract specialist <input type="checkbox"/> Contract administrator 	<ul style="list-style-type: none"> <input type="checkbox"/> Electronic access to legal, technological, supplier, and market information

<p>Best Practices</p> <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 	<p>Metrics</p> <ul style="list-style-type: none"> ❑ Percent of discount versus industry average ❑ Scope of negotiation ❑ Number of enterprise-wide versus customer specific contracts ❑ Multi-year versus one-time iterations
<p>Process Integration</p> <ul style="list-style-type: none"> ■ Contract management 	<p>Futures</p> <ul style="list-style-type: none"> ■ Improved, automated mapping of IT requirements to market and technology trends

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										Stability									
Manual					Automatic					Dynamic					Stable				
Tasks <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 										Skills <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 <ul style="list-style-type: none"> <input type="checkbox"/> Network control specialist <input type="checkbox"/> Online systems specialist <input type="checkbox"/> Network support products (such as enterprise management tools) 										Automation Technology <ul style="list-style-type: none"> <input type="checkbox"/> Embedded instrumentation in network equipment (SNMP-based) <input type="checkbox"/> Network management platforms <input type="checkbox"/> OEM tool <input type="checkbox"/> Correlation tools <input type="checkbox"/> Configuration tools <input type="checkbox"/> Service-level management tools 									

Best Practices

- ☐ Highly automated network monitoring systems in place
- ☐ Integrated presentation of network status information to differing operational groups
- ☐ Use of monitoring to drive automation, notification, and problem management applications
- ☐ Ongoing documentation and evaluation of network topology, performance, standards, configuration, change control, faults, and accounting.

Metrics

- ☐ Ratio of personnel versus infrastructure elements (such as IP addresses)
- ☐ Percent of events processed automatically
- ☐ Network up-time (availability), component availability
- ☐ Network latency, data delivery rate, throughput
- ☐ Number of chronic problem groupings
- ☐ Mean time to isolate a link failure, repair it, and restore service

Process Integration

- Configuration management
- Problem management

Futures

- 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

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

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automatic					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 ■ Evaluate appropriateness of output medium ■ 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"> <input type="checkbox"/> Print operator <input type="checkbox"/> Output manager 										<ul style="list-style-type: none"> <input type="checkbox"/> Output management software <input type="checkbox"/> Print protocols 									

Best Practices	Metrics
<ul style="list-style-type: none"> <input type="checkbox"/> Using a single output management process for the enterprise <input type="checkbox"/> Integration of print, output, and document management functions <input type="checkbox"/> Decentralized output processing to departments where possible <input type="checkbox"/> Benchmark annually to evaluate competitiveness of output operations with competitors, industry standards <input type="checkbox"/> Systematic reduction of hardcopy output 	<ul style="list-style-type: none"> <input type="checkbox"/> Cost/printed page normalized for media fluctuations <input type="checkbox"/> Percent of decrease in internal use hardcopy output <input type="checkbox"/> Number of lost or missing outputs <input type="checkbox"/> Number of reruns to reproduce lost/damaged output <input type="checkbox"/> 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

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

Automation	Stability
1 2 3 4 5 6 7 8 9 10 Manual Automatic	1 2 3 4 5 6 7 8 9 10 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	Metrics
<ul style="list-style-type: none"> <input type="checkbox"/> Use of a common organization and performance-management process for all enterprise environments <input type="checkbox"/> 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 <input type="checkbox"/> Integration of performance management with production acceptance process <input type="checkbox"/> 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"> <input type="checkbox"/> Consistent and repeatable: <ul style="list-style-type: none"> – CPU service times – Response times – Batch turnaround – Decision-support systems/database applications response times <input type="checkbox"/> Continuous improvement in achieving performance service levels <input type="checkbox"/> 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

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automatic					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"> <input type="checkbox"/> Help-desk specialist <input type="checkbox"/> Service manager 										<ul style="list-style-type: none"> <input type="checkbox"/> None 									

Best Practices

- ☐ 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

Metrics

- ☐ Customer satisfaction surveys
- ☐ Average help-desk queue time
- ☐ Average number call abandonment
- ☐ Average first-call resolution rates
- ☐ Mean time to resolution (MTTR)
- ☐ Mean time to response
- ☐ Support staff per 1000 supported users

Process Integration

- No Items

Futures

- Improved systems that are self-healing
- Increased use of the Web to support user help

11/11/2011

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automatic					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> ■ Understand application development life cycle (ADLC) ■ Apply testing tools, such as simulation and modeling tools and 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"> <input type="checkbox"/> Production acceptance specialist <input type="checkbox"/> Application liaison <input type="checkbox"/> Life-cycle specialist 										<ul style="list-style-type: none"> <input type="checkbox"/> Testing tools <input type="checkbox"/> Life-cycle software <input type="checkbox"/> Documentation tools for application processing 									

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automatic					Dynamic					Stable				
Tasks										Skills									
<ul style="list-style-type: none"> ■ Understand application development life cycle (ADLC) ■ Apply testing tools, such as simulation and modeling tools and 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"> <input type="checkbox"/> Production acceptance specialist <input type="checkbox"/> Application liaison <input type="checkbox"/> Life-cycle specialist 										<ul style="list-style-type: none"> <input type="checkbox"/> Testing tools <input type="checkbox"/> Life-cycle software <input type="checkbox"/> Documentation tools for application processing 									

Best Practices

- ☐ 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 over to operations
- ☐ Halt deliverables unless all requirements are met
- ☐ Automate sign-off processes throughout the application development life cycle (ADLC)
- ☐ Modify the ADLC to handle shorter development cycles enabled by packaged software solutions

Metrics

- ☐ Average time to production acceptance (by complexity)
- ☐ Number of unsuccessful/partially failed applications implemented
- ☐ Number of reverted deployments
- ☐ Number of errors in scheduling new applications
- ☐ Time to estimate infrastructure cost of new applications (PCM model)
- ☐ Average time to respond to new requests
- ☐ Staffing metrics
- ☐ Number of applications accepted/analyst

Process Integration

- No Items

Futures

- New production acceptance methods, as follows:
 - 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

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

Automation	Stability
1 2 3 4 5 6 7 8 9 10 Manual Automatic	1 2 3 4 5 6 7 8 9 10 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"> <input type="checkbox"/> Production coordinator <input type="checkbox"/> CL/script specialist <input type="checkbox"/> IOB liaison 	<ul style="list-style-type: none"> <input type="checkbox"/> Production control software <input type="checkbox"/> Report-balancing software

Best Practices

- ☐ 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
- ☐ 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

Metrics

- ☐ Number of failed applications/month
- ☐ Mean time to resolution
- ☐ Number of scheduling errors and invalid run-time projections
- ☐ Number of applications accepted without proper documentation/testing, and so forth
- ☐ Average time for handling application change requests, by request type

Process Integration

- Production acceptance

Futures

- 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

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 1 2 3 4 5 6 7 8 9 10 Manual Automatic	Stability 1 2 3 4 5 6 7 8 9 10 Dynamic Stable
Tasks <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 	Skills <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 <ul style="list-style-type: none"> <input type="checkbox"/> Storage administrators <input type="checkbox"/> Storage management specialists <input type="checkbox"/> Database specialist 	Automation Technology <ul style="list-style-type: none"> <input type="checkbox"/> Database management software <input type="checkbox"/> Support utilities for reorganization, data-set extraction, backup, and so forth

Best Practices	Metrics
<ul style="list-style-type: none"><input type="checkbox"/> Use of a common organization and management process for all enterprise databases<input type="checkbox"/> Proactive monitoring of databases for optimization<input type="checkbox"/> Interface with Disk Storage Management process to ensure appropriate media selection and caching approach<input type="checkbox"/> Achieving appropriate availability for production databases	<ul style="list-style-type: none"><input type="checkbox"/> Cost/MB of database data<input type="checkbox"/> Database availability<input type="checkbox"/> Response time<input type="checkbox"/> Mean time to recovery
Process Integration	Futures
<ul style="list-style-type: none">■ Disk management	<ul style="list-style-type: none">■ 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

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automatic					Dynamic					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"> <input type="checkbox"/> Controller <input type="checkbox"/> QA specialist <input type="checkbox"/> Production coordinator <input type="checkbox"/> LOB liaison 										<ul style="list-style-type: none"> <input type="checkbox"/> QA tools 									

Best Practices	Metrics
<ul style="list-style-type: none"><input type="checkbox"/> Use of interactive tools that enable customers to participate directly in quality-assurance efforts<input type="checkbox"/> Periodic reporting and enforcement of level of compliance<input type="checkbox"/> Use of quality-assessment information to improve performance of application and infrastructure teams	<ul style="list-style-type: none"><input type="checkbox"/> Cost of quality (and non-quality)<input type="checkbox"/> Customer satisfaction<input type="checkbox"/> Number of failed processes<input type="checkbox"/> Percent of jobs adhering to quality-assurance policies/standards<input type="checkbox"/> Number of defects in applications that were compliant with quality-assurance principles<input type="checkbox"/> Number of emergency quality-assurance review processes<input type="checkbox"/> Average time to respond to new requests<input type="checkbox"/> Number of jobs and processes per analyst
Process Integration	Futures
<ul style="list-style-type: none">■ All processes	<ul style="list-style-type: none">■ QA integrated across all centers of excellence■ Automated tools for risk/complexity analysis■ Defect discovery

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automatic					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"> <input type="checkbox"/> Security administrator <input type="checkbox"/> Security policy manager 										<ul style="list-style-type: none"> <input type="checkbox"/> General network and systems management (NSM) tools for monitoring (that is, availability management) <input type="checkbox"/> Reporting add-ons to general NSM tools <input type="checkbox"/> Firewall and virtual private network products for perimeter defense; intrusion detection products for defense within perimeter <input type="checkbox"/> Single sign-on and Kerberos products for efficient and secure use of password authentication 									

Best Practices	Metrics
<ul style="list-style-type: none"> <input type="checkbox"/> Use of single sign-on technologies to streamline user access while maintaining security <input type="checkbox"/> Use of Kerberos-style tokens to avoid transmitting passwords over insecure networks <input type="checkbox"/> Use of intrusion detection technologies within the boundaries of the enterprise <input type="checkbox"/> Service levels coupled to externalized metrics <input type="checkbox"/> End-to-end objectives reflecting business perception 	<ul style="list-style-type: none"> <input type="checkbox"/> Number of security breaches/time <input type="checkbox"/> Cost of security breaches/time <input type="checkbox"/> Level of customer satisfaction (survey feedback) <input type="checkbox"/> Cost of administering/number of service-level agreements (and customers) <input type="checkbox"/> Service availability <input type="checkbox"/> Service performance <input type="checkbox"/> Service quality (QOS)
Process Integration	Futures
<ul style="list-style-type: none"> ■ 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

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										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automatic					Dynamic					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

- ☐ Escalation process for negative feedback
- ☐ 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

Metrics

- ☐ Parallel individual feedback loop (individual feedback form)
- ☐ Actual versus 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

- No items

Futures

- 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

ding, and close-out of service requests.

Automation 1 2 3 4 5 6 7 8 9 10 Manual Automatic	Stability 1 2 3 4 5 6 7 8 9 10 Dynamic Stable
Tasks <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 	Skills <ul style="list-style-type: none"> ■ Attention to details ■ Knowledge of service-level agreement approach to IT management
Staffing <ul style="list-style-type: none"> <input type="checkbox"/> Help-desk specialist <input type="checkbox"/> Line of business liaison <input type="checkbox"/> Customer service representative 	Automation Technology <ul style="list-style-type: none"> <input type="checkbox"/> Various point products to manage service requests <input type="checkbox"/> Help-desk tools

Best Practices	Metrics
<ul style="list-style-type: none">❑ Management with clearly defined categories for service-level requests❑ 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">❑ Number of requests/month❑ Number of requests/staff❑ MTTR for each request (by type)❑ Number of late service events/number of requests
Process Integration	Futures
<ul style="list-style-type: none">■ Job scheduling	<ul style="list-style-type: none">■ 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

1 2 3 4 **5** 6 7 8 9 10 1 2 3 4 5 6 **7** 8 9 10
Manual Automatic Dynamic Stable

Automation	Stability
1 2 3 4 5 6 7 8 9 10 Manual Automatic	1 2 3 4 5 6 7 8 9 10 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"> <input type="checkbox"/> Production coordinator <input type="checkbox"/> Software distribution specialist 	<ul style="list-style-type: none"> <input type="checkbox"/> Microsoft Systems Management Server <input type="checkbox"/> Novadigm EDM <input type="checkbox"/> Tivoli Software Distribution <input type="checkbox"/> CA Unicenter TNG Software Distribution/ShiplT <input type="checkbox"/> IBM LCCM <input type="checkbox"/> Novell ZENWorks <input type="checkbox"/> Intel LANDesk <input type="checkbox"/> Mobile user support: Callisto, Marimba, Mobile Automation, Sterling Software (Xcellnet)

Best Practices	Metrics
<ul style="list-style-type: none"> <input type="checkbox"/> Automated distribution of all major enterprise applications <input type="checkbox"/> Minimal custom scripting of software distribution solutions <input type="checkbox"/> Use of distribution tools that deliver to multi-tiered, multi-platform architectures <input type="checkbox"/> 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"> <input type="checkbox"/> Number of discrete distributions performed weekly/monthly <input type="checkbox"/> MB/GB transferred per week/month <input type="checkbox"/> Staff-per-target-resources ratio <input type="checkbox"/> 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

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual					Automatic					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 predefined 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"> <input type="checkbox"/> Console specialist <input type="checkbox"/> Systems operations specialist <input type="checkbox"/> Availability specialist 										<ul style="list-style-type: none"> <input type="checkbox"/> OEM-supplied tools <input type="checkbox"/> Instrumentation <input type="checkbox"/> Suites 									

Best Practices	Metrics
<ul style="list-style-type: none"> <input type="checkbox"/> Extremely high level of automated monitoring <input type="checkbox"/> Use of standard instrumentation provided by system suppliers <input type="checkbox"/> Ability to integrate event data across processes <input type="checkbox"/> Ability to integrate and present system information to differing operational groups <input type="checkbox"/> Integration of system monitoring with automation, notification, and problem management systems <input type="checkbox"/> Integration of event data with service-level agreement reporting <input type="checkbox"/> Use of Web-based user access to system management data 	<ul style="list-style-type: none"> <input type="checkbox"/> Class and aggregate resource availability <input type="checkbox"/> Number of elements monitored per employee <input type="checkbox"/> Employees per 10,000 events <input type="checkbox"/> Unit cost of monitoring per 10,000 events <input type="checkbox"/> Percentage of 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

Automation										Stability														
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10					
Manual										Automatic					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 block size, 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 trade-offs (disk versus tape, near-line versus offline) Experience with storage area networking management 														
Staffing										Automation Technology														
<input type="checkbox"/> None										<input type="checkbox"/> Tape transport subsystems <input type="checkbox"/> Silos and virtual tape servers <input type="checkbox"/> Tape-management software														

Best Practices

- ☐ 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, and optimal file placement on tapes
- ☐ Ongoing investigation of how costs can be reduced both internally and externally

Metrics

- ☐ Utilization per cartridge
- ☐ Number of (manual) mounts
- ☐ Cost/GB (or cartridge)
- ☐ Staffing per unit capacity (staffing/n-tapes/mounts/etc.)
- ☐ Mean-time-between-failures (MTBF): How many applications were affected, and for how long, due to tape-related issues?

Process Integration

- Disk storage management

Futures

- 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

Automation										Stability									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Manual							Automatic			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■ Ability to follow a methodology consistently■ Understanding of major, critical job streams and business functions that they support■ Expertise in operating environments and chosen automation tool(s)									
Staffing										Automation Technology									
<ul style="list-style-type: none"><input type="checkbox"/> Console operator<input type="checkbox"/> Systems operations specialist<input type="checkbox"/> Production coordinator										<ul style="list-style-type: none"><input type="checkbox"/> BMC Control-M/Enterprise Console System (ECS)<input type="checkbox"/> CA-Unicenter TNG Workload Management, (PLAT) AutoSys, CA-Jobtrac, CA-Scheduler, CA-7, CA-Jobwatch, FAQs/PCS<input type="checkbox"/> Cybermation ESP Workload Manager<input type="checkbox"/> ISA AppWorx<input type="checkbox"/> SEA CSAR<input type="checkbox"/> SMA The Scheduler, OpCon/XPS<input type="checkbox"/> Tivoli Workload Manager (Maestro), (IBM) OPC/ESA									

Best Practices	Metrics
<input type="checkbox"/> High degree of workload monitoring automation	<input type="checkbox"/> Number of operators per 10,000 jobs
<input type="checkbox"/> Eventual elimination of all manual job “set-ups”	<input type="checkbox"/> Percent of jobs run on time
<input type="checkbox"/> Ability to monitor jobs scheduled on different operating platforms	<input type="checkbox"/> Number of ad hoc requests handled
<input type="checkbox"/> Integration of workload monitoring with event management	<input type="checkbox"/> Number of exceptions per 10,000 jobs
Process Integration	Futures
■ Production control	■ Additional automation
	■ Better cross-platform integration

