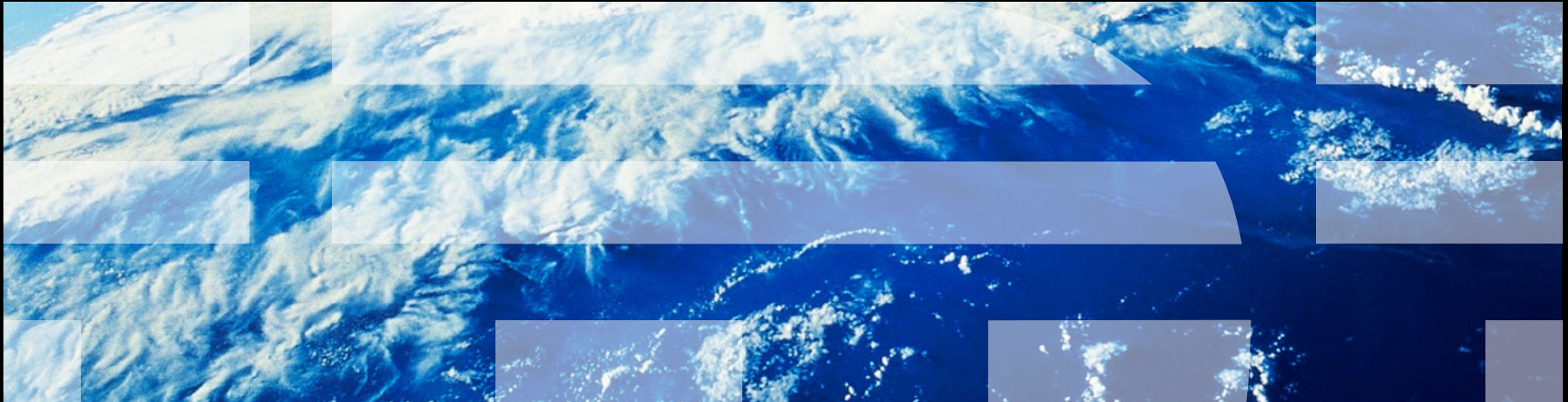


# Storage Consolidation Services from IBM:

## Transformation Strategy

### *Storage Management Complexity Factor*



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# *agenda*

<b>1</b>	<b>Market drivers</b>
<b>2</b>	<b>Initiatives to manage storage infrastructure</b>
<b>3</b>	<b>How to begin the journey? – MCF</b>

Business drivers and storage and data issues are increasing the pressure on clients to achieve hard dollar savings

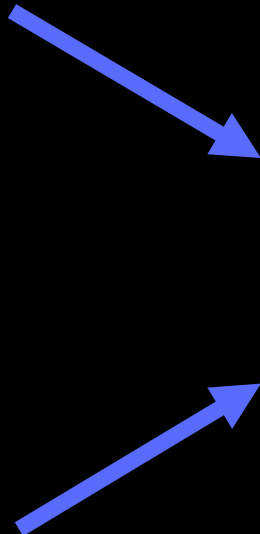


**Business Drivers:**

- Economic Turmoil
  - budget pressures
  - cost containment
  - revenue and profit challenges
- Mergers and Acquisitions
- Green initiatives and energy efficiencies
- Business transformation
- Risk Assurance
  - governance and compliance
  - data retention

**Storage and Data Issues:**

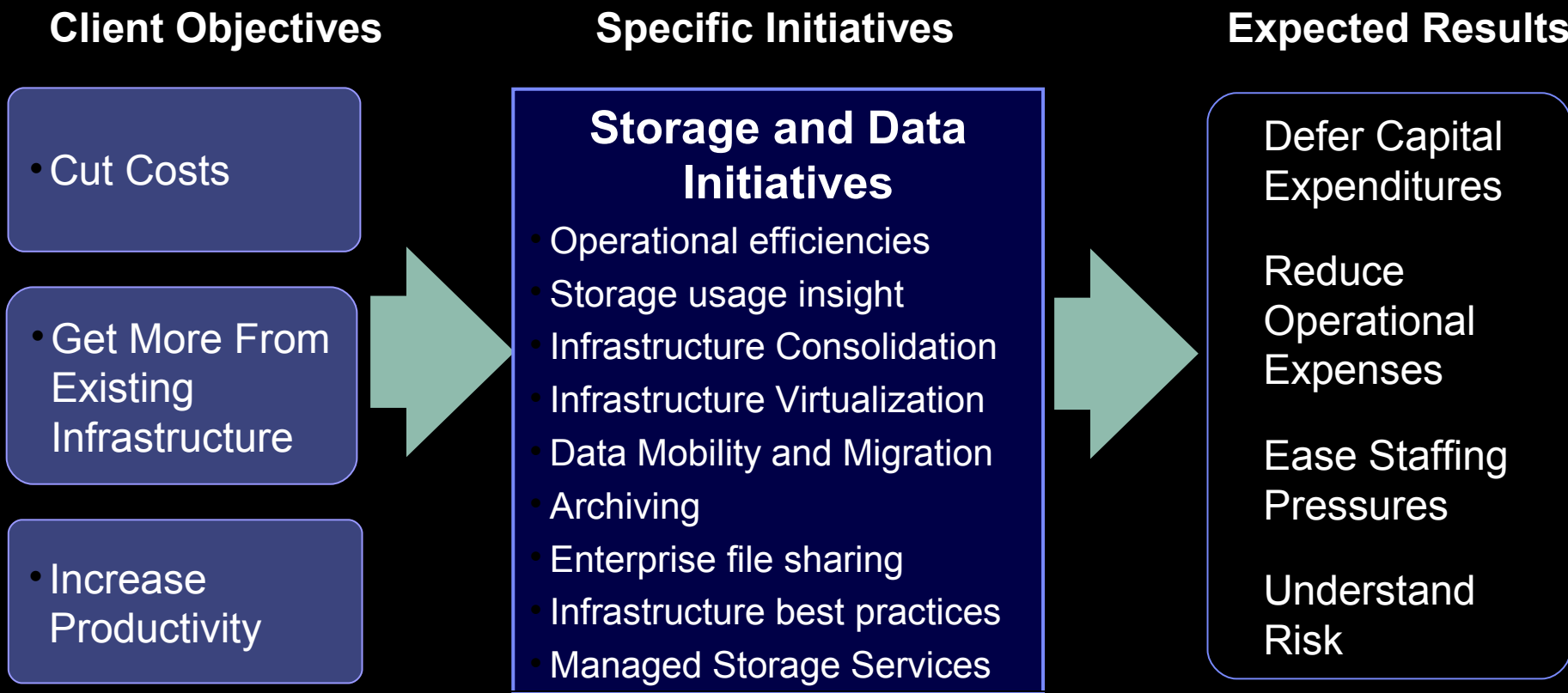
- Providing 24x7 and Global Availability
- Managing Data Growth
- Relocating and Protecting Data
- Refreshing Technology
- Simplifying Infrastructure Complexity
- Capacity Forecasting and Reporting
- Optimizing Infrastructure and Performance
- Tiering Storage
- Considering cloud infrastructure



**Client Objectives:**

- **Cut costs**
- **Get more from existing infrastructure**
- **Increase productivity**

These client objectives drive specific storage and data initiatives to yield results



# Initiatives to manage storage infrastructure



In order to achieve their expected results, CIOs are launching an emerging set of strategies and best practices



## CIO Strategies:

### ▪ Capital Expenses

- Postponing long-term projects in favor of near-term ROI
- Deferring or reducing capital expenditures
- Revisiting existing service contracts
- Postponing the launch of new initiatives

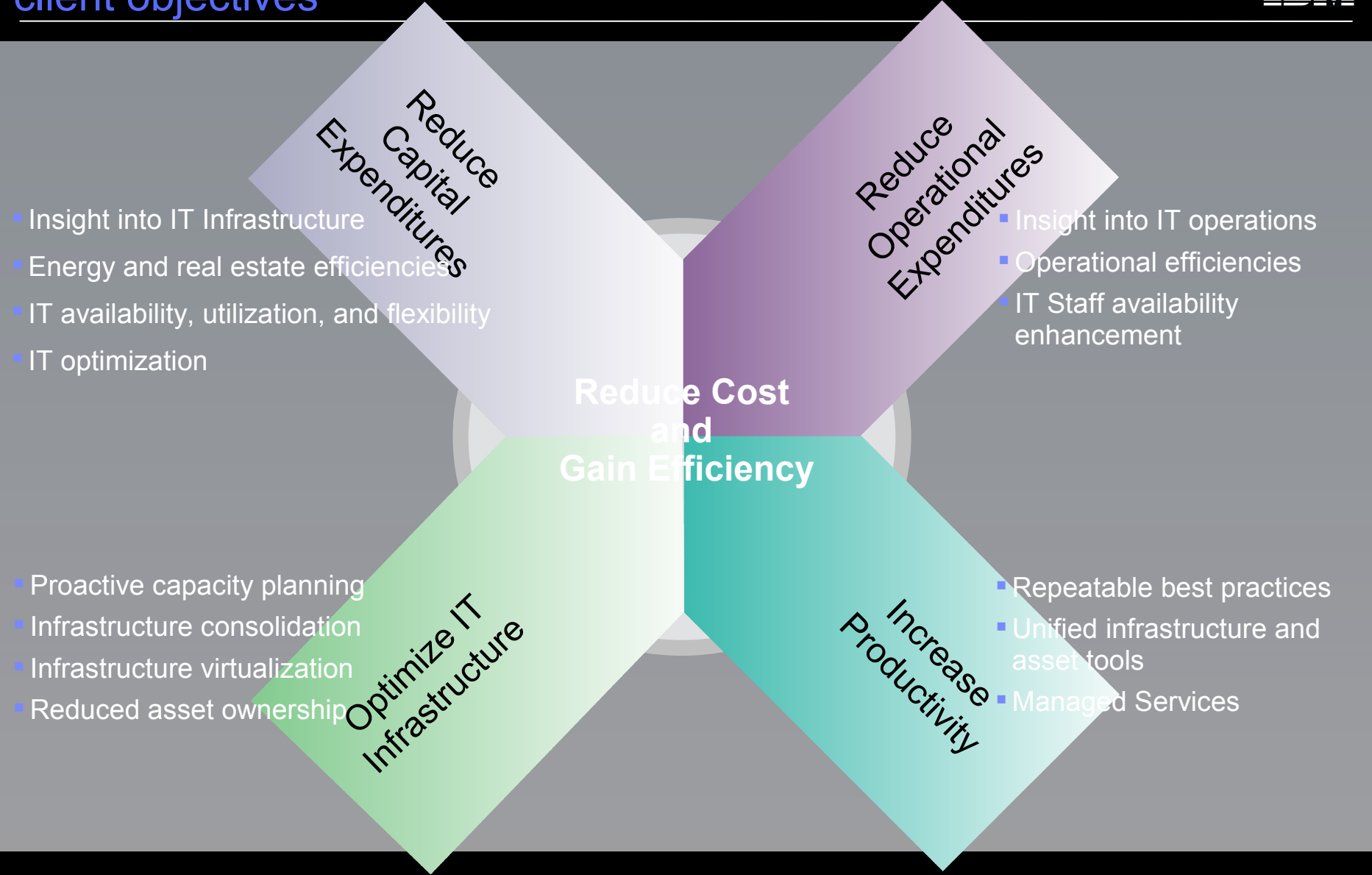
### ▪ Operational Expenses

- Cutting operating expense
- Revisiting existing service contracts
- Seeking productivity increases in their existing infrastructure
- Postponing hiring of additional IT staff
- Postponing the launch of new initiatives

## Best Practices:

- Gaining insight into IT infrastructure and operations
- Gaining energy and real estate efficiencies
- Increasing availability, utilization and flexibility of infrastructure
- Gaining operational efficiencies
- Lowering regulatory risk by addressing compliance requirements
- Performing non disruptive data migrations
- Leveraging unified infrastructure and tools
- Implementing Managed Services
- Executing or Planning Initiatives:
  - Tech refreshes
  - Infrastructure optimization
  - Consolidation and virtualization
  - Enterprise Archiving

# These emerging strategies and best practices align to specific client objectives



## *Storage Reclamation*

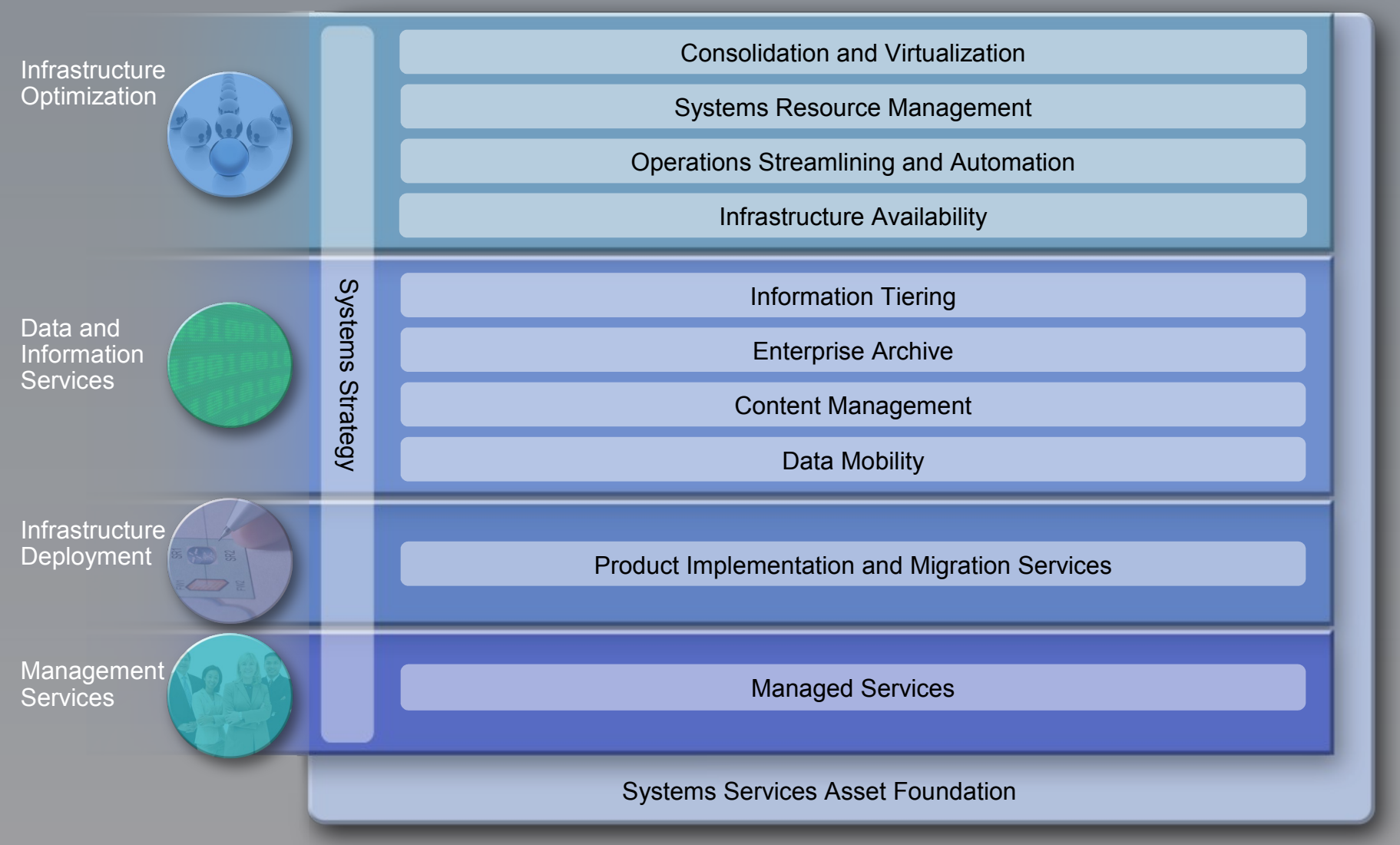
- Environmental costs (per GB) decrease as utilization goes up!
- Reclaim “trapped” Storage Capacity within the existing infrastructure:
  - Typically 10%-20% found!
  - Results in a **\$5M-\$10M** annual TCO Impact for a 1,000 TB environment @ \$4.50 GB/Mo.

## *Reduced Storage Growth Rate*

- Reduce new storage capacity acquisition
- Reduced Environmental impact and increase overall storage utilization:
  - Power costs alone are often over \$250K annually for 1PB
  - Each +1% increase through re-tiering and reclamation yield nearly \$500K positive annual impact!



# The GTS System Services portfolio framework consists of specific offerings that drive client value



How to begin the journey?



## Transformation strategy utilizes MCF™

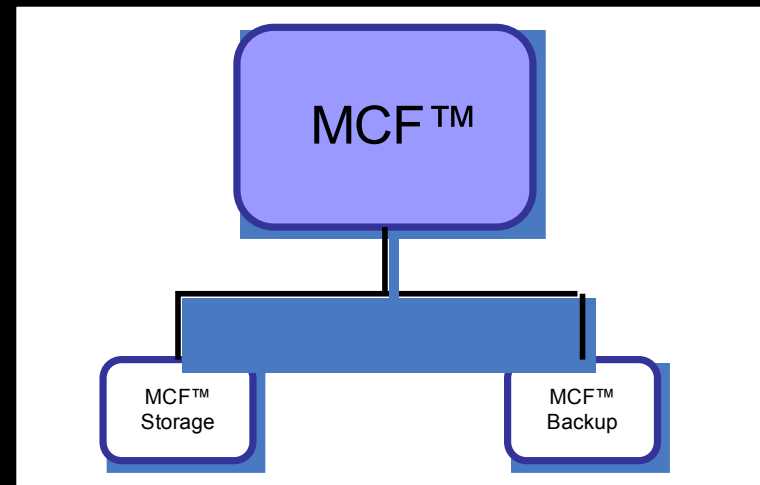


Transformation of enterprise storage environments require carefully devised strategies and metrics to track current state, goal state and progress along the way

IBM's Transformation Strategy™ combines these into one powerful offering, based on the Management Complexity Factor, to help clients save money while increasing service levels and reducing risk.

The MCF™ replaces watered-down metrics like FTE/TB ratio with 8 key metrics that can be used to measure any IT environment:

- Architectural Complexity
- Process Maturity
- Level of Automation
- Information Availability
- Use of Tools
- Skills Alignment
- Expected Growth
- Rate of Reactive Change



The MCF™ methodology and toolset, along with the expertise of IBM's consultants has driven large ROIs for numerous Fortune™ 500 clients!

Tier 1	Architectural Complexity	<p>How the components configurations differ from best practices</p> <p>Number/Type of HW and SW solutions in use</p> <p>Too many or not enough components</p> <p>Does infrastructure contain unplanned for single points of failure</p>
	Process Maturity	<p>How defined and appropriate are your processes and procedures</p> <p>Are they followed</p> <p>Do they adhere to industry standards such as ITIL or ISO</p>
	Level of Automation	<p>How much time does your staff spend doing manual and repetitive tasks</p> <p>How free is your staff to focus on proactive activities</p>
Tier 2	Information Availability	<p>How effective tools are in meeting information needs for all levels of organization</p> <p>How integrated are data sources and is data correlated to provide meaningful info</p> <p>Are decisions made based on feeling and estimates or factual data</p>
	Use of Tools	<p>How effective tools are in managing the environment</p> <p>Fewer number of tools, easier management</p> <p>How much of environment is under the tool's control</p>
	Skill Alignment	<p>How capable is the team in meeting technical requirements of their job</p> <p>Is the team comprised of a well balanced mix of junior, mid, and senior level employees</p>
Tier 3	Expected Growth	<p>How well is growth forecasted and planned for</p> <p>How accurate are the growth forecast</p>
	Rate of Reactive Changes	<p>How stable is the environment</p> <p>Are upgrades/updates made to the environment in a scheduled periodic manner or ad-hoc</p> <p>Typically, the more changes being made the more they are being made to fix issues</p>

## MCF Rank

## Process Maturity Value Definition

- 1 Defined processes and procedures are closely aligned and/or integrated with accepted industry standards (ISO, ITIL, etc). Performance of these procedures can be quantitatively measured. Continuing testing/implementing of innovative ideas and technologies to better existing processes.
- 2 Defined processes and procedures are generally aligned with accepted industry standards (ISO, ITIL, etc). Metrics are defined around processes and procedures to determine effectiveness. Performance of these procedures can be quantitatively measured.
- 3 Most processes and procedures are documented and standardized and are somewhat aligned with accepted industry standards (ISO, ITIL, etc). All management efforts follow published guidelines but are only updated infrequently.
- 4 Basic processes and procedures are established but do not align with accepted industry standards (ISO, ITIL, etc) and may not be routinely followed. Additionally, advanced processes and procedures may not be defined.
- 5 Processes and procedures are ad-hoc. Individual's efforts and methods used to manage the environment.

## Transformation Strategy – powered by MCF Service Offerings

- **Base Project Offering (6 Weeks)**
  - Best offering if you have organization-wide issues or concerns
    - Provides an in-depth review of your current environment and a gap analysis of how it differs from IBM's recommended best practices
  - Details both tactical and strategic actionable recommendations covering a 3 year period to maximize transformation effect
    - Includes service catalog definitions and referential architectures
- **Rapid Methodology (2 Weeks)**
  - Allows for the rapid review of your environment if you are in a critical situation and need to see improvements immediately
    - Provides tactical recommendations (1 year or less) focused on dealing with the specific issues you are encountering
  - Or if you need to create a long term strategy but are unsure of how to begin
    - Focused on performing an analysis of the current state and provides strategic recommendations (18 months or less) on positioning yourself for transformation
- **Periodic Update (Quarterly or Semi-Annually) (1.5 Weeks)**
  - Enables success of transformation activities by providing periodic reviews
    - Details customer progress and highlights areas of both success and concerns
    - Determines changes to environment (Business or Technical) and provides updated recommendations
    - Supports changes to your business goals as well as new technical capabilities
    - Provides additional strategic guidance as required

**A rapid project takes 2 weeks comprised of the following activities:**

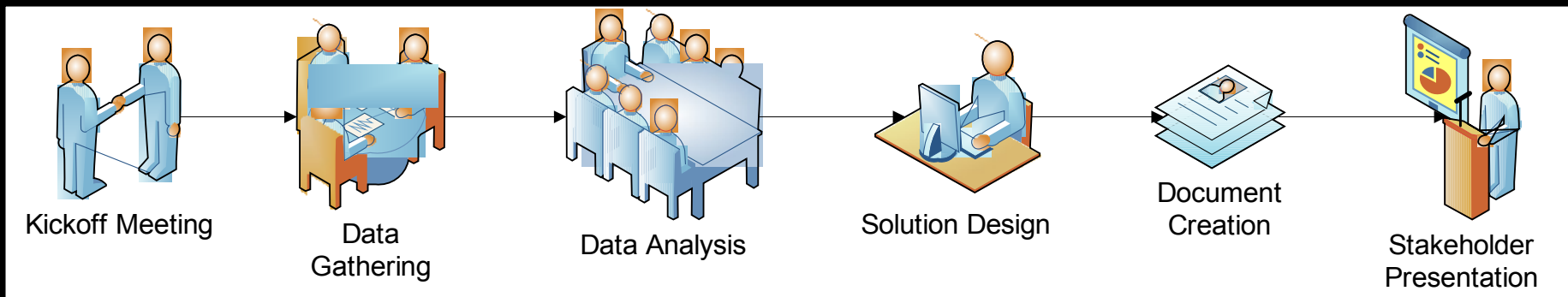
**Data Gathering:** Face to face interviews and consultant lead workshops

Includes gathering data on the Backup environment and interdependent areas such as Storage, Network, DR/BC, Engineering, Compliance, Execs, etc

**Data Analysis:** Consolidate, correlate, and analyze data to determine business drivers, strategic goals, tactical needs, current state, and historical trends

**Solution Design:** Utilize analyzed data to determine best future state, develop referential architecture, and strategic recommendations and roadmap to achieve

**Deliverable Creation and Delivery:** Thorough documentation and presentation of all findings, recommendations, timelines, and financial benefits to stakeholders and executives



## The primary tools are the **MCF Calculators** with:

Ability to analyze data for an organization's Storage environment as well as interdependent Backup, Fabrics, File systems, and Facilities environments

Financial projections for both OPEX and CAPEX

"Green" financial projections based on recommendation's effect on energy and space consumption

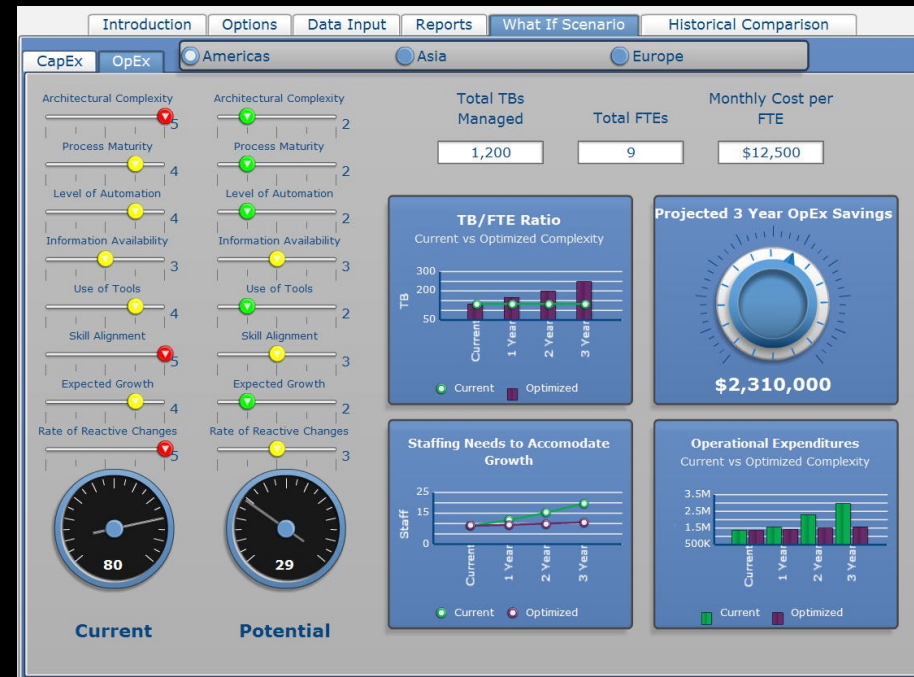
Component Growth Projections

Staffing level projections

Industry comparisons

'What-If' analysis

Supports multiple focus areas at same time





Green Analysis is comprised of the following items:

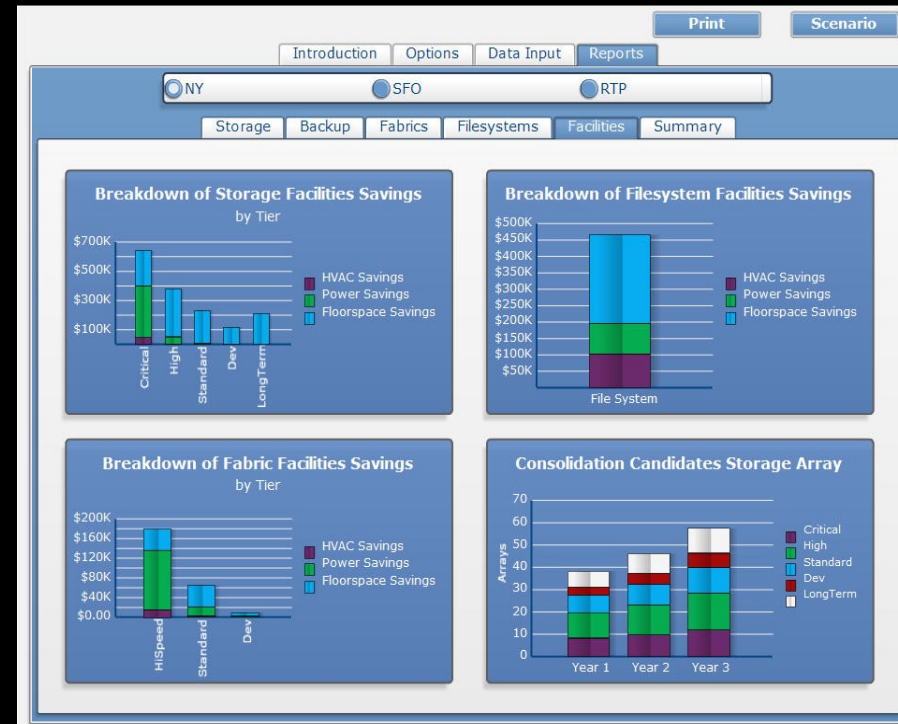
Recommendations for number of infrastructure components, by service tier, that can be removed from the environment based on optimization recommendations

Calculation of energy consumption savings based on direct component power usage and cooling requirements

Based on the average of best of breed tape and storage arrays from (IBM, STK, EMC, HDS) and their consumption and cooling needs

Takes into account the varying consumption characteristics of different backup tiers

Projection of expensive data center floor space reclamation enabled by optimization



## Step 1: Enter data about your environments

Print Scenario

Introduction
Options
Data Input
Reports

**Data Inputs:**

- Storage, Part 1
- Storage, Part 2
- Storage, Part 3
- Backup
- Fabrics
- Filesystems
- Facilities

**Progress:**

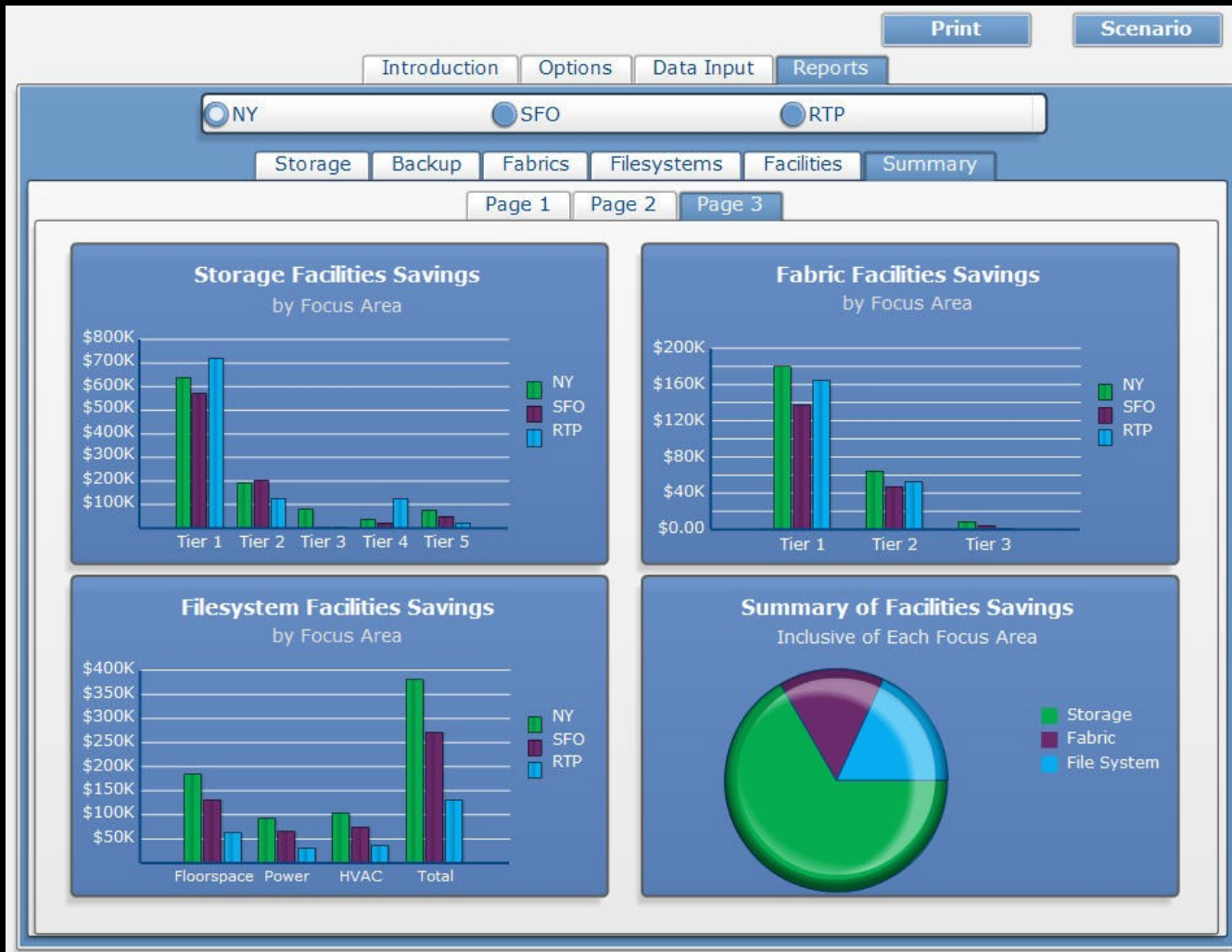
### Storage, Part 2

	NY	SFO	RTP
<b>Current Array Allocation (%)</b>			
Critical	67	55	52
High	68	62	66
Standard	70	75	72
Dev	80	82	75
LongTerm	72	55	80
<b>Target Array Allocation (%)</b>			
Critical	85	85	85
High	85	85	85
Standard	85	85	85
Dev	85	85	85
LongTerm	85	85	85
<b>Target Storage Tiering Ratios (must equal 100%)</b>			
Critical	15	15	10
High	20	20	20
Standard	25	25	25
Dev	20	20	15
LongTerm	20	20	30

## Step 2: See what the data says about your organization!



## Step 3: See what the recommendations can do for your organization!



## Step 4: Use the 'What-If?' function to prioritize your actions.

Introduction
Options
Data Input
Reports
What If Scenario
Historical Comparison

CapEx
OpEx
Americas
Asia
Europe

Architectural Complexity 5

Process Maturity 4

Level of Automation 4

Information Availability 3

Use of Tools 4

Skill Alignment 5

Expected Growth 4

Rate of Reactive Changes 5

Architectural Complexity 2

Process Maturity 2

Level of Automation 2

Information Availability 3

Use of Tools 2

Skill Alignment 3

Expected Growth 2

Rate of Reactive Changes 3

**80**

**Current**

**29**

**Potential**

**Total TBs Managed**

1,200

**Total FTEs**

9

**Monthly Cost per FTE**

\$12,500

**TB/FTE Ratio**

Current vs Optimized Complexity

Year	Current	Optimized
Current	~100	~100
1 Year	~100	~100
2 Year	~100	~100
3 Year	~100	~100

**Projected 3 Year OpEx Savings**

**\$2,310,000**

**Staffing Needs to Accomodate Growth**

Year	Current	Optimized
Current	~10	~10
1 Year	~12	~10
2 Year	~15	~10
3 Year	~18	~10

**Operational Expenditures**

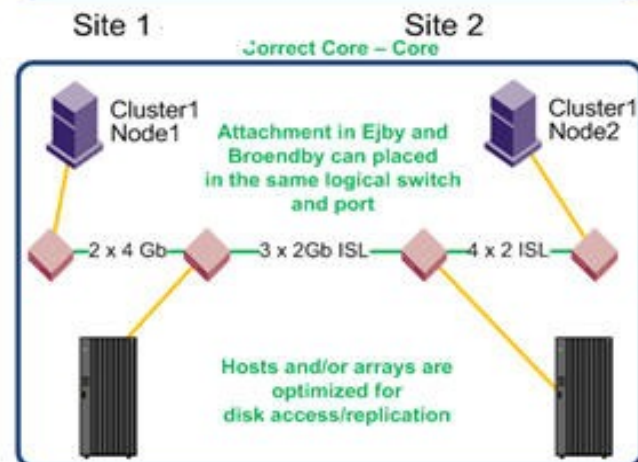
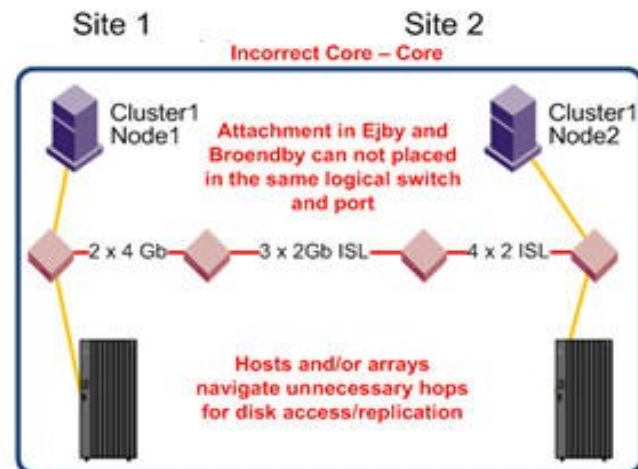
Current vs Optimized Complexity

Year	Current	Optimized
Current	~1.5M	~1.5M
1 Year	~1.5M	~1.5M
2 Year	~2.5M	~1.5M
3 Year	~3.0M	~1.5M

## Environmental Overview detailing your organization's current state as framed within the 8 metrics

### Architectural Complexity

- Multi-Site Brocade SAN
  - Fabrics interconnected by channel extenders over 7 KM
  - 6GB (3 x 2Gb) ISL trunk between sites
  - Single ISL trunks from core to edge
  - Disk and tape through same SAN
  - True core to core design not maintained
    - Hosts and arrays are attached to both core and edge switches
    - Placing arrays in edge switches increases traffic on all ISLs (intra/inter-site)
  - Inter-site tape creation may put enormous stress on all ISLs
  - Host and array based synchronous replication also places very large load on the arrays and the ISLs



# Transformation strategy Deliverables

## Storage Strategy detailing Action Plans to Achieve the Projected Scores and Related ROI

**Recommendations** are by metric and directly related to score improvements and focus on largest returns on investments

Recommendations are detailed from a business and technology perspective  
Focus on both CAPEX and OPEX portions of environment

	79 <u>Current Score</u>	46 <u>MCF Effect</u>
<b>Short Term Recommendations (6 months)</b>		
<ul style="list-style-type: none"> <li>• <b>Architectural Complexity</b> <ul style="list-style-type: none"> <li>• Change SVC Fibre ports to be on different blades in core switch</li> <li>• Move TSM Servers and tape drives onto core switches only</li> <li>• Ensure business continuance capabilities in the production environment by establishing multiple point-in-time copies</li> </ul> </li> </ul>	4	4
<ul style="list-style-type: none"> <li>• <b>Process Maturity</b> <ul style="list-style-type: none"> <li>• Perform full MCF assessment of both storage and backup</li> <li>• Begin data classification exercise for all data</li> <li>• Develop and deliver granular SLAs, with appropriate RTOs and RPOs in collaboration with business owners to provide a defined services offering</li> <li>• Create standard operating procedures for all related storage/backup hardware and software.</li> <li>• Begin analysis to determine the viability of implementing a true extended distance DR site.</li> <li>• Begin gathering historical data on performance</li> <li>• Standardize on Single Initiator Zoning to increase the stability of the disk fabrics.</li> </ul> </li> </ul>	5	4
<ul style="list-style-type: none"> <li>• <b>Automation</b> <ul style="list-style-type: none"> <li>• Identify manual processes that can be automated to free up staff by shifting away from reactive activities</li> <li>• Start creating advanced scripts which perform routine tasks</li> <li>• Utilize TPC where available for Array and Switch Monitoring</li> </ul> </li> </ul>	4	4

## Recommended Storage Service Tiers tailored to your environment

### Tiers of Service Recommendations

- **Develop and implement Tiers of Service based on SLAs that are built upon degrees of performance, RTOs and RPOs.**
  - It is recommended that there are three primary Tiers of Service, each comprised of three possible offerings, as well as a general archival tier
  - Within tiers 1,2 and 3 concentrations on availability, reliability and performance can be achieved
  - Customer X should engage in an exercise to determine the appropriate SLA metrics for each of its Tiers of Service

	Tier 1	Tier 2	Tier 3	Tier 4
<b>Description</b>	<b>Revenue Generating</b>	<b>Mission Critical</b>	<b>General Supporting</b>	<b>Archival</b>
<b>Availability</b>	99.999%	99.99%	99.9%	99.0%
<b>Downtime per year</b>	5.25 Min	52.56 Min	525.60 Min	5256 Min
<b>RTO</b>	5 Min	1 Hour	24 Hour	< 72 Hours
<b>RPO</b>	15 Min	12 hour	Previous COB	Previous COB
<b>MTBF</b>	180 days	120 days	90 days	30 days
<b>Performance</b>	Highest	Increased	Standard	Average





**IBM's Transformation Strategy™ based on the Management Complexity Factor™ goes beyond traditional uninformed metrics to drive the transformation of today's most challenging environments.**

**The MCF™ will help you:**

**Identify the *real* problems in your environment**

**See *clearly* how to improve your operation**

**Set a detailed *plan* to recognize your goals**

**Give you a way to *measure* your progress along the way**

***Identify* the greatest opportunities for cost savings**

***Transform* your environment and drive out complexity**

## Why IBM for transformation strategy?

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IBM's global reach and scale create an integrated solutions portfolio that can help you simplify and improve storage management

Combining industry-proven, patent pending methods for analyzing and managing storage with IBM's leading storage and data services, IBM can offer you solutions that improve access to business information, enable stronger regulatory and corporate compliance, and boost overall IT performance.



# Tools and Resources – IBM External

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Storage & Data Services IBM Landing Page -  
<http://www-935.ibm.com/services/us/index.wss/itservice/its/a1000416>

[Storage Optimization and Integration Services](http://www.ibm.com/services/storageopt) - <http://www.ibm.com/services/storageopt>

[Storage Optimization assessment tool](http://www-935.ibm.com/services/us/its/html/storageoptimization.html) –  
<http://www-935.ibm.com/services/us/its/html/storageoptimization.html>

[Data Mobility Services](http://www.ibm.com/services/datamobility) - <http://www.ibm.com/services/datamobility>

Data Mobility Self Assessment - <http://www-935.ibm.com/services/us/its/html/datamobility.html>

Information Lifecycle Management Services -  
<http://www-935.ibm.com/services/us/index.wss/offerfamily/gts/a1027722>

Storage and Data Managed Services -  
<http://www-935.ibm.com/services/us/index.wss/offerfamily/gts/a1027723>

Storage and Data Product Services -  
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