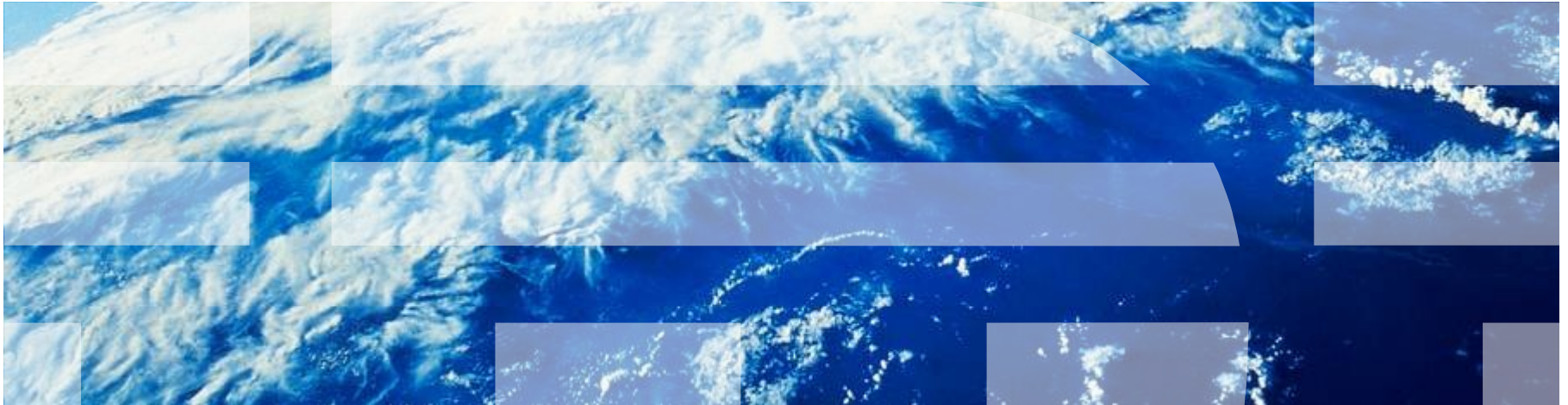


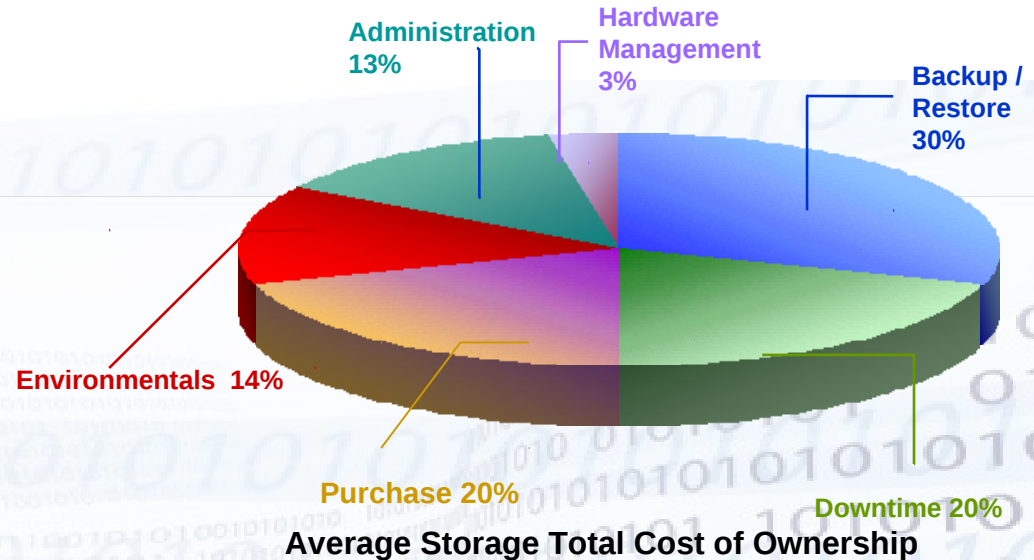
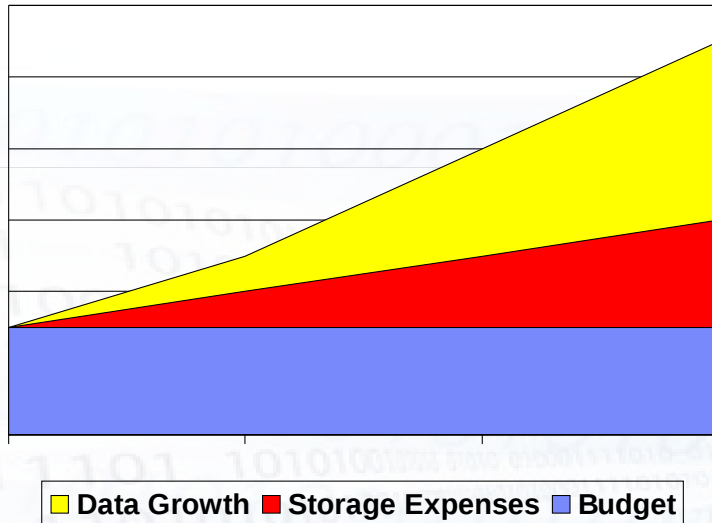
# IBM End to End Storage Management Strategy



Deon George, Tivoli Storage Software Sales



# Customer Concerns Driving Change

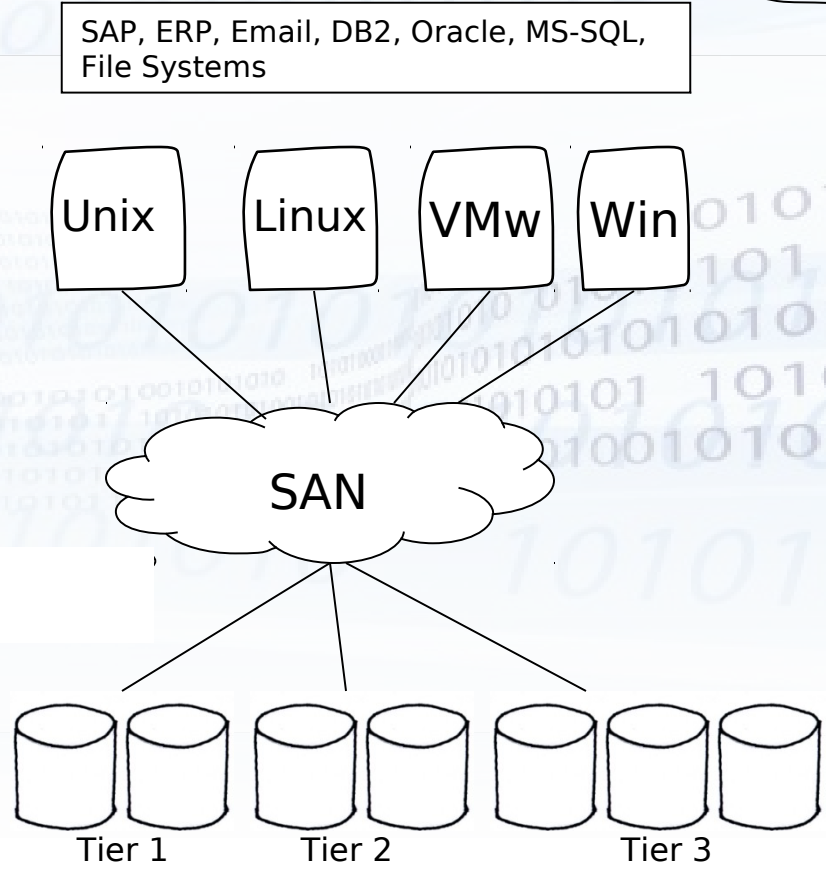


- Growth in data center costs – storage now accounts for >15% of the IT spend
- Data growth is now estimated at >40% annually on average
- Poor asset utilization – effective disk utilization is <50% with 20% to 40% wasted space
- Budgets are flat
- There are over 20,000 regulations worldwide
- Inability of IT organization to respond quickly enough to business demands
- Poor availability or service levels
- Lack of skilled staff for storage administration functions

# Typical Customer Open Systems Environment

- Heterogeneous Servers and Storage (Unix, Linux, Windows)
- Multiple databases and applications (ERP, BI, EMAIL, DB2, MS-SQL, Oracle, etc)
- Tiers of disk storage based on performance, function and cost
- Data Challenges
  - Tremendous data growth
  - Scalability issues on backup/recovery, file systems and databases
  - Data protection and encryption
  - Inefficient use of storage assets
  - Manual storage management and provisioning
  - Lack of visibility into the storage environment
  - Application Services Levels
  - Conforming to compliance requirements

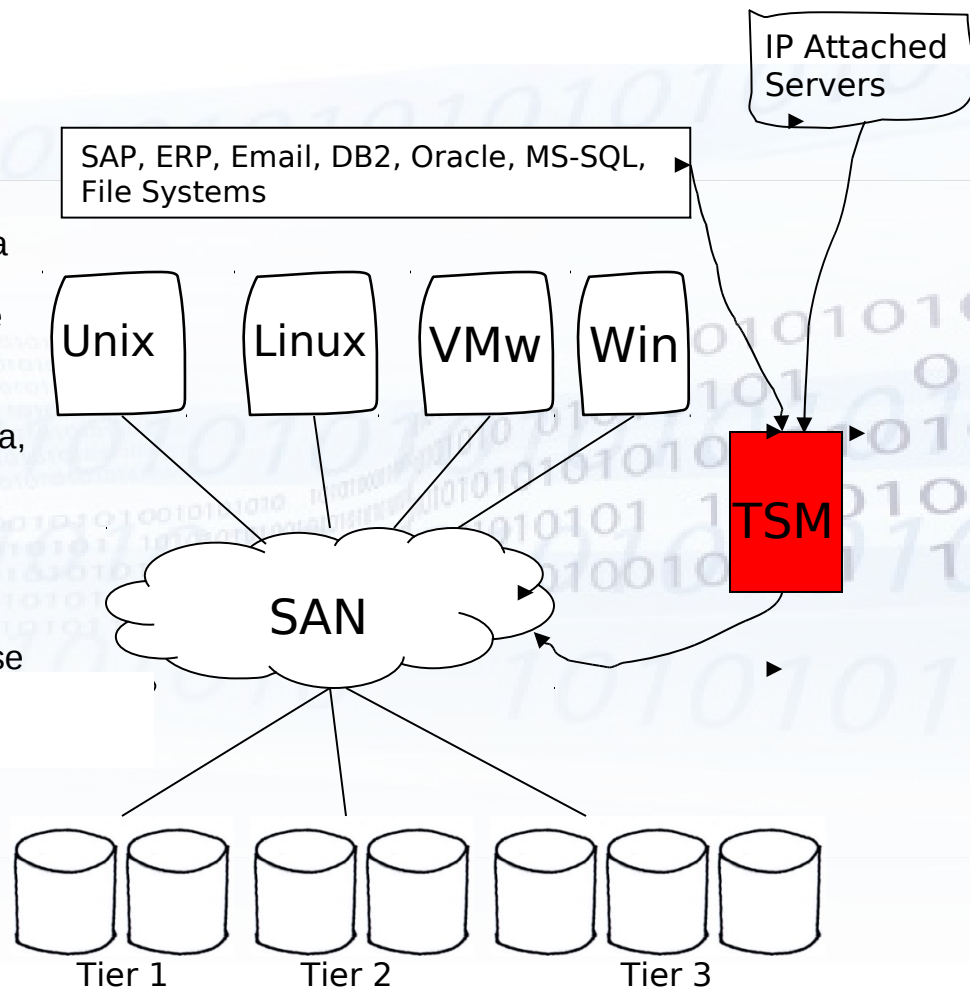
IP Attached Servers



# Addressing Data Challenges – Data Protection and Management

## Tivoli Storage Manager

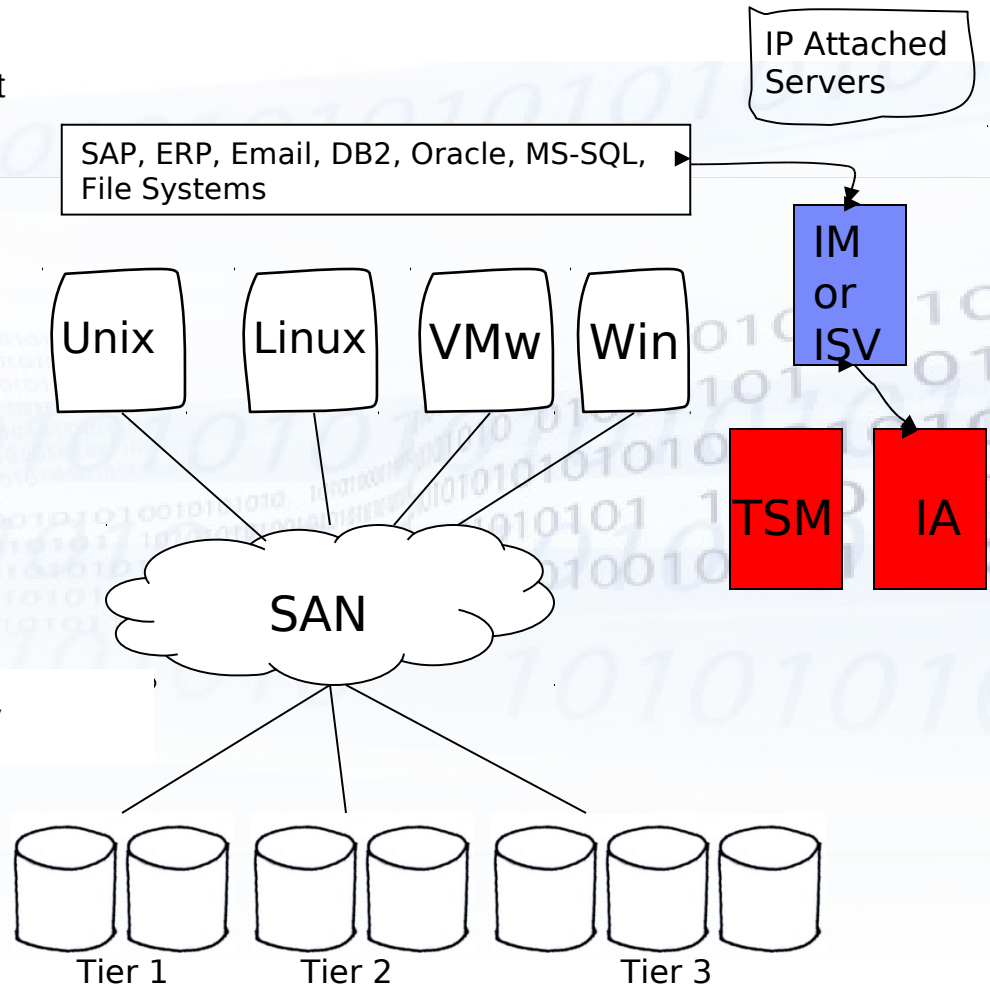
- Optimize Backup and Recovery
  - *Incremental-forever* backup capability minimizes network, server, disk and tape storage requirements
  - *Reclamation* of tape cartridges onsite and offsite providing secure and efficient reuse of tape media
  - *Archival* support for data retention, including disaster recovery, de-duplication, and compliance
- Optimize Information Life-Cycle Management
  - *Hierarchical Storage Management (HSM)* automates movement of data to appropriate media, disk or tape, based upon access needs
  - *Automated file movement* across disk and tape storage matching the value of the data to the storage technology
  - *Automatic file expiration* for compliance
  - *Disk Pooling* to effectively consolidate to enterprise tape
  - *Information-on-Demand aware* to support key Records Management, Warehouse, and Content Management functions Heterogeneous Servers and Storage (Unix, Linux, Windows)



# Addressing Data Challenges – Data Retention

## IBM Information Archive

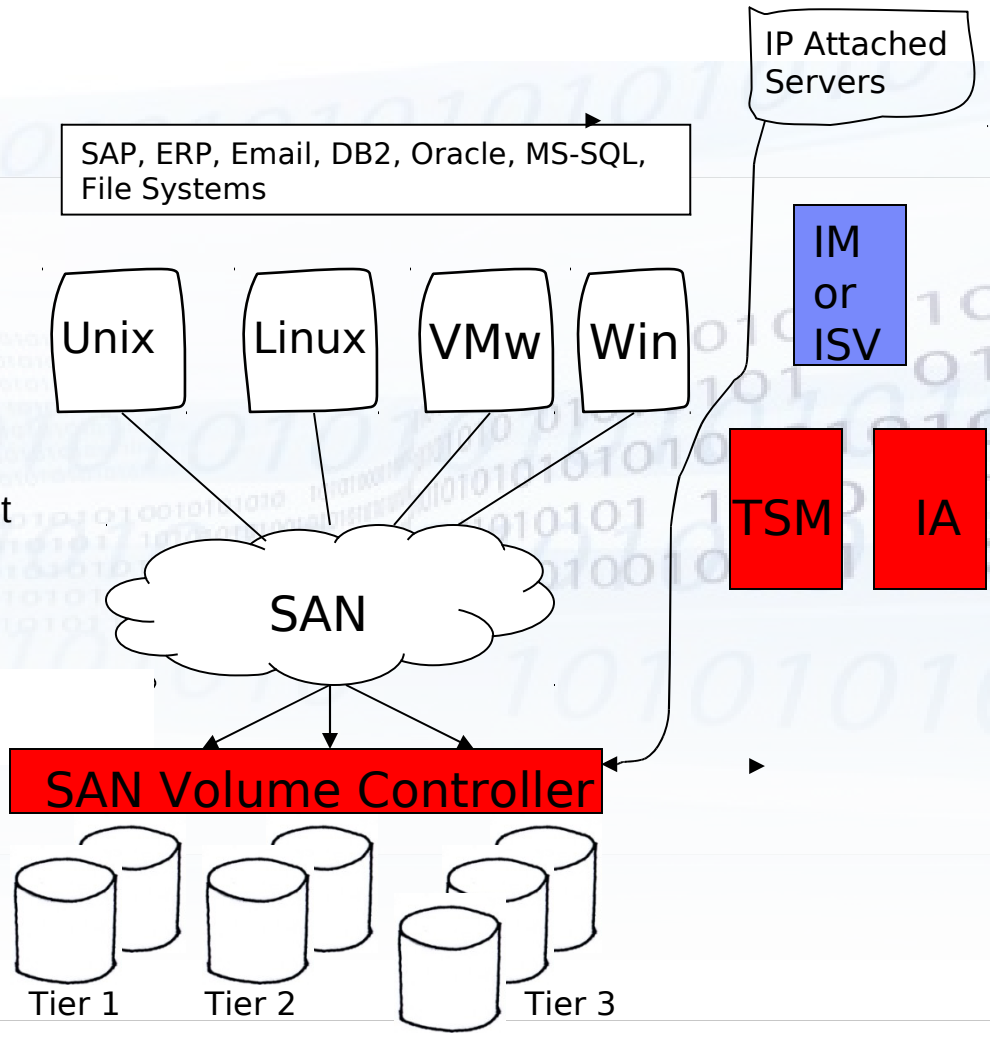
- Integrated and proven capabilities including IBM software, hardware, and services, based on best practices, to simplify implementation and obtain quick time to value
  - Straightforward archiving and eDiscovery capabilities – yet expandable to meet changing business needs
  - A highly scalable, secure, high performance infrastructure with the flexibility to meet multiple requirements in a single solution
- Removing inactive data from primary storage enables:
    - Faster backups and quicker restores
  - Removing inactive data from primary storage helps:
    - Improve application performance and availability
  - Adding data reduction & compression techniques can further:
    - Reduce the amount of data archived & defer primary storage expenditures



# Addressing Data Challenges – Storage Virtualization

## ▪ SAN Volume Controller

- *Common Class of Service* across uncommon storage devices
- Dramatically *improved utilization* of storage pools (in many cases greater than 30%)
- *Standards based* approach for capacity planning for all tiers
  - Eliminates many redundant copies of data
- *Automated data migration*, based upon policies across tiers, including heterogeneous environments
- *Accelerate migration* to new, energy efficient disk technologies
- *Improved application availability* for both planned on unplanned activities
- *Integrated* into TPC for full operations & planning requirements
  - Single device driver, eliminates proprietary host-based drives
  - Single management interface across heterogeneous arrays



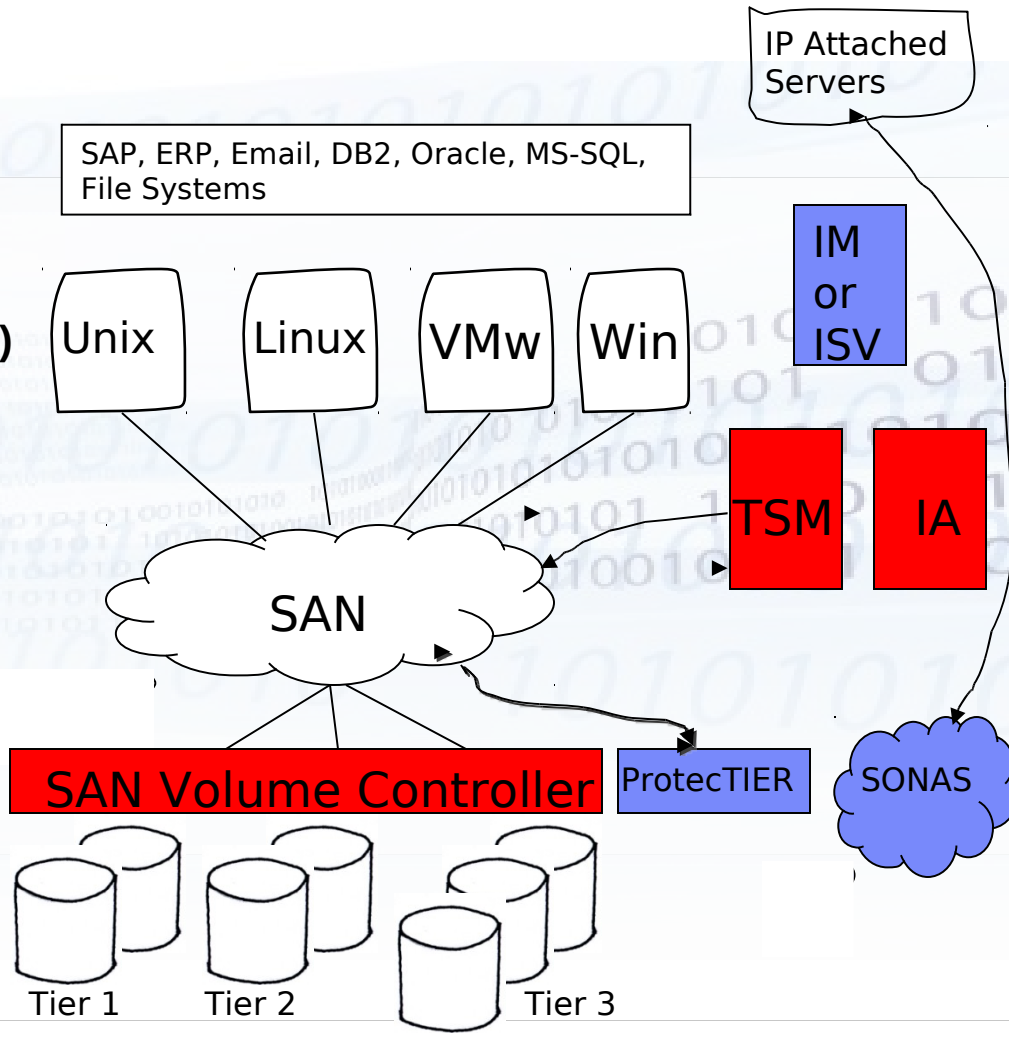
# Addressing Data Challenges – Storage Virtualization

## ProtectTIER Data Deduplication

- A virtual tape library with built-in data dedup support
- Dramatically reduced disk storage requirements
- High performance in-line Deduplication
- Reduced power, space and cooling requirements
- Improved management - simplifies and speeds information protection

## Scale Out Network Attached Storage (SONAS)

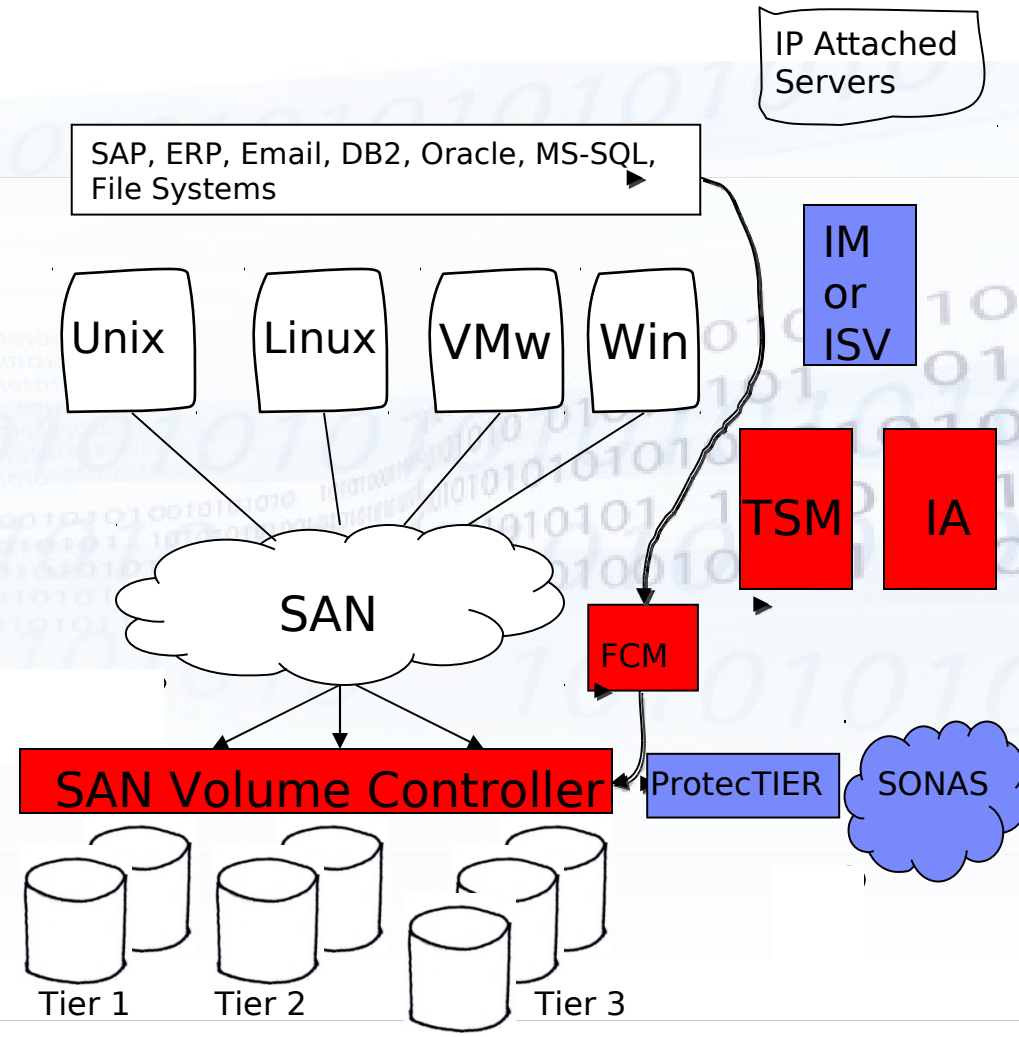
- designed to manage vast repositories of information in enterprise environments requiring
  - very large capacities
  - high levels of performance
  - high availability
- Enhanced TSM support with Integrated Lifecycle Management and Hierarchical Storage Management
- Supports multiple petabytes of storage and up to a billion files in a single file system and supports up to 256 file systems per system.
- Data access to the system from client computers is provided using industry standard network file protocols NFS v2/v3, CIFS, HTTP, and FTP.



# Addressing Data Challenges – Application Rapid Recovery

## Tivoli Storage Flashcopy Manager

- Perform near-instant application-aware snapshot backups, with minimal performance impact for IBM DB2, Oracle, SAP, Microsoft SQL Server and Exchange
- Improve application availability and service levels through high-performance, near-instant restore capabilities that reduce downtime
- Integrate with IBM System Storage DS8000, IBM System Storage SAN Volume Controller and IBM XIV Storage System on AIX and Microsoft Windows.
- Protect applications on IBM System Storage DS3000, DS4000 and DS5000 on Windows using VSS
- Satisfy advanced data protection and data reduction needs with optional integration with IBM Tivoli Storage Manager.

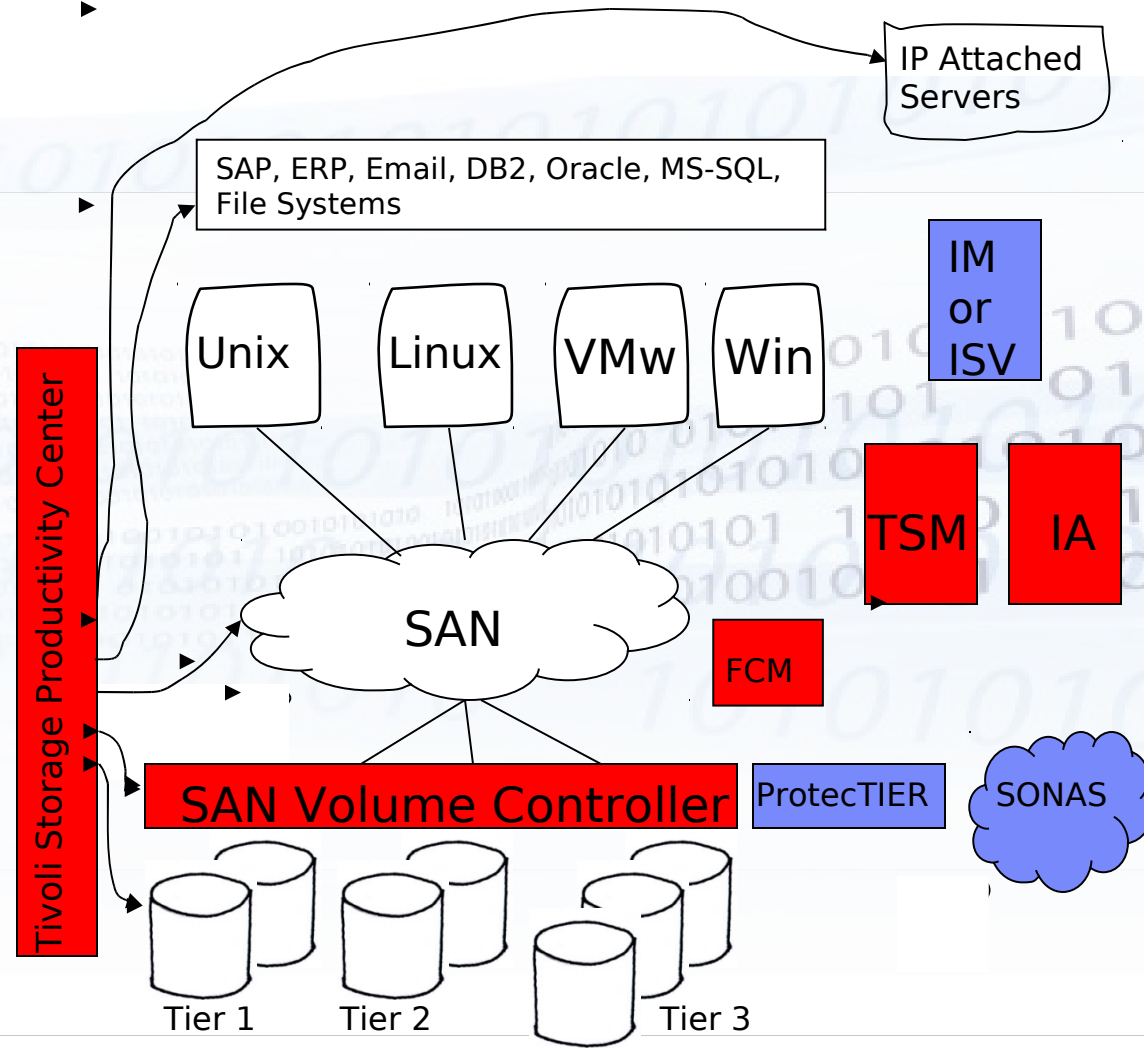




# Addressing Data Challenges – Storage Infrastructure Visibility, Control and Automtion

## Tivoli Storage Productivity Center

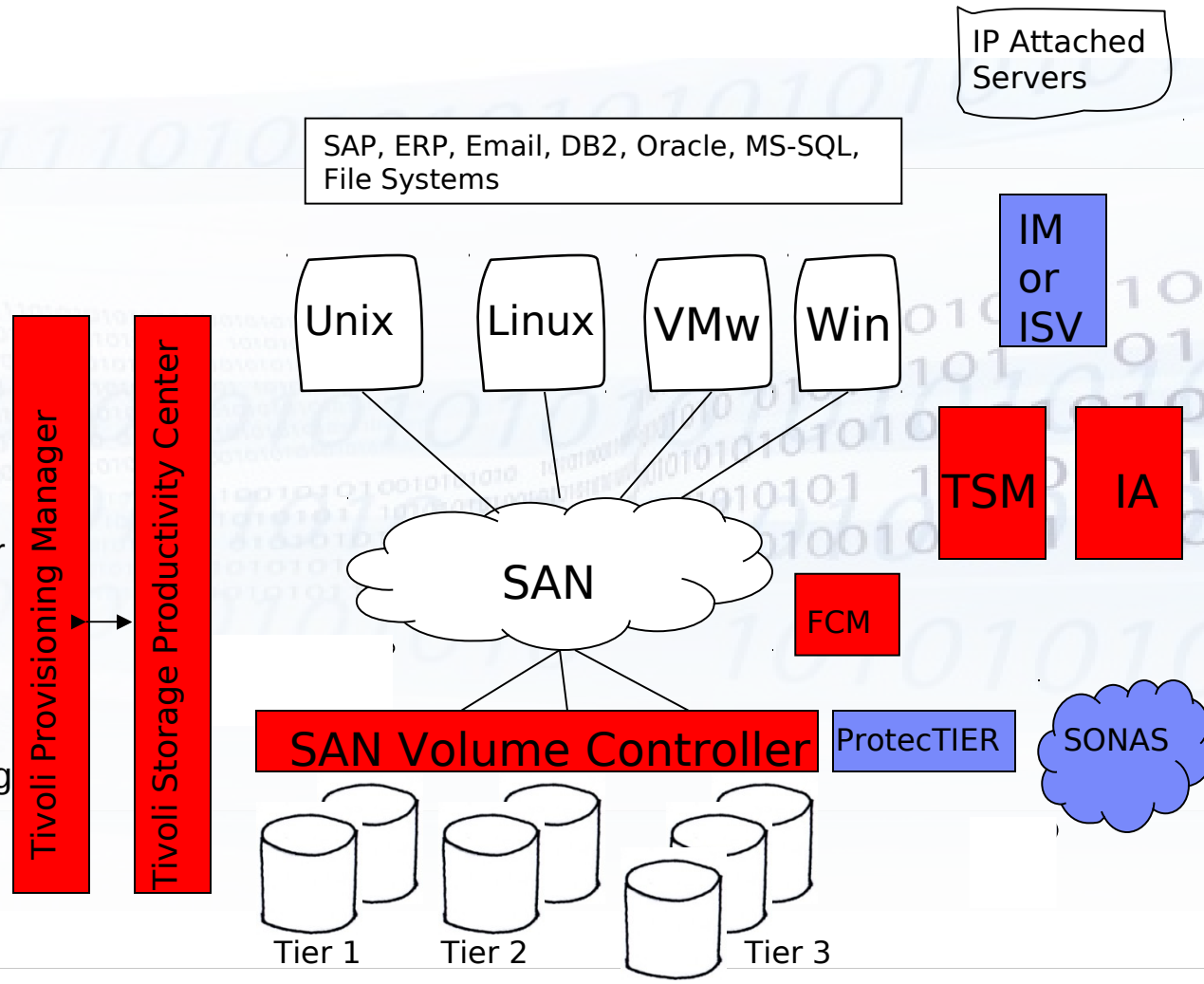
- Single pane of glass providing visibility, control and automation to the storage infrastructure
  - Storage management with a single management layer
  - Storage configuration management across the network
  - Centralizes management of all storage devices
  - Provides linkage to Service Management and Automation
  - Disk and SAN topology views and management
  - Host file systems, data bases, and storage
  - Wide range of IBM and non-IBM device support



# Addressing Data Challenges – Storage Automation

## Tivoli Provisioning Manager

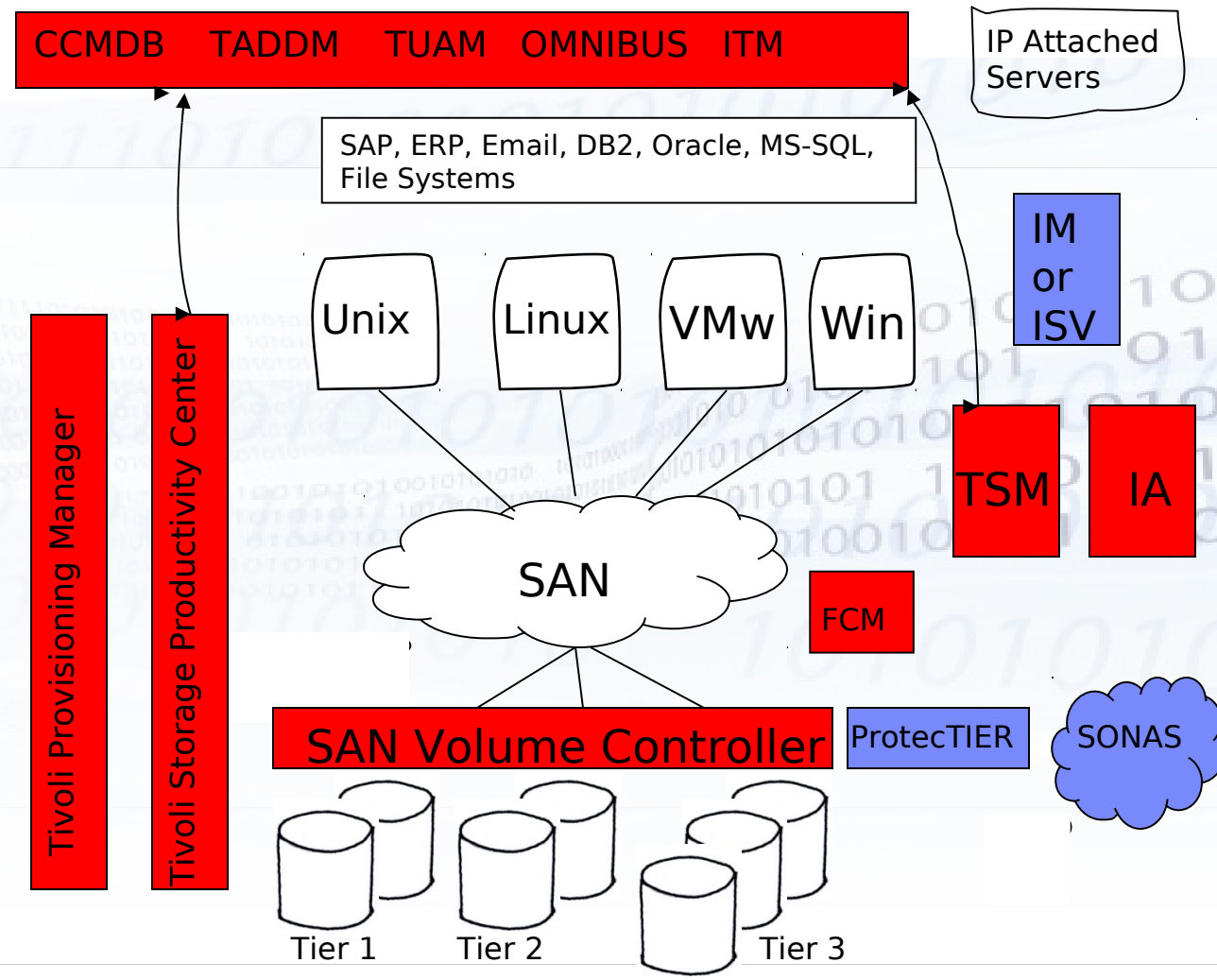
- *Standard provisioning automation* for storage, server and networks, both virtual and physical, for test, development, production and business continuity
- *Quickly and efficiently provision* storage & server resources
- *Visualization* of resource interdependencies improves productivity and responsiveness
- *Eliminates manual tasks* and reliance on custom scripting - major source of errors and productivity drag
- *Comprehensive capabilities* for planning, modeling, real-time resource brokering, and self-healing corrective actions



# Addressing Data Challenges – Service Management

## Service Management

- *Visibility* of interdependencies between applications, systems, networks and storage devices (through TPC)
- *Data store* to track IT assets, configurations, relationship along with any management changes
- *Aligns and correlates business processes* and priorities to IT environment
- *Proactive monitoring and management* of performance, problems, events, for quick diagnosis and response



# Addressing Data Challenges – Service Management

**Service Management - Leveraging SERP in a multivendor environment to feed EAM.**

- SERP is a GTS s/w product which:
  - Provides a single point for reporting storage infrastructure data from large multi-vendor heterogeneous environments
  - Aids in capacity planning, resource reclamation, utilization improvement, deployment planning, financial transparency, and chargeback
  - Adds a critical business context of the storage environment enabling customers to turn vast streams of technical data into actionable information

CCMDB Maximo TADDM TUAM OMNIBUS ITM

SERP

SAP, ERP, Email, DB2, Oracle, MS-SQL, File Systems

IP Attached Servers

Tivoli Provisioning Manager  
Tivoli Storage Productivity Center

Unix Linux VMw Win

IM or ISV

SAN

TSM IA

FCM

SAN Volume Controller ProtecTIER

SONAS

Comp SRM Tools

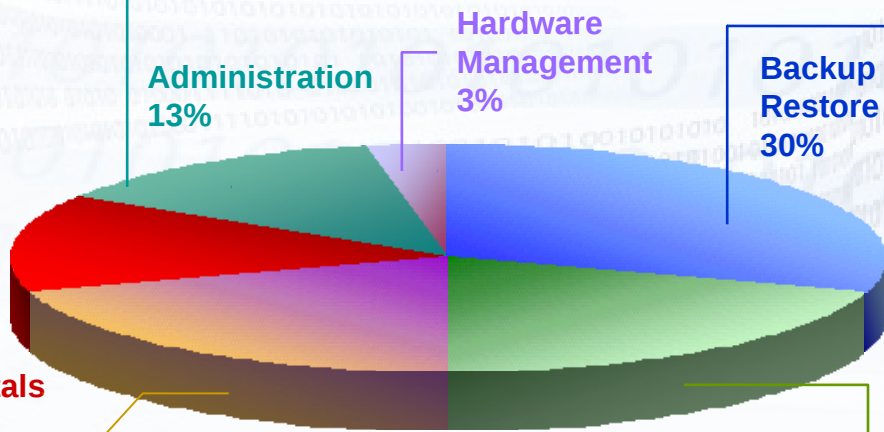
Tier 1 Tier 2 Tier 3

# Total Cost of Ownership: How IBM Storage Software Helps

## Average Storage TCO for Storage Systems

Source: Gartner Group

- Better manage explosive data growth
- Simplify storage management across tiers of heterogeneous storage
- Reduce time to provision storage



- Monitor and automate backup and archive of corporate files

- Lower hardware costs
- Storage resource optimization
- Make more efficient storage purchases based on capacity demands

- Predict out of space conditions
- Detect availability issues in SAN
- Monitor SAN and Disk perf hot spots