The Meaning and Value of Software Defined Storage

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SNIA Technical Council

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Defining
Software Defined Storage (SDS)

SDS is often defined by describing a set of attributes

What is the underlying value of SDS?

How can SDS be structured as an ecosystem to deliver this value?

SDS Value

- Flexible construction of services
- Separation of control and data planes
- Deployment Simplicity

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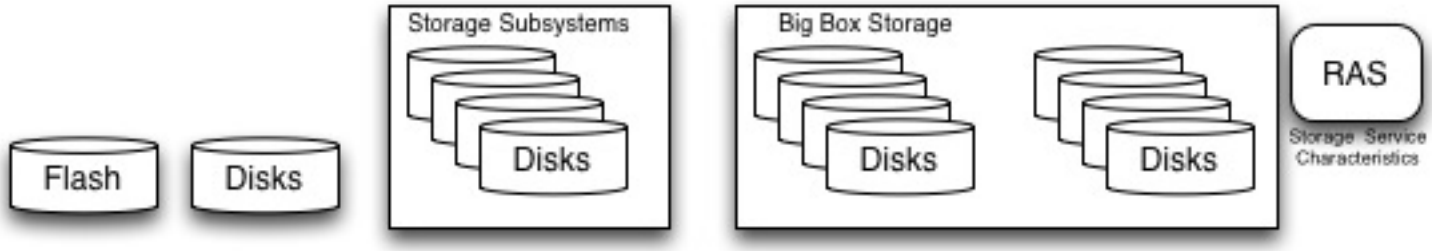
- Separation of control and data planes
  - SDS builds on Virtualization of the Data Path
    - Data Path Virtualization alone is not SDS
- Deployment Simplicity
  - Storage service interface
    - Expresses Requirements for the Cloud/DC/Storage/Data Administrator
    - Receives Service Levels from the Cloud/DC/Storage/Data Administrator
    - Automates the matching of services to requirements

SDS Value Map

- Flexible construction of services
  - Works with standard hardware as well as specialized hardware
  - Works with scale out or scale up architectures
  - Enables incremental building of storage/data services solutions
- Separation of control and data planes
  - Includes pooling of resources
  - Includes Service Level Management (metadata tagging)
    - Large grain “Labels” for your storage/data containers
    - Fine Grain “Knobs” on individual data objects
  - Enables dis-aggregation of storage and data services
- Deployment Simplicity
  - Includes self-service interface that supports provisioning
  - May include policy based management automation
  - Simplifies management of scale

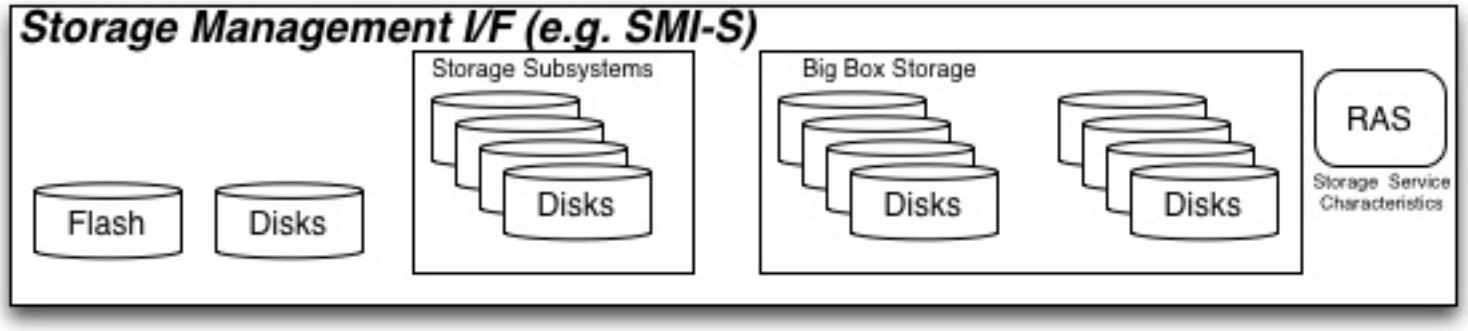
What is needed: Virtualized Data Path

- File, Block, Object
- Without a virtualized data path the "hardware" is defining the storage



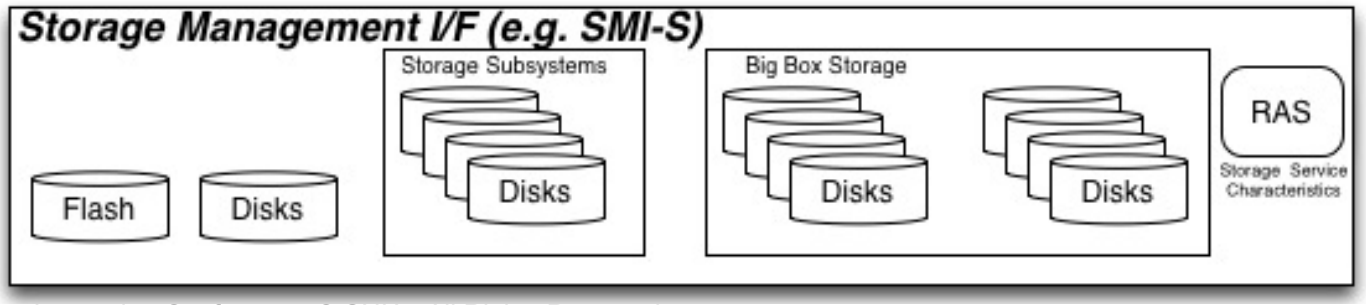
What is needed: Management APIs

- Preferably Standardized
- Must be programmatic
- Storage services include capacity, performance, availability, security, data paths



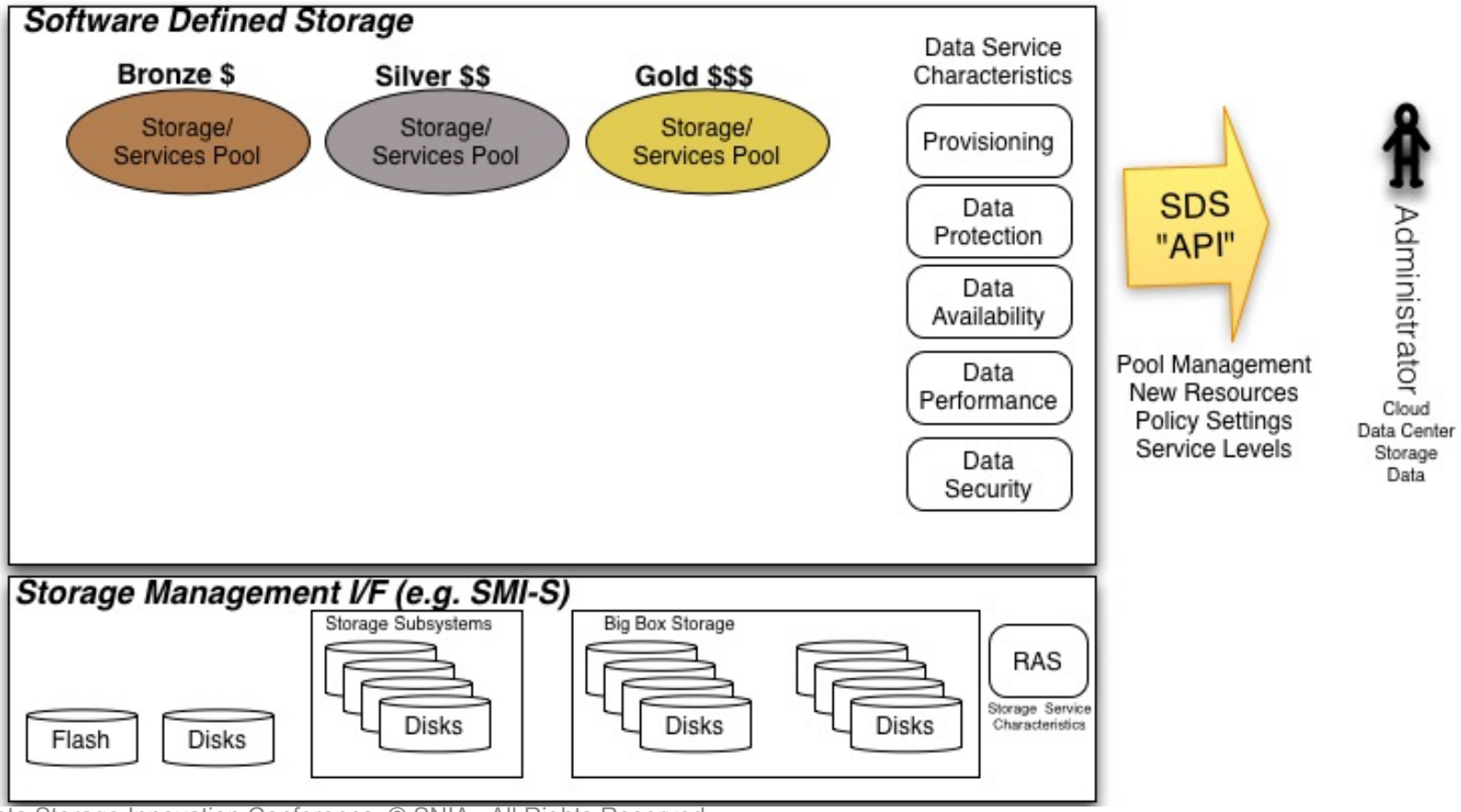
What is needed: Data Services

- Data services provide containers for files, objects, blocks
- Data services are deployed dynamically



What is needed:
Policy Driven Service Levels

- SDS API is used to define service levels
- Metadata is used to match requirements with capabilities

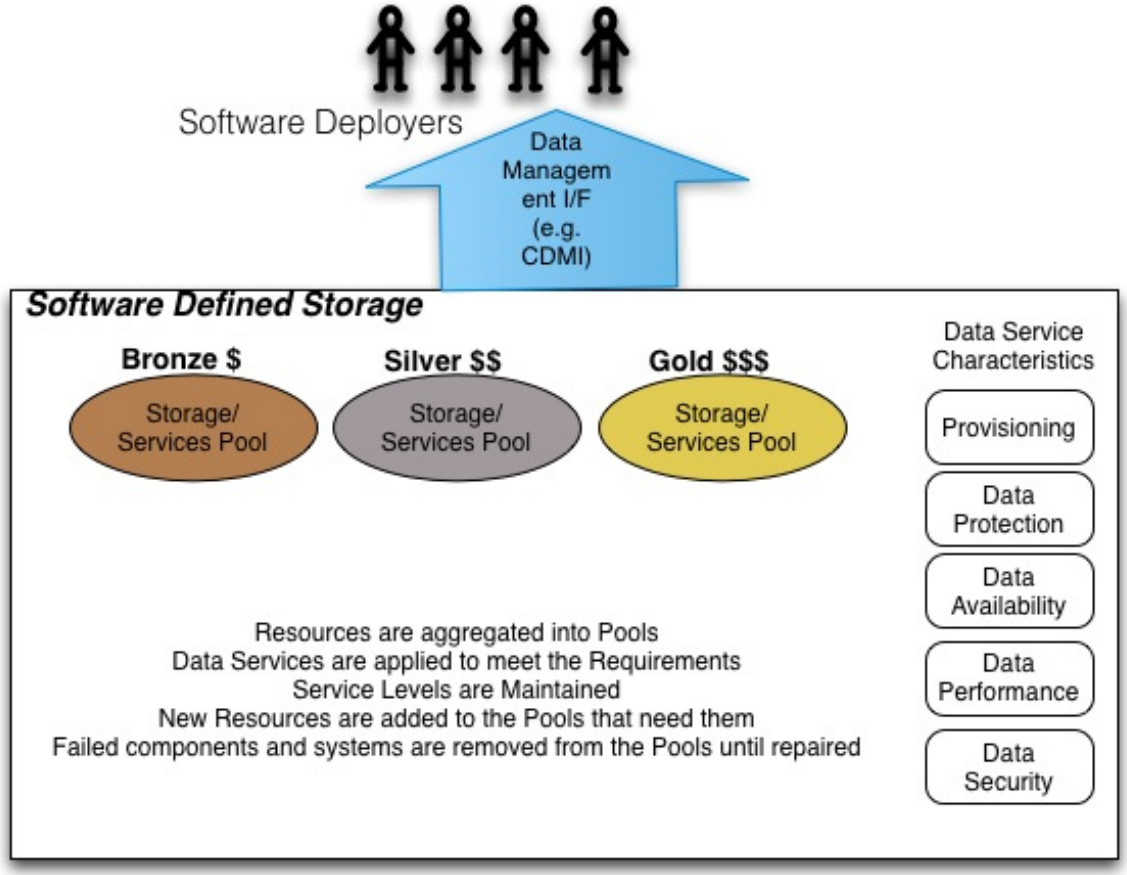


Storage/Services Pool

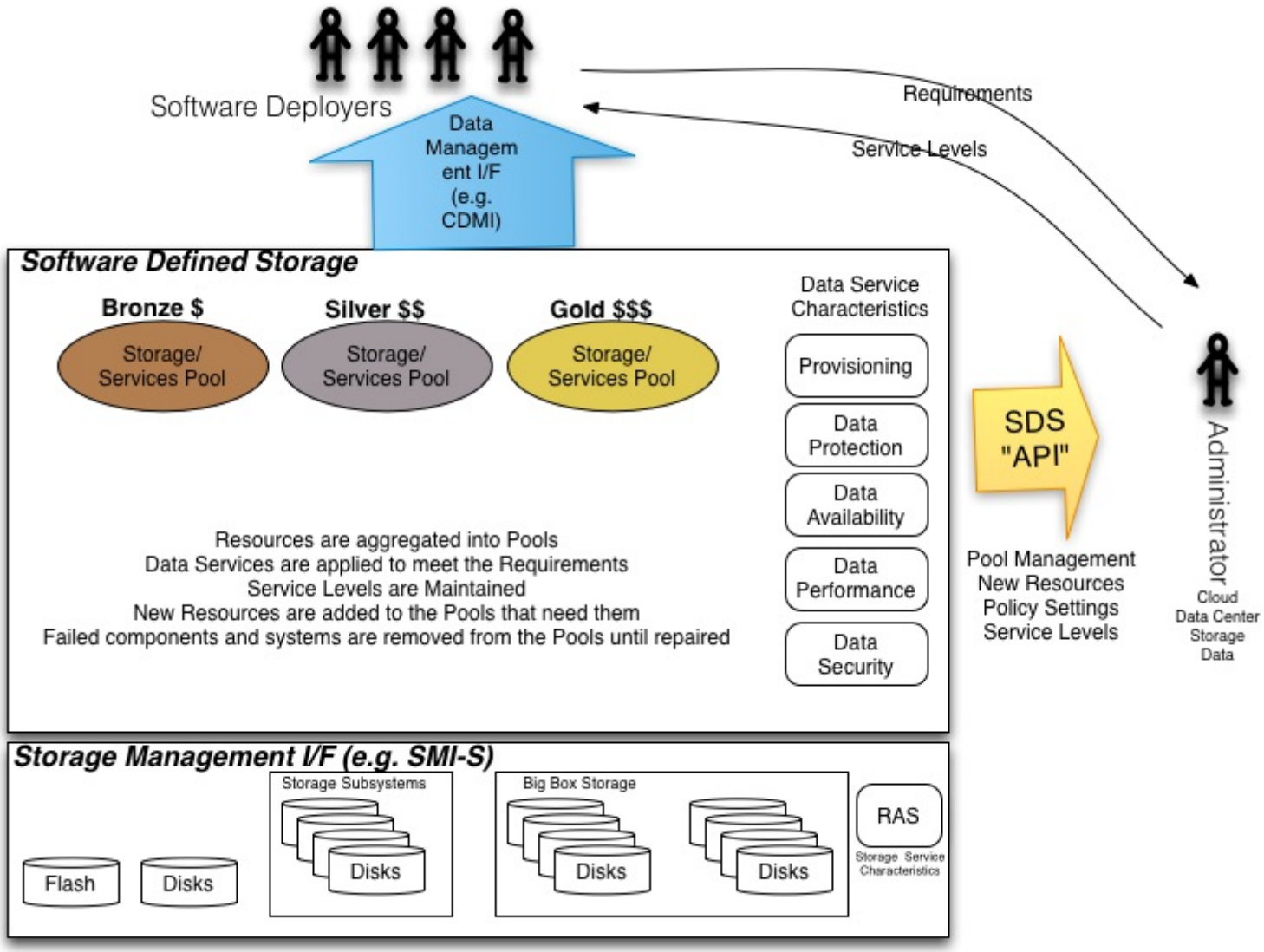
- A storage services pool specifies storage that may be used and data services that are applied to meet certain ranges of requirements
- Requirement granularity depends on implementation: Volume, File, Object, Container
- Resources are aggregated into pools
- Data services are added to meet service level requirements
- New resources are added to pools that need them
- Failed resources are removed from pools until repaired

What is needed:
Data management API

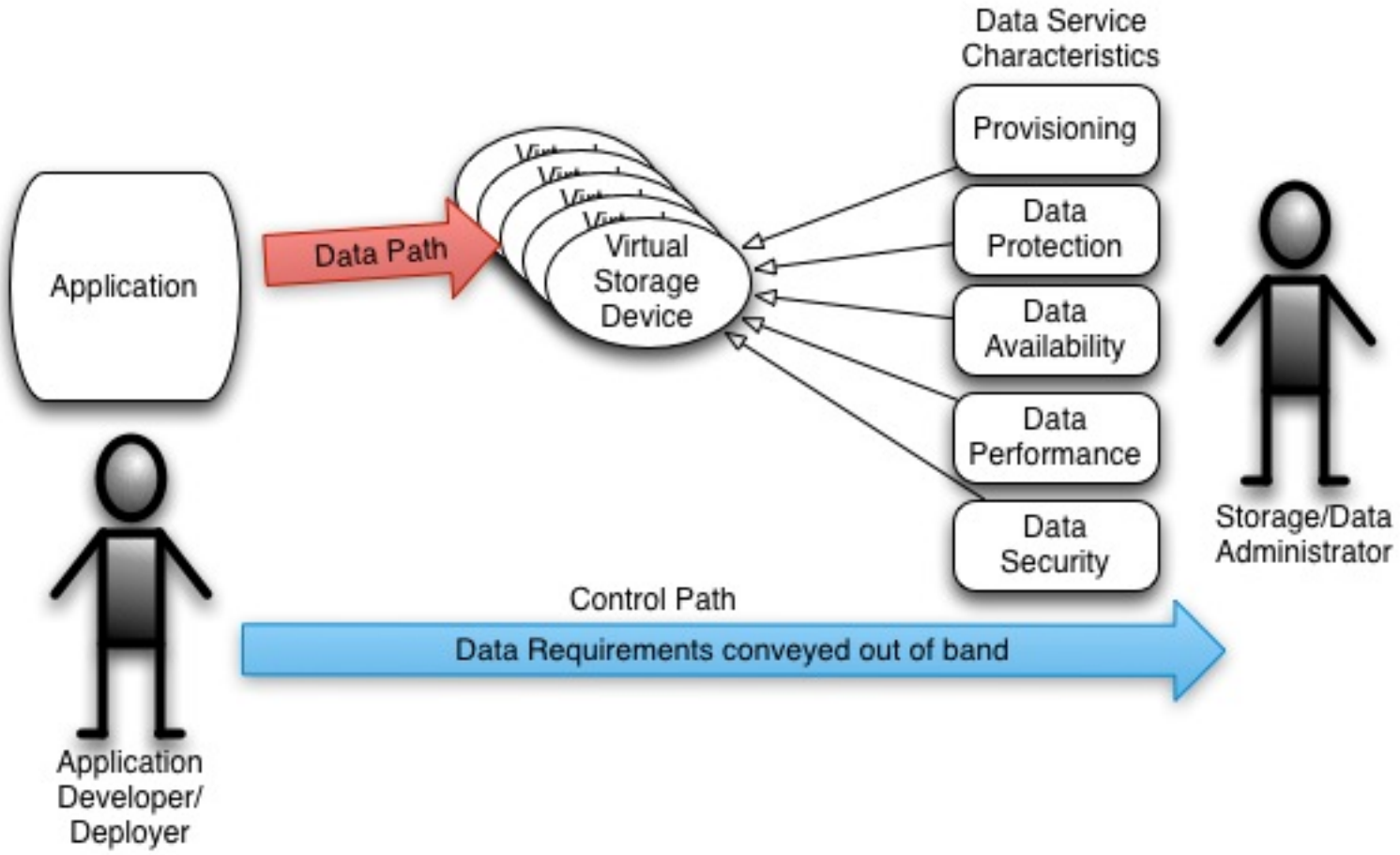
- Gives SW developers easy access to data services
- Metadata controlled service selection



Big Picture

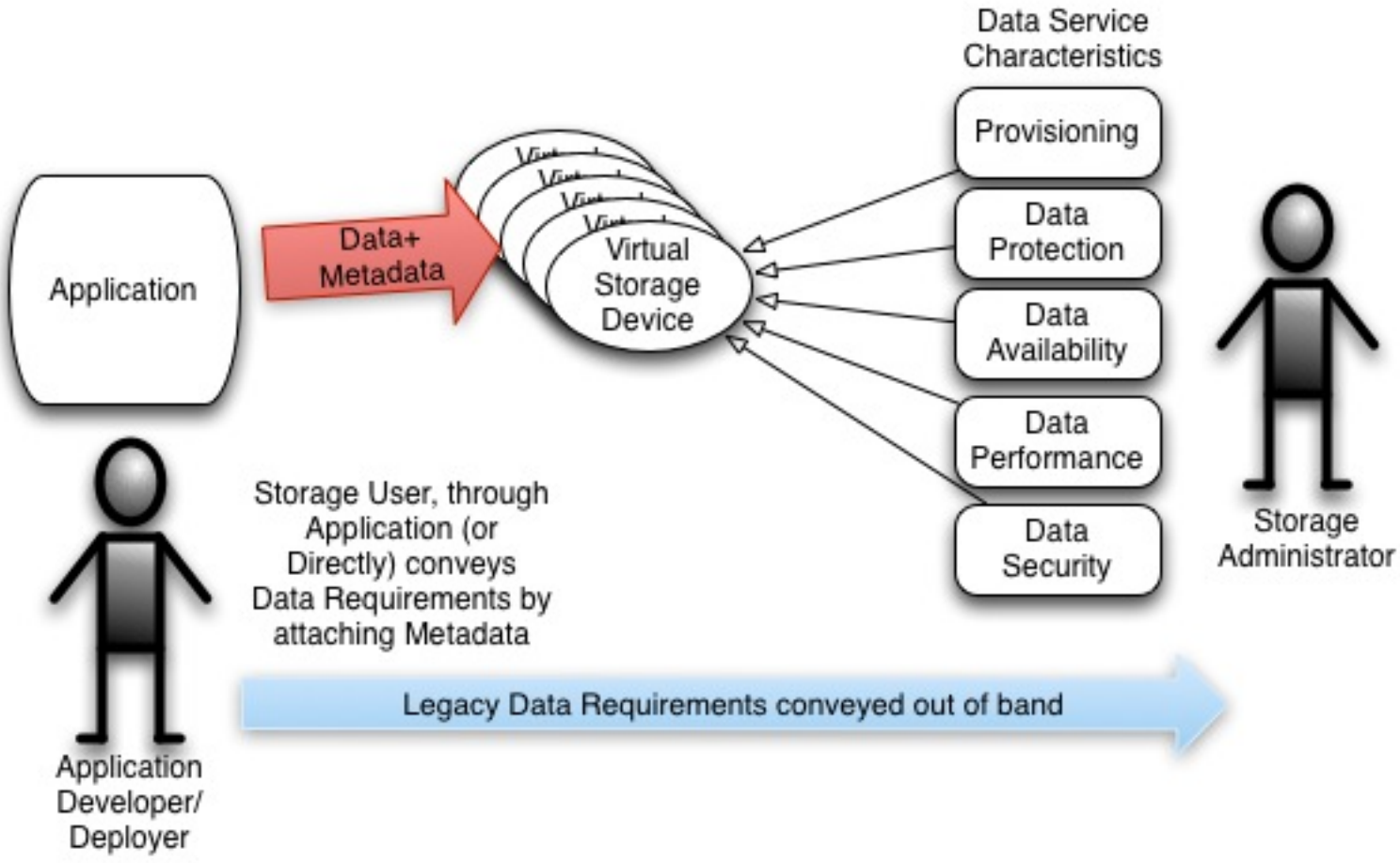


How are requirements conveyed traditionally?

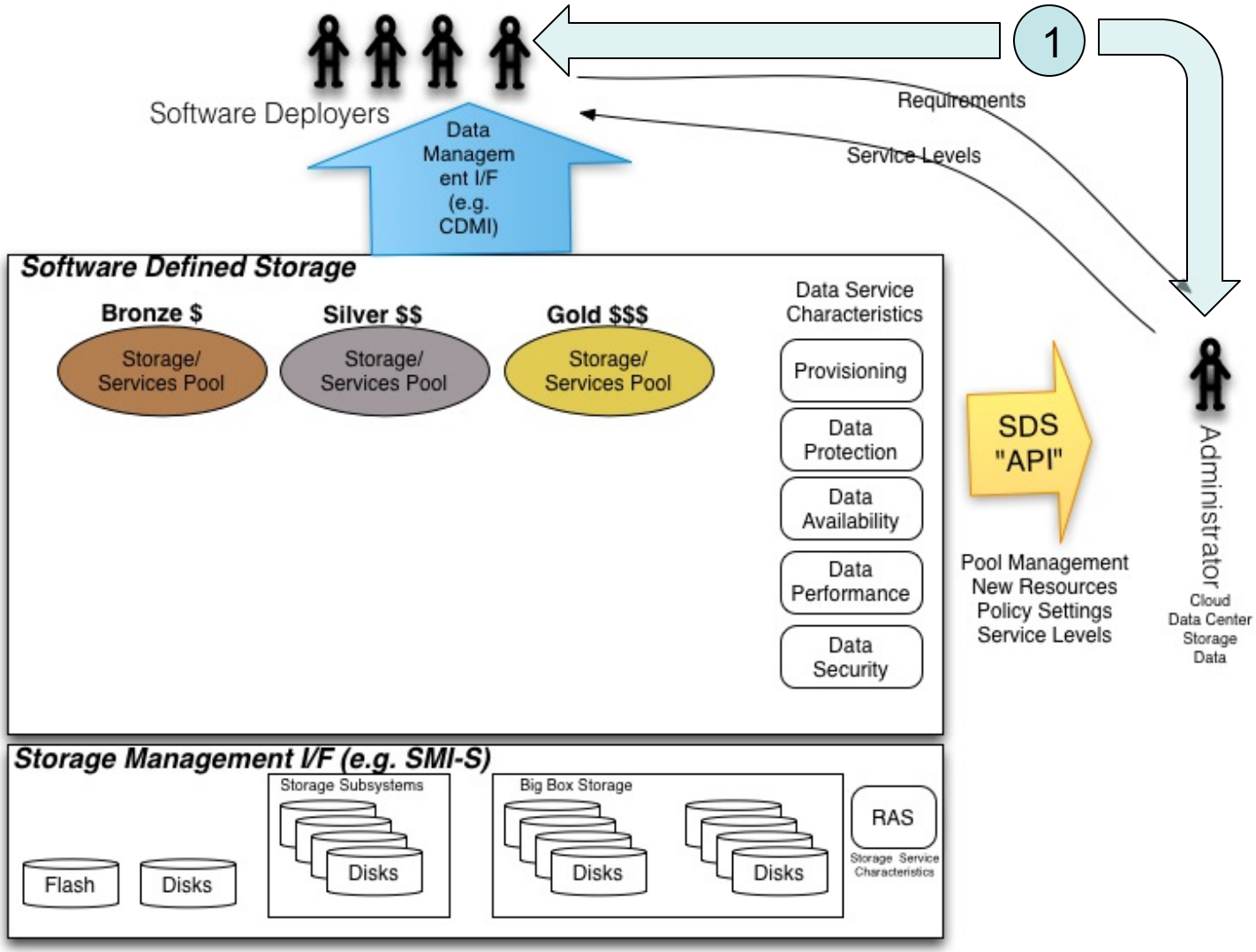


How are requirements conveyed with SDS?

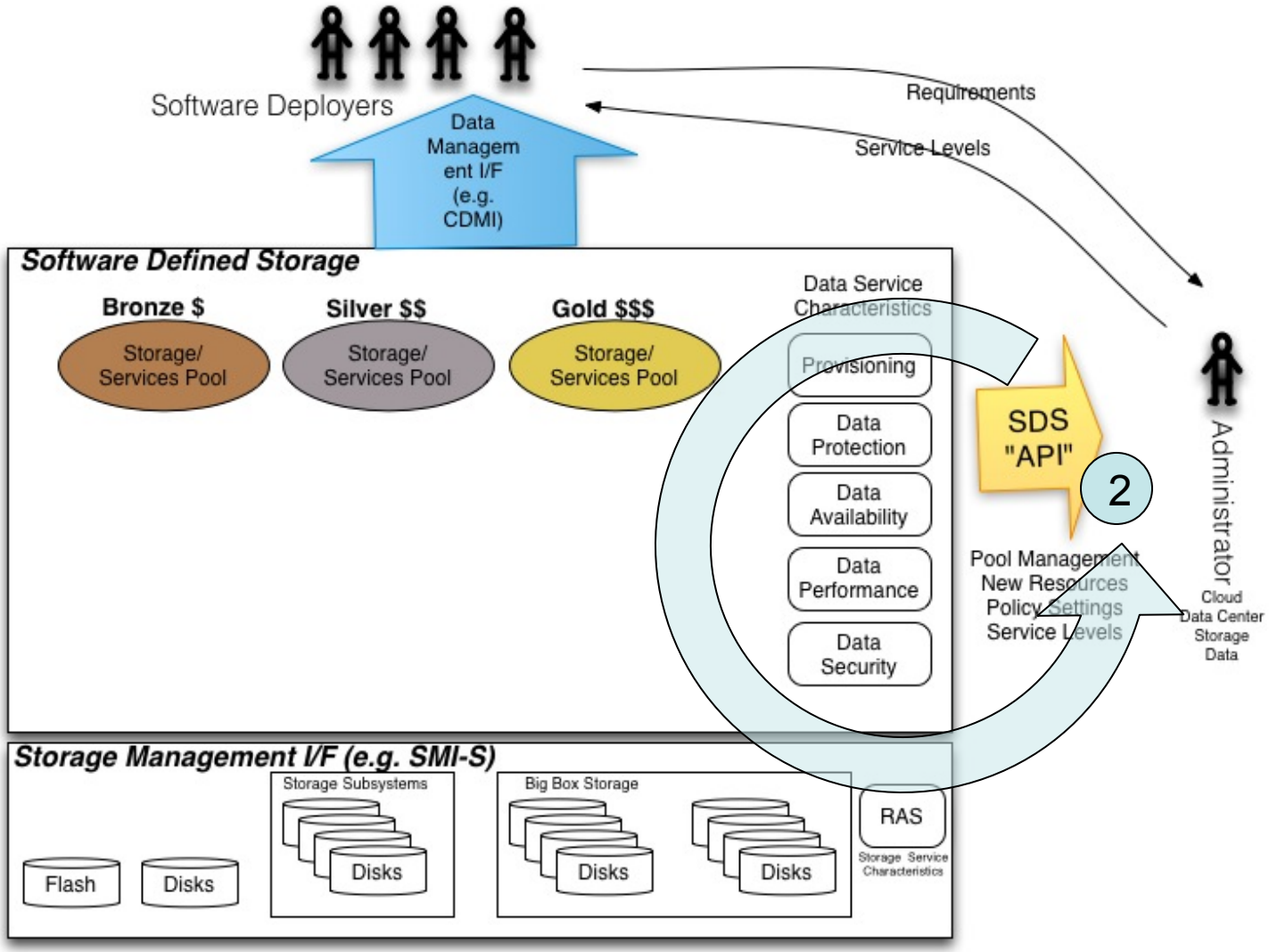
- Requirements flow through the data storage interface



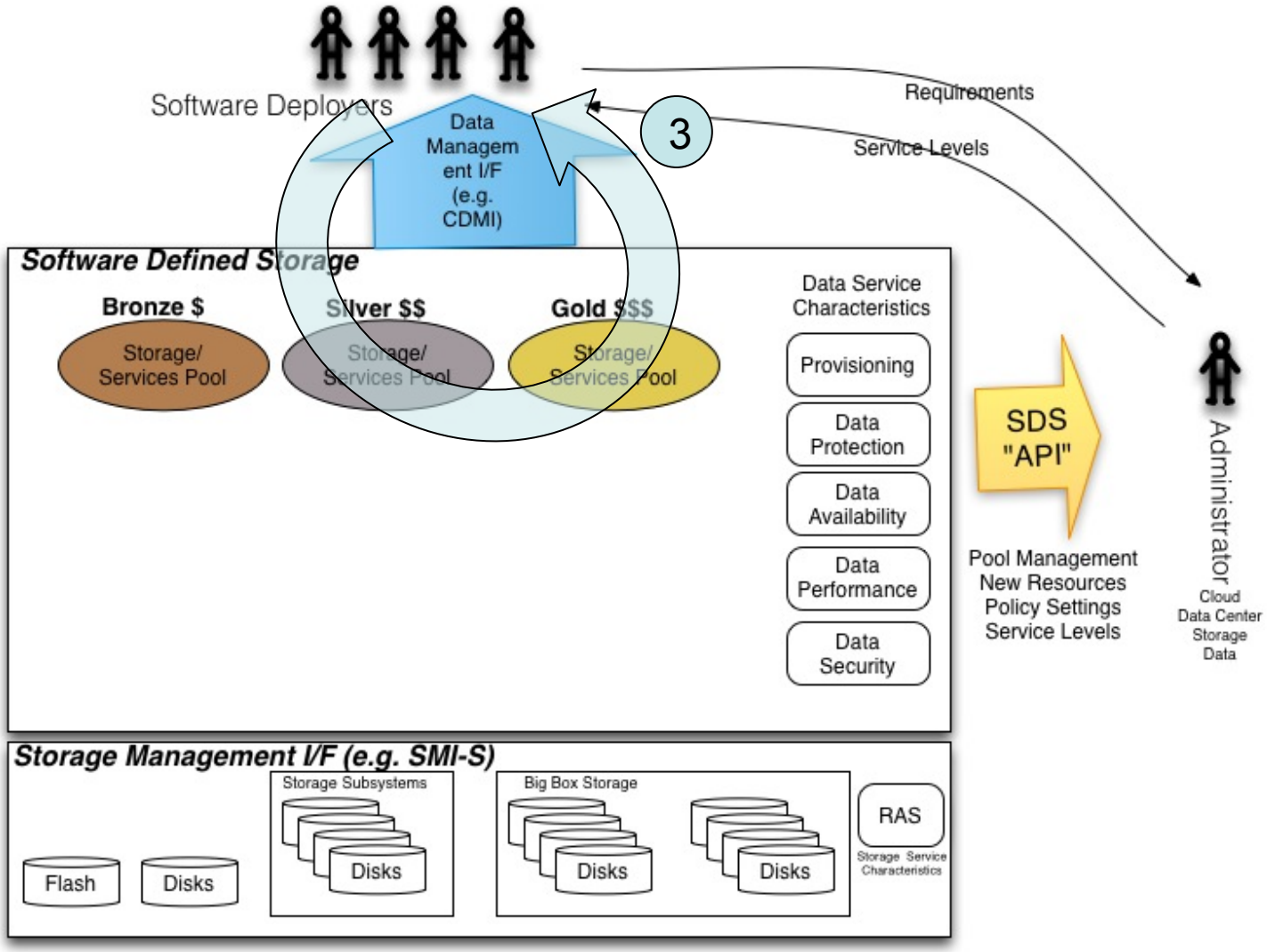
Control Plane Flow: Discuss Requirements



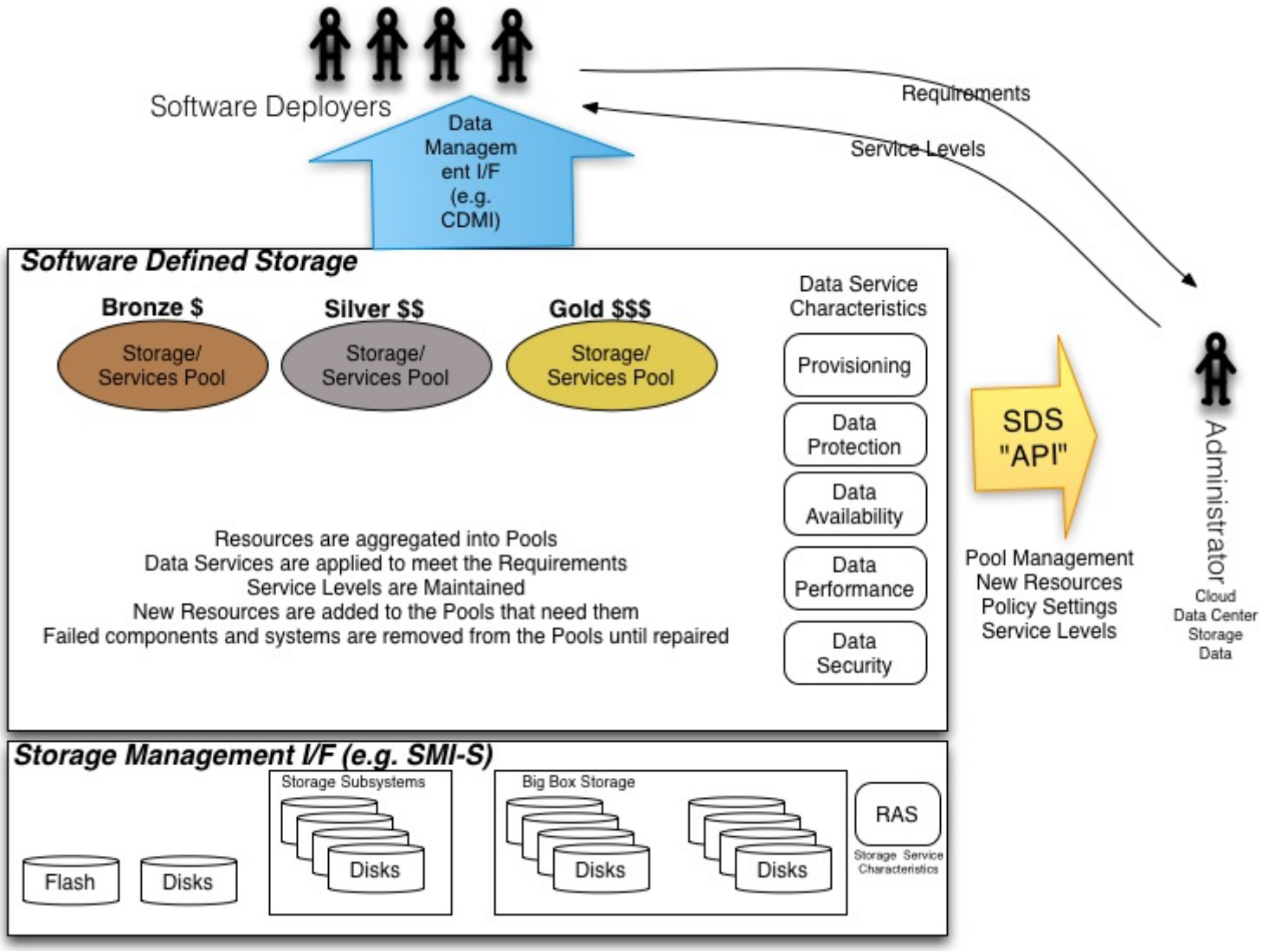
Control Plane Flow
Define Storage/Services Pools



Control Plane Flow: Choose Storage/Services Pools



Software Defined Storage



Thank You