

Using Cloud Architectures to Address IT Challenges

Riki Fine
Cloud Infrastructure Group

Cloud Architecture: A Great Way to Manage Petabytes of Digital Content

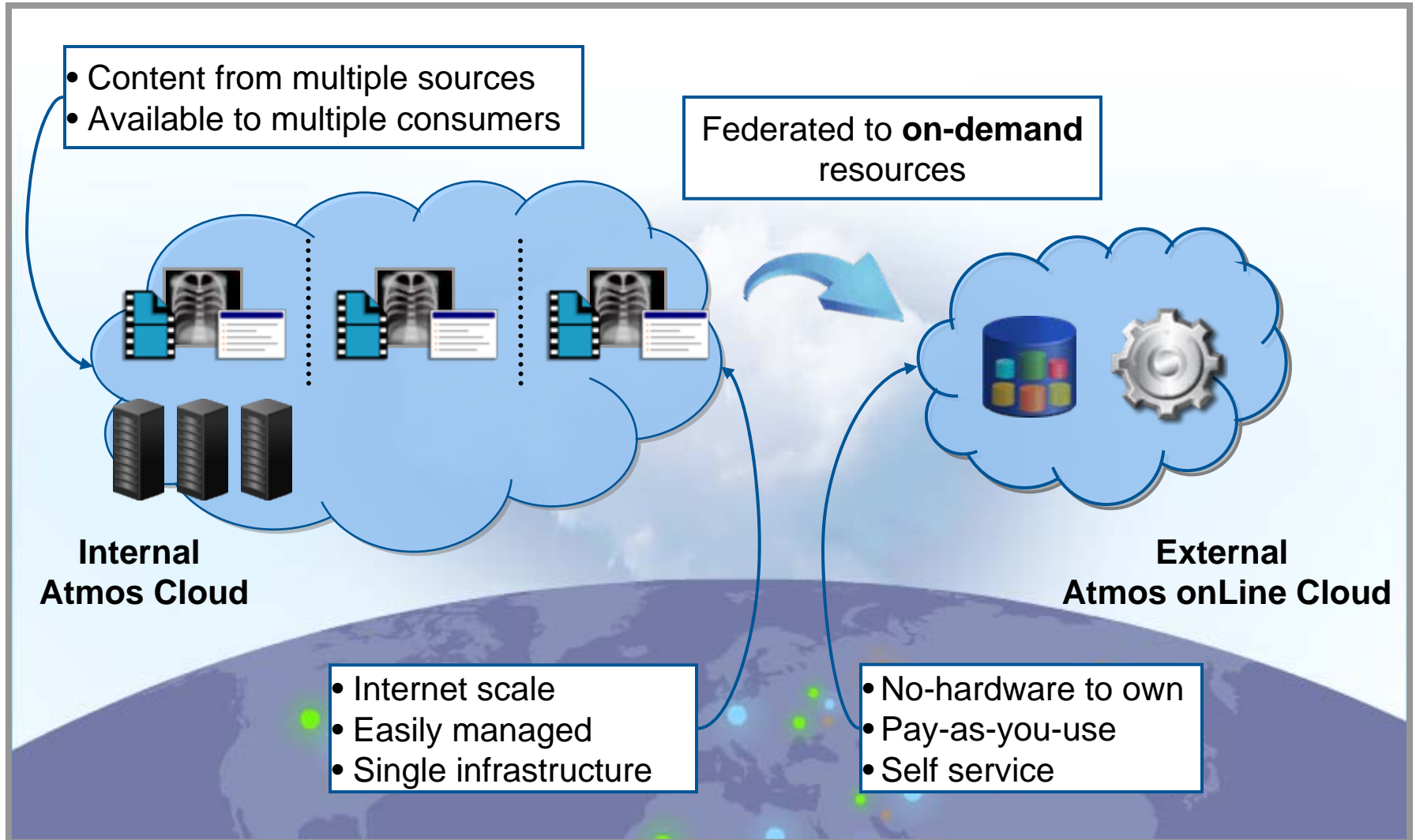


More Accessible

More Flexible

More Cost Effective

The Enterprise Content Cloud



One Infrastructure, Many Uses



**Web Facing
Applications**



***“Cloud
Drive”***



**Backup
Target**

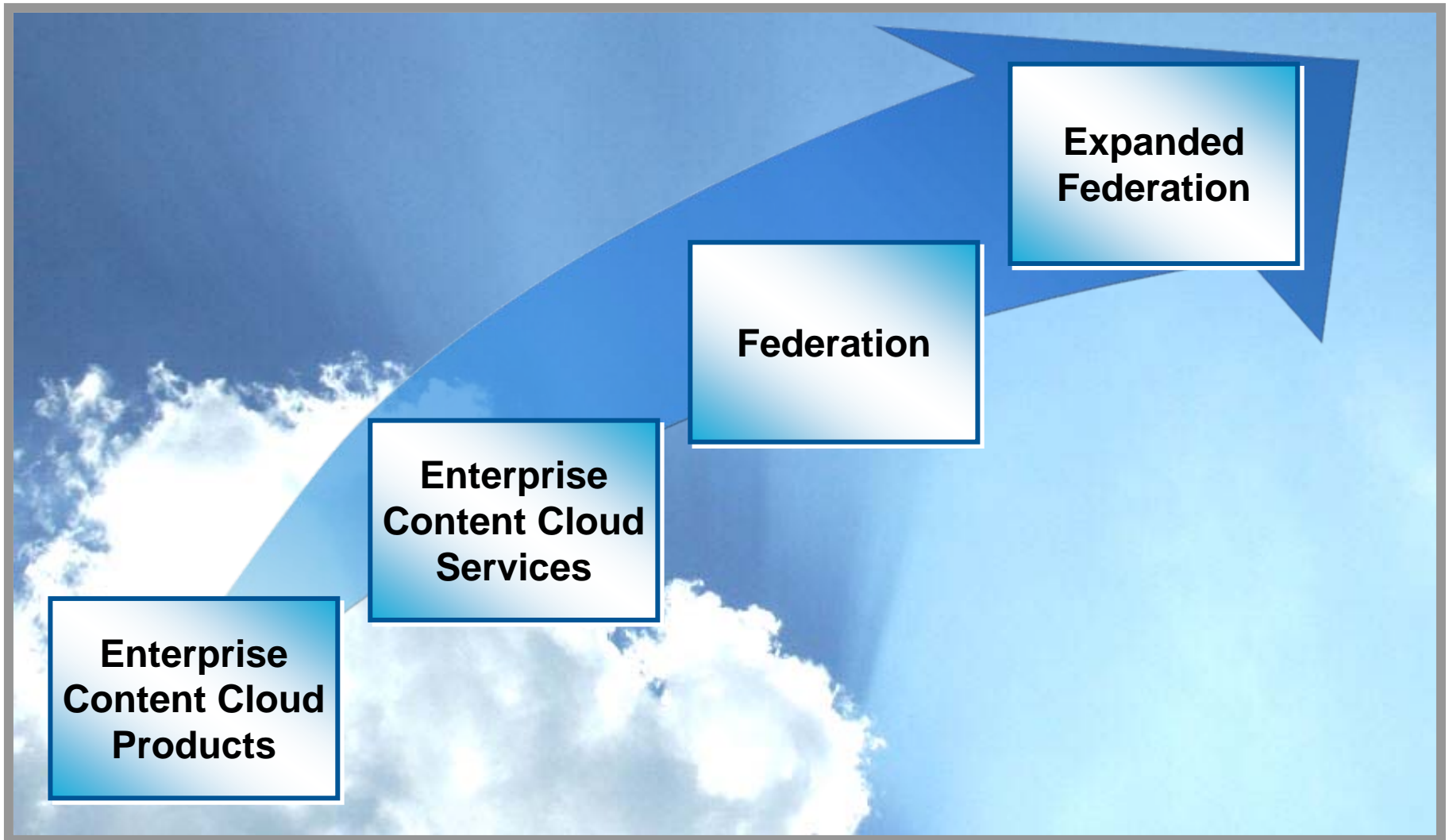


**Archive/
Retention**



**Content
Distribution**

EMC Cloud Infrastructure Evolution



A horizontal banner with a blue gradient background and a white border. The text "EMC Atmos" is centered in white. The banner is reflected below it.

EMC Atmos

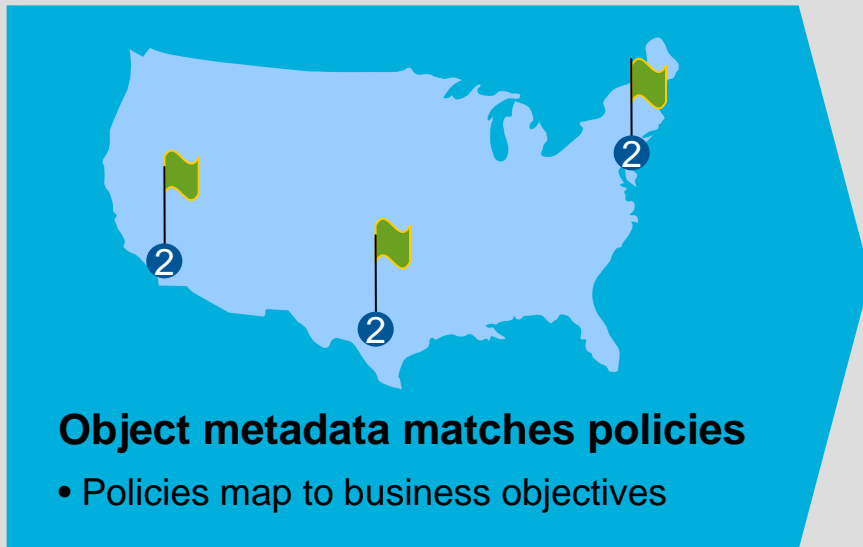
The Secret Sauce: EMC Atmos Software



- **Massively scalable infrastructure**
 - Multiple petabytes; billions of objects
 - Hundreds of sites, fully distributed
 - Unified namespace
- **Policy-based management**
 - Policy tells data where to go, what actions to take
 - Integrated object based metadata
 - Event driven policy evaluation
- **Data services and access methods**
 - Replication, versioning, compression, de-duplication, spin-down
 - Web services (REST/SOAP) and file system access
- **Management at scale**
 - Multi-tenancy
 - Auto-config and auto-healing architecture
 - Manage more with fewer people



Policy-based Information Management



Object metadata matches policies

- Policies map to business objectives

Policies drive actions

- Where to store information
- What content services to apply
- How many copies



Digital Images

Content Type =
Digital Image
:**Gold**



Audio Transcripts

Content Type =
Audio Transcript
:**Bronze**

Gold : **Replication, stripe**
2 synchronous copies – TX
2 asynchronous copies - MA

Bronze: **De-dupe, compression**
2 synchronous copies – LA

Revolutionary Approach



**Internal Enterprise
Content Cloud**

Internal to External Federation



External Atmos Cloud



Atmos onLine



External Atmos Cloud

Internal-External Federation Policy

ContentType = Non-confidential : **Bronze**
ContentType = Confidential : **Platinum**

Bronze: Location="Atmos onLine"

Platinum: Location="Atmos Internal"

Internal-External Federation Benefits

- On-ramp to leverage external cloud
- Reduced total cost of ownership
- Enables sharing and collaboration

Hardware Design Philosophy



- **Industry standard components**
- **Standard data center environments**
- **Factory configured, racked and cabled**
- **Flexible, cost effective service model**
- **Optional HA and redundancy**
- **User serviceable**
- **30 drives per 3U drawer**
- **Up to 360 TB per rack**
- **120TB, 240TB or 360TB configurations**





EMC Atmos onLine

Internet Accessible Storage and Compute Services

Nothing to Own, Self Service, Instant Access

Easy Adoption and Integration

EMC Atmos onLine is Designed for Enterprise IT



- **Internet-based storage and compute services**
 - Simplify application development and deployment
- **Self-service management console**
 - Rapid services provisioning/de-provisioning
 - User lifecycle administration and management
 - Single sign-on to multiple services
- **Extensive metering**
 - Usage tracking enabled via service instrumentation
 - API access to metering and account data
- **Fine-grained reporting**
 - Snapshot and historic views of usage patterns
 - View network bandwidth, compute and storage statistics
- **Flexible billing options**
 - Support for credit card and purchase orders
 - Integration with 3rd party back-office systems



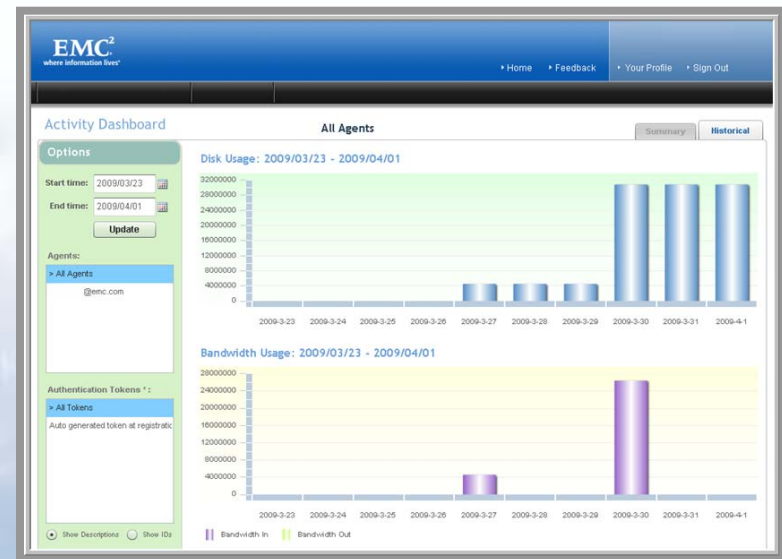
Preview available:

<http://www.emccis.com>

EMC Atmos onLine – Storage Service



- Federation with EMC Atmos
- Common REST API
- Policy-based pricing tiers
- System and user metadata
- Incremental object updates
- No limits on object size



EMC Atmos onLine – Compute Service



- Instant and unlimited access to virtual servers
- Multiple management tools
- VLAN-based isolation
- Persistent local storage
- NFS and HTTP access to Atmos onLine storage service

The screenshot displays the EMC Atmos onLine management interface. At the top, there's a navigation bar with 'Overview', 'Atmos onLine', and 'Support'. Below this, a 'Management' tab is active, showing a 'Resources Summary' and a 'Status' pie chart. The 'Resources Summary' indicates 1 VDC and 5 VM Instances. The 'Status' pie chart shows 2 Powered Off (orange), 2 Powered On (green), and 1 Suspended (blue) instances. Below the summary, there's a 'VDCs' list with 'orgqa66' and 'vdcqa66'. The 'VM Instance List' table shows the following data:

Name	Status	Instance Type	NIC Number	Public IP	Private IP	Hostname
SugarCRM	Powered On	small	2	162.97.144.33	172.16.67.102	
winZnic01	Powered Off	small	2	162.97.144.11	172.16.67.99	
mySugarCRM	Powered On	small	2	162.97.144.37	172.16.67.104	
MediaWiki	Powered On	small	2	162.97.144.13	172.16.67.100	
winZnic02	Powered Off	small	2	162.97.144.36	172.16.67.103	

At the bottom of the console, there are buttons for 'Enable NFS Access', 'Resync NFS Access', and various VM actions like 'Power On', 'Power Off', 'Suspend', 'Clone', 'Connect', 'Edit Settings', and 'Delete'. The footer shows the user 'cqa66@null.com' and the time 'Tue Aug 11 17:43:23 GMT-0400 2009'.

Atmos onLine: Putting Policies to Work



- Policies allow users select from a series of storage topologies for their data
- Policies selection is enabled via metadata:
 - e.g., `SetUserMetadata(policy,Archive);`

	Archive	Application	Distribution
Heavy write, read rarely	+ +	+	
Balanced write / read	+	+ +	+ +
Heavy write and read		+	+ +



EMC Atmos Partner Program

Enhancing the Cloud: ISV Partner Program



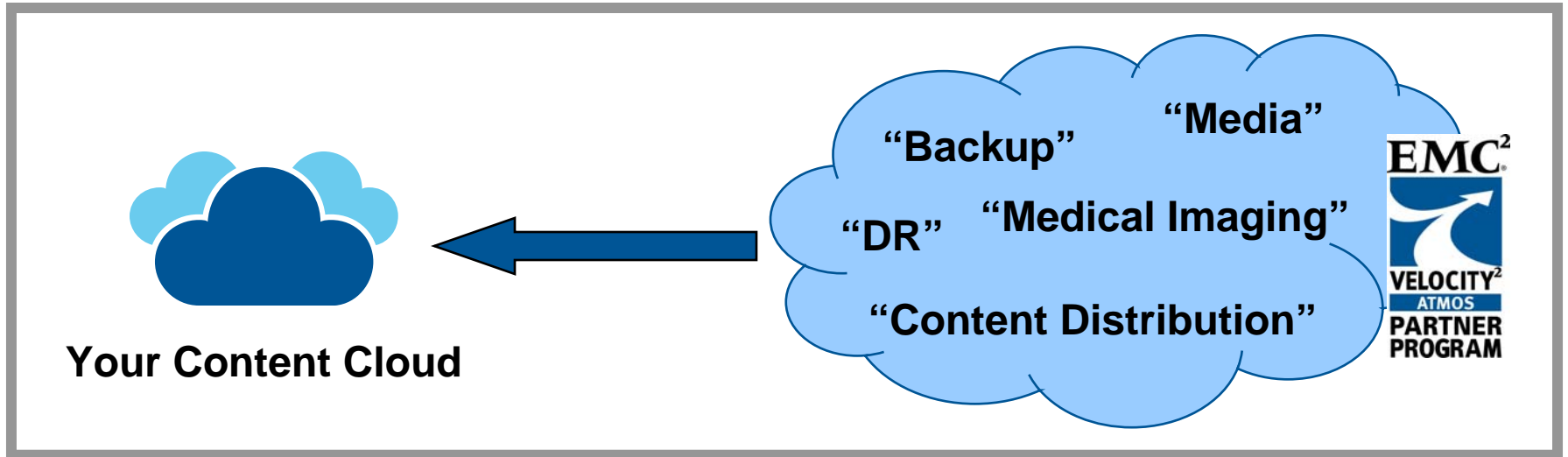
Enables ISVs to deliver and deploy cloud-based solutions to their customers with minimal infrastructure and engineering investment

- Key benefits to ISVs include:
 - Enhanced market visibility through partner showcase and joint marketing activities
 - Shorter sales and deployment cycles with EMC Atmos cloud technologies and community
 - Greater customer credibility and enhanced customer satisfaction as an EMC partner
 - Faster time to market via technical assistance and developer forums



Rapid Time to Market With Minimal Investment

A Strong Ecosystem of Partners



- A strong ecosystem of ISV's and Service Providers
- Delivering "pluggable" applications and services
- Covering a broad portfolio of industry verticals and uses
- Working to maximize the value of your cloud solution

Example Partner Applications



- **Disaster recovery**
 - Centralized backup from multiple sites and applications
 - Backup to a remote location
- **Data archive**
 - Long term protection of critical digital assets
 - System independent archiving based on policies
- **Content delivery**
 - Managed, accelerated and secure digital asset distribution
 - Driven by specific customer workflows
- **Infrastructure as a Service**
 - Local cache for performance, cloud backend for storage scale

EMC NetWorker

Atempo 

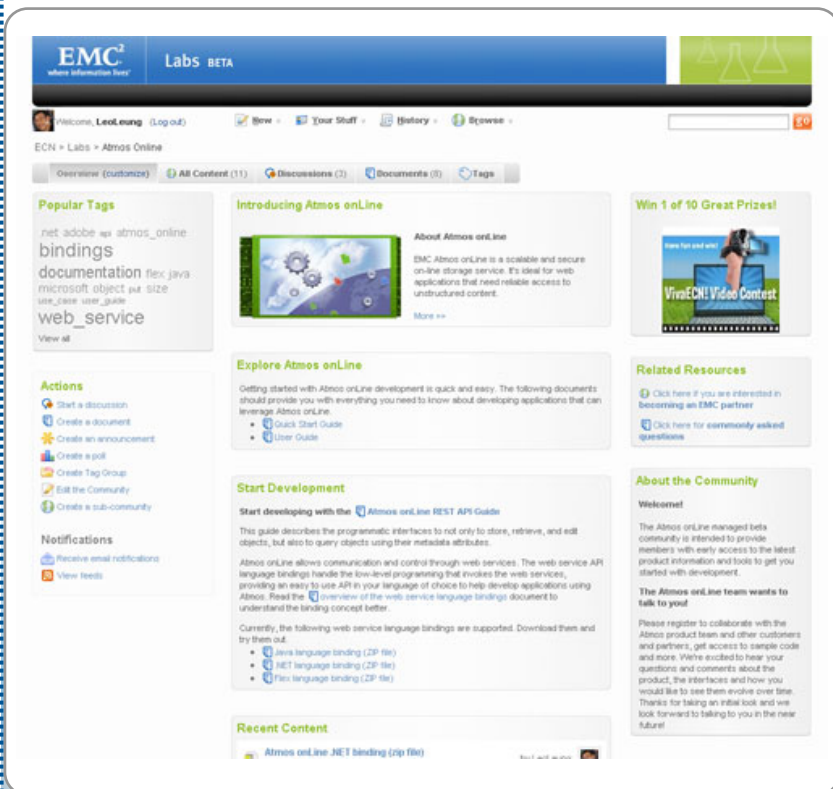
Data Management, Simplified.

SIGNIANT. 

TWINSTRATA

Join our Managed Beta and Community

www.emc.com/cloud



- **Learn how to start using Atmos onLine**

- <http://labs.emc.com/atmos>
- Download APIs and guides
- Collaborate with EMC and peers

- **Try out Atmos onLine**

- www.emccis.com
- Sign up for Beta program

- **Join our Partner Program**

- <https://community.emc.com/community/partner/atmospartner>

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