

Management Harmonization Overview

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Background

- Industry need for consistent service oriented interfaces for management.
 - HP, IBM, Grid community and partners developed Web Services Distributed Management (WSDM) motivated by modelling stateful resources with web Services
 - Intel, Microsoft and partners developed WS-Management for systems management
 - Industry feedback and desire for common management protocol.
 - We heard you!
 - “HP, IBM, Intel and Microsoft plan to develop a common set of specifications for resources, events, and management that can be broadly supported across multiple platforms. The parties will do this by building on existing specifications and defining a set of enhancements that enable this convergence.”
 - *Toward Converging Web Service Standards for Resources, Events, and Management*, HP, IBM, Intel and Microsoft, March 2006
- <http://devresource.hp.com/drc/specifications/wsm/index.jsp>
 - <http://www.ibm.com/developerworks/webservices/library/specification/ws-roadmap/>
 - <http://www.intel.com/technology/manage/downloads/convergence.pdf>
 - <http://msdn2.microsoft.com/en-us/library/aa480724.aspx>

Objective and Agenda

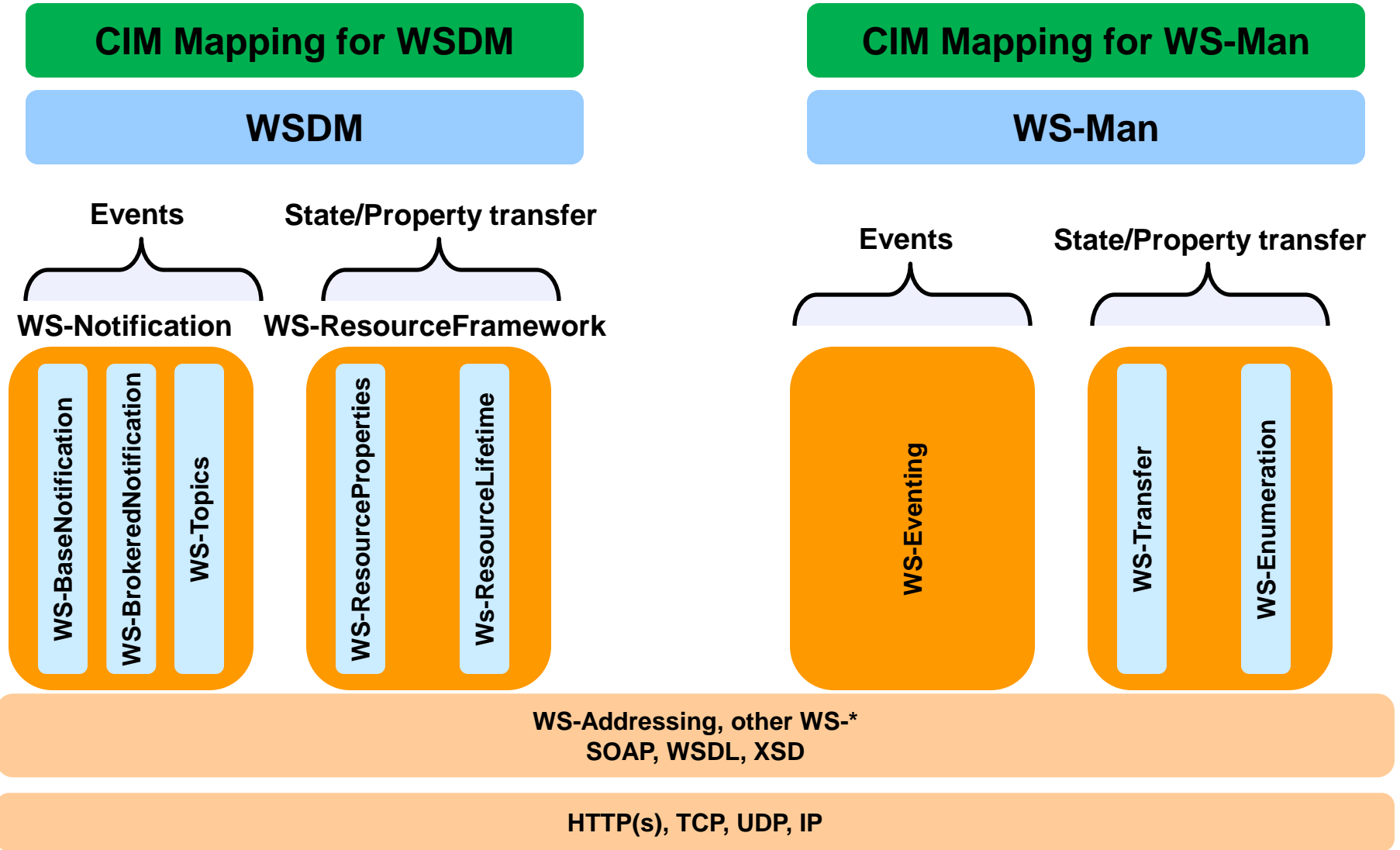
- Objective

- Provide an update on the progress on the convergence of WS-Management (WS-Man) and WSDM
- Solicit feedback on the architecture (requires Feedback Agreement executed by all)

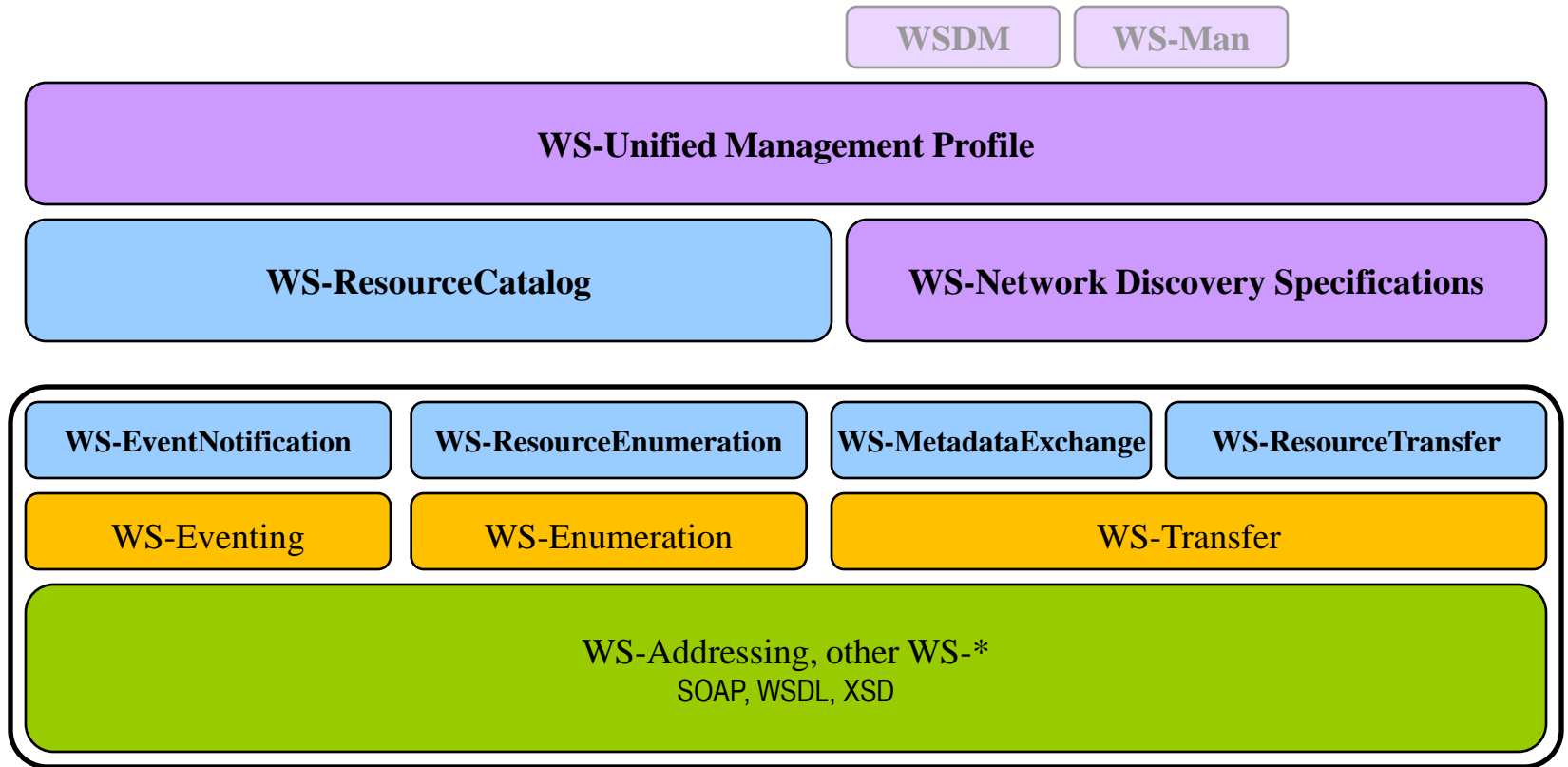
- Agenda

- Overview of existing stacks
- Current convergence stack architecture and status
- Functional decomposition and overview of constituent specifications
- Process and next steps

WSDM and WS-Management side by side



Converged Architecture



- Converged Management specifications**
- Convergence Infrastructure specifications**
- Basic events and state/property transfer**
- Web Services base specs**

Names of some specifications are not final and may change

New Specifications Developed

➤ WS-ResourceTransfer

- WS-EventNotification
- WS-ResourceEnumeration
- WS-ResourceCatalog
- WS-Network Discovery Specifications
- WS-UnifiedManagement Profile

WS-ResourceTransfer (WS-RT)

- Goal:
 - Satisfy the primary requirements that WS-Management and WSDM had on WS-Transfer and WS-ResourceProperties/WS-ResourceLifetime
 - Layered on top of WS-Transfer

- Main concepts:
 - WS-RT defines extensions to the WS-Transfer CRUD operations that can operate on fragments of the XML representation of the resource
 - Multiple-Gets/Puts per operation
 - New filter dialects
 - QName
 - XPath level 1
 - WS-RT defines optional resource metadata that describes certain aspects of the resource
 - Lifetime
 - Can be included on Create
 - Use MEX to retrieve - MEX+Transfer to update

WS-ResourceTransfer (WS-RT)

- Goal:

- Satisfy the primary requirements that WS-Management Transfer and WS-ResourceProperties/WS-ResourceTransfer
- Layered on top of WS-Transfer

```
<wsrt:Get Dialect="XPath-Level-1">  
  <wsrt:Expression>  
    d:Volume[1]/d:Label  
  </wsrt:Expression>  
</wsrt:Get>
```

- Main concepts:

- WS-RT defines extensions to the WS-Transfer CRUD operations that can operate on fragments of the XML representation of the resource
- Multiple-Gets/Puts per operation
- New filter dialects
 - QName
 - XPath level 1
- WS-RT defines optional resource metadata that describes certain aspects of the resource
 - Lifetime
 - Can be included on Create
 - Use MEX to retrieve - MEX+Transfer to update

WS-ResourceTransfer (WS-RT)

- Goal:

- Satisfy the primary requirements for Resource Transfer and WS-ResourceTransfer
- Layered on top of WS-Transfer

```
<wsrt:Get Dialect="XPath-Level-1">
  <wsrt:Expression>
    d:Volume[1]/d:Label
  </wsrt:Expression>
  <wsrt:Expression>
    d:Volume[2]/d:FreeSpace
  </wsrt:Expression>
</wsrt:Get>
```

and on WS-

- Main concepts:

- WS-RT defines extensions to the WS-Transfer fragments of the XML representation of a resource
- Multiple-Gets/Puts per operation
- New filter dialects
 - QName
 - XPath level 1
- WS-RT defines optional resource metadata that describes certain aspects of the resource
 - Lifetime
 - Can be included on Create
 - Use MEX to retrieve - MEX+Transfer to update

can operate on

WS-ResourceTransfer (WS-RT)

- Goal:

- Satisfy the primary requirements that WS-Management and WSDM had on WS-Transfer and WS-ResourceProperties/WS-ResourceLifetime
- Layered on top of WS-Transfer

- Main concepts:

- WS-RT defines extended fragments of the XML
- Multiple-Gets/Puts per
- New filter dialects
 - QName
 - XPath level 1
- WS-RT defines optional resource
 - Lifetime
 - Can be included on Create
 - Use MEX to retrieve - MEX+Transfer to update

```

<Lifetime>
  <TerminateAt>
    <TerminationTime>dateTime</TerminationTime>
    <CurrentTime>dateTime</CurrentTime>
  </TerminateAt> |
  <TerminateAfter>duration</TerminateAfte> |
  <TerminateAfterIdle>duration</TerminateAfterIdle>
</Lifetime>
    
```

on

WS-ResourceTransfer (WS-RT)

- Goal:

- Satisfy the primary requirements that WS-Management and WSDM had on WS-Transfer and WS-ResourceProperties/WS-ResourceLifetime
- Layered on top of WS-Transfer

- Main concepts:

- WS-RT defines extensions to the WS-Transfer CRUD operations that can operate on fragments of the XML representation
- Multiple-Gets/Puts per operation
- New filter dialects
 - QName
 - XPath level 1
- WS-RT defines optional extensions to the WS-Transfer operations
 - Lifetime
 - Can be included on Create
 - Use MEX to retrieve - MEX+Transfer to update

```

<wsrt:Create Dialect="xs:anyURI" ?>
  <wsmex:Metadata>metadata sections +</wsmex:Metadata> ?
  <wsrt:Fragment>
    <wsrt:Expression>xs:any</wsrt:Expression> ?
    <wsrt:Value ...>xs:any</wsrt:Value>
  </wsrt:Fragment> *
</wsrt:Create>

```

WS-RT continued...

- WS-Transfer updated
 - WS-Transfer was updated to define extension points that can be used by other specifications.
 - WS-ResourceTransfer uses these extension points without the need to define new operations/actionURIs
 - **Get** allows for a specialized retrieval mechanism in the soap:Body
 - Must have a mU=1 header to ensure the Body is processed
 - **Put** allows for a specialized update mechanism in the soap:Body
 - Must have a mU=1 header to ensure the Body isn't treated as the full resource representation
 - **Create** allows for specialized constructor mechanism in the soap:Body
 - Again, requires a mU=1 header

New Specifications Developed

- WS-ResourceTransfer
- **WS-EventNotification**
- WS-ResourceEnumeration
- WS-ResourceCatalog
- WS-Network Discovery Specifications
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WS-EventNotification (WS-EVN)

■ Goal:

- Satisfy the primary requirements that WS-Management and WSDM had on WS-Eventing and WS-BaseNotification/WS-Topics
- Layered on top of WS-Eventing

■ Main Concepts:

- Subscription can be treated as a resource
- Additional filters – composition filters, such as Topics, Notification or Resource
- Delivery Formats – batched
- Delayed activation
- Specification of metadata on Subscribe
- Pause/Resume
- Transformation and selection
- Dropped events
- Bookmarks
- New delivery modes – pull, receipts
- Inactivity Message
- Verify Subscription
- Advertise features/events

(click for more...)

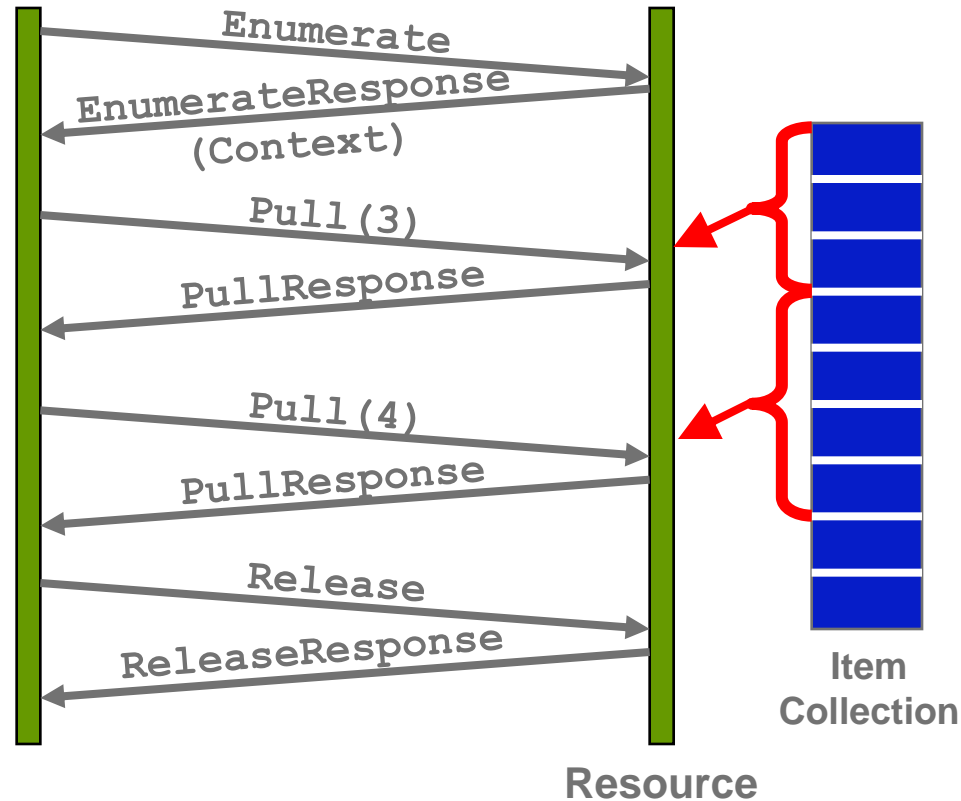
New Specifications Developed

- WS-ResourceTransfer
- WS-EventNotification
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- WS-ResourceCatalog
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WS-ResourceEnumeration (WS-RE)

- Goal:
 - Satisfy the primary requirements that WS-Management and WSDM had on WS-Enumeration
 - Layered on top of WS-Enumeration

- Main Concepts:
 - Enumeration as a resource
 - Optional new EPR to Enumerate()
 - instead of assuming same as data source
 - Transformation and filter
 - Estimate size of results on Enumerate()
 - Optimized MEP for small data sets.
 - Client chooses size
 - Enumerate EPRs in addition to objects
 - Ability to manipulate “cursor”
 - Reverse, skip, moveTo



New Specifications Developed

- WS-ResourceTransfer
- WS-EventNotification
- WS-ResourceEnumeration
- **WS-ResourceCatalog**
- WS-Network Discovery Specifications
- WS-UnifiedManagement Profile

WS-ResourceCatalog (WS-RC)

- Goal:
 - Satisfy the primary requirements that WS-Management and WSDM have for advertising, enumerating and locating resources, their relationships and capabilities

- Main Concepts:
 - Defines the schema of a 'catalog'
 - Find/get EPR to service/resource
 - Types and instances
 - Relationships/Topologies
 - Search over advertisement data (classifiers), or resource-specific data (WSDL, Cached Data, Schema...)
 - Profiles will define the binding for a particular access need
 - WS-UnifiedManagement is a key customer
 - This group will define the binding for Mgmt (RT, EVN, RE...)
 - DMTF may define access for WSDM or WS-Man

New Specifications Developed

- WS-ResourceTransfer
- WS-EventNotification
- WS-ResourceEnumeration
- WS-ResourceCatalog
- **WS-Network Discovery Specifications**
- WS-UnifiedManagement

WS-Network Discovery Specifications

- Goal:
 - Satisfy the primary requirements that WS-Management and WSDM
 - Discovery of manageable nodes and resource catalogs on the network
 - Leverage existing network discovery mechanisms

- Main Concepts:
 - Profile over the existing discovery mechanisms (WS-Discovery, SLP, DNS...)
 - To populate, or be reflected through, an instance of the WS-ResourceCatalog

New Specifications Developed

- WS-ResourceTransfer
- WS-EventNotification
- WS-ResourceEnumeration
- WS-ResourceCatalog
- WS-Network Discovery Specifications
- **WS-UnifiedManagement Profile**

WS-UnifiedManagement Profile (WS-UM)

- Goal:
 - Satisfy the primary requirements that WS-Management and WSDM defined through the profiling of their respective lower-level specification

- Main Concepts:
 - Goal is to unify the concepts of WS-Man and WSDM
 - Profile use of lower-level specs (WS-RT, WS-EVN, WS-RC, WS-RE, WS-Network Discovery specifications)

What to expect?

- Follow the normal workshops process
 - Publication on author web sites
 - Workshops
 - Feedback
 - Interop
 - Submission to standards body

- Tentative timeline
 - WS-ResourceTransfer , published Aug 2006, public feedback workshop held Dec 2006
 - WS-EventNotification, likely publication 1Q'07
 - WS-ResourceEnumeration, likely publication 1Q'07
 - WS-ResourceCatalog, likely publication 1Q'07 (DMTF)
 - WS-UnifiedManagement
 - WS-Network Discovery Specifications

- How can you participate?
 - Feedback workshops
 - Interop workshops
 - Standards Body
 - Feedback at any time (signed feedback agreement required)
 - Yahoo Group (WS-RT): <http://tech.groups.yahoo.com/group/WS-RT-Workshops>

Summary

- HP, IBM, Intel and Microsoft committed to developing converged Management stack
- Overall architecture defined
- Good progress on constituent specifications
 - WS-RT published, WS-EVN, WS-RE, WS-ResourceCatalog likely published by 2Q'07

Thank you!

Comments/Questions

Feedback agreement required