

Requirements for Subscription to YANG Datastores

draft-ietf-i2rs-pub-sub-requirements-02

I2RS WG - IETF 92

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Since WG adoption

draft-voit-i2rs-pub-sub-requirements-00



draft-ietf-i2rs-pub-sub-requirements-01

Section 4.2: Subscription Service


- General
- Negotiation
- Update Distribution
- Transport
- Security Requirements

Section 4.2: Subscription Service

- General
 - Negotiation
 - Update Distribution
 - Transport
 - Security Requirements
 - QoS Requirements
 - Filtering
 - Assurance and Monitoring
- } tweaks
- } new

Other than Section 4.2 ← tweaks

Changes posted last night for “-02”

 Need more review
and comments

- Add text that the document is not I2RS specific
- Stop Yelling: MUST, SHOULD, etc. keywords in requirements document will become lower case because these are not RFC 2119 keywords.
- Clarify that a subscribed subtree can be a leaf
- Change “QoS Requirements” to “Subscription QoS” for clarity
- Explain on why NETCONF notification “predates YANG” is an issue (e.g., trees/filters).
- Text on allowing multiple subscription updates to be bundled to the same Subscriber
- Refinements to filtering for extensibility

draft-ietf-i2rs-pub-sub-requirements

Intended to cover requirements outside I2RS

Document	Potentially Subscribed	Subscribers care about
draft-ietf-i2rs-rib-info-model	Nexthop, tunnels, MPLS	Peers going up or down Change announcement latency Filtering, multiple security tiers
RFC 7277 (IP Management)	Interface state, neighbor state	Peer reachability, potential failure Conflicting config between peers
RFC 7223 (Interface Management)	Interface enabled, traffic counters	Volume of telemetry provided Filtering, multiple security tiers
draft-ietf-netmod-acl-model	My allow, deny rules in sequence	Filtering, multiple security tiers
draft-ietf-netmod-syslog-model	Events, who is logged on	Filtering, multiple security tiers
draft-ietf-netmod-routing-cfg	Active routing protocols	Conflicting config between peers
hundreds...		

See Benoit Claise website, OpenDaylight

- Σ
- Periodic
 - On-change
 - Filters
 - Security
 - Dampening
 - Reaction speed
 - Update bundling
 - Negotiation
 - Multipoint

Subscription QoS Parameters

Liveliness	<ul style="list-style-type: none">• SHOULD notify a Subscriber if nodes can no longer be monitored or are determined to be stale
Dampening	<ul style="list-style-type: none">• MUST be able to negotiate the minimum time separation since the previous update before transmitting a subsequent update
Reliability	<ul style="list-style-type: none">• If Reliable delivery, MUST reattempt update delivery until all subscribers acknowledge receipt or some duration has passed
Coherence	<ul style="list-style-type: none">• Updates MUST be sent in-order
Presentation	<ul style="list-style-type: none">• SHOULD be able to bundle a set of discrete object notifications into a single update
Deadline	<ul style="list-style-type: none">• MUST be able to push updates at a regular cadence that corresponds with specified start and end timestamps
Push Latency	<ul style="list-style-type: none">• MUST be possible to determine the time between object change and actual Push

Periodic Filtering

Send Update if...

Requirements cover

	<u>Filter Type</u>	<u>Complexity</u>
Object A exists	n/a	
if Object A currently has property ▲ or ▲	Simple query	Intermittent Periodic Reporting ↓
if Object A currently has property ▲ and different property ■	Complex query	
if Object A currently has property ▲ and Object B has property ●	Multi-object query	
if Object A currently has property ▲ then run process	Distributed Analytics	

Requirements do not preclude future coverage



Range of Filtering Technology:

- XPATH
- SQL
- Distributed Analytics

On-Change Filtering

Send Update if...

Requirements cover	Filter Type	Complexity
Object A property just changed Object A has been created/deleted	n/a	
Object A has been created with property ▲ or ▲ if Object A property just changed to ▲ if Object A property just changed to ▲ and has different property ■ if Object A property just changed and Object B has property ● if Object A property just changed, run process	Stateless simple simple complex multi-object distributed analytics	Filtering Events
if Object A property just changed/deleted away from ▲ if Object A property just changed from ▲ to ▲ if Object A property just changed from ▲ and Object B has property ● if Object A property just changed/deleted away from ▲, run process	Stateful simple complex multi-object distributed analytics	Maintaining filtered remote state

Requirements do not preclude future coverage

Assurance

- It **MUST** be possible to fetch the state of a single subscription from a Subscription Service.
- It **MUST** be possible to fetch the state of all subscriptions of a particular Subscriber.
- It **MUST** be possible to fetch a list and status of all Subscription Requests over a period of time. If there us a failure, some failure reasons might include:
 - Improper security credentials provided to access the target node
 - Target node referenced does not exist
 - Subscription type requested is not available upon the target node
 - Out of resources, or resources not available
 - Incomplete negotiations with the Subscriber.

Next Steps

- Solicit WG comments across I2RS, NETCONF, NETMOD, other?
- We have early code based on draft-clemm-netconf-yang-push-00. Anyone interested in interop in Prague?