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DAV Server Information Object
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Abstract

This specification describes a new XML object that can be retrieved from hosts to discover services, features and limits for that host or domain.

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1. Introduction

Any given host on a network may support a number of services. Each of those services will have limits or optional features. The advertising and discovery of services, features and limits is often through the use of properties and headers. As the number of services and features grows the amount of data and complexity of the requests grows.

Additionally, headers and properties don't allow for caching mechanisms based on etags. A client has to fetch all the information and compare with its stored copies to determine if a service change has taken place.

This specification defines a new XML document type which can be retrieved from a host and is easily extended to allow the description of complex services. The schema as described here only handles basic DAV services. Other specifications will extend this specification to define elements for other DAV based services.

2. Conventions Used in This Document

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

2.1. Service

By service we mean an application running on one or more hosts at the network application layer and above. The service may provide data storage, manipulation, presentation, communication or other capabilities. The service may use a well defined protocol and is often implemented with a client-server relationship.

A service will usually implement one or more features which may be defined by standard specifications. Services and features may also be constrained by various limits.

Examples of services are

- o caldav
- o email
- o File servers

2.2. Feature

A feature is some functionality provided by a service. For example, a DAV based service may provide the versioning feature.

Services need not support all features that are defined as an optional part of that service. Some features may depend on the authenticated state and/or the authorization of the authenticated principal.

Examples of features are

- o DAV versioning.
- o DAV access control.
- o CalDAV scheduling.

3. Server Information Document Use

A host will make the document available through one or more methods. Depending upon the endpoint and method of retrieval the retrieved document may describe one or more services.

If a document provides information for more than one service it SHOULD contain information allowing clients to obtain information about each individual service only. This allows a client to determine what the actual limits and features are for the specific service.

3.1. Server Information Location and Retrieval

3.1.1. DAV:server-info-href property

Name: server-info-href

Namespace: DAV

Purpose: To define the location of the server-info document.

Protected: This property MAY be protected.

PROPFIND behavior: This property SHOULD NOT be returned by a PROPFIND DAV:allprop request (as defined in Section 14.2 of [RFC4918]).

COPY/MOVE behavior: This property value SHOULD be preserved in COPY and MOVE operations.

Description: This property is needed for a client to determine where the server information document is located. If not present, then no document is available for the server.

Definition:

```
<!ELEMENT server-info-href (DAV:href)>
```

3.1.2. Server Information Retrieval

The document may be retrieved from the server by doing a PROPFIND on the `.well_known` (or any location on the service) for the `D:server-info-href` property defined above.

Clients SHOULD retrieve the document in the context of a session and services SHOULD ensure the context is appropriate. Values in the returned document may differ depending on who is authenticated so a server SHOULD require authentication before returning server information for an authenticated service.

3.1.3. Server Information Synchronization

While server features may not change frequently it may be important for clients to react rapidly when server features or limits change. Polling for changes is undesirable so this specification allows for informing clients when the server information has changed.

The returned `server-info` document contains an opaque token which the client can use to determine if the server copy is different. This token is used in a number of places to aid client synchronization.

3.1.3.1. Header Field: `server-info-token`

The `server-info-token` header field takes as a value the current value of the token element in the `server-info` document.

This header field may be returned with a response at any time a server feels appropriate.

The `server-info-token` header MUST be returned for

- o An `OPTIONS` request.
- o The client sends a request with the `server-info-token` header field

The `server-info-token` header field SHOULD be returned when a client

- o Attempts to use an unsupported feature.

- o Misuses a feature according to the server info document.
- o Exceeds a limit defined in the document.

If the server returns a server-info-token header field as part of the response and if the value of that token differs from the value held by the client, then the client MUST fetch a new copy of the server information document.

4. Server Information Document Structure

This specification defines a new XML document type "server-info". All XML elements in this specification are in the DAV name space.

4.1. Server Information server-info element

At the top level of the document is a "server-info" element which encloses a change token, an optional "features" element and a "services" element

```
<?xml version="1.0" encoding="utf-8"?>
<server-info xmlns="DAV">
  <token>...</token>
  <features>
    ...
  </features>
  <services>
    ...
  </services>
</server-info>
```

If a "features" element appears inside the "server-info" element then the features apply to all services.

4.2. Server Information services element

The "services" element appears once and contains 0 or more "service" elements each of which provides information about a service.

NOTE: do the service have to be on the same host? I think not.

4.2.1. Server Information service element

The "service" element contains the name and information about the location of that service and how to obtain a service specific server-info document.

It may also contain a "features" element which lists features implemented by that service.

For example:

```
<services>
  <features>
    <DAV:class-1 />
    <DAV:class-2 />
    <DAV:access-control />
  </features>
  <service>
    <name>caldav</name>
    <href>https:cal.example.org//.well-known/caldav</href>
    <features>
      <CALDAV:calendar-access />
      <CS:sharing>
        <CS:no-scheduling />
      </CS:sharing>
    </features>
  </service>
</services>
```

4.3. Server Information features element

The "features" element contains 0 or more elements each specifying a feature supported by that service.

The "features" element may appear within the "server-info" element - in which case it applies to all services or it may appear inside a "service" element in which case it only applies to that service.

When a single service is specified the features named SHOULD be accessible for the same authentication and authorization level.

4.3.1. Server Information feature element

A feature is specified by an element defined in this document or by an element defined in the specification for that feature.

WebDAV feature elements correspond to, but are not exactly the same as, the elements returned in the DAV header.

Some features have no corresponding DAV header element. This may be because the feature is not available on all resources. The occurrence of a such a feature simple advertises the availability of that feature on some resources.

For a service supporting this specification, the absence of a feature means that feature is NOT supported on any resource.

For example, a calendar service may return the following which specifies a global set of features:

```
<features>
  <DAV:class-1 />
  <DAV:class-2 />
  <DAV:access-control />
  <CALDAV:calendar-access />
  <CALDAV:calendar-availability />
  <CALDAV:calendar-auto-schedule />
</features>
```

5. XML Element Definitions

All elements defined here are in the "DAV:" namespace.

5.1. server-info XML element

Name: server-info

Purpose: Contains information about a single service.

Definition:

```
<!ELEMENT server-info (token, services?, features?) >
```

5.2. token XML element

Name: token

Purpose: Contains an opaque token which changes when the document changes..

Definition:

```
<!ELEMENT token (#PCDATA) >
```

5.3. services XML element

Name: services

Purpose: Contains information about all services on a host.

Definition:

```
<!ELEMENT services (service*) >
```

5.4. service XML element

Name: service

Purpose: Contains information about a specific service on a host.

Definition:

```
<!ELEMENT service (name, href?, features) >
```

5.5. name XML element

Name: name

Purpose: Within a service or feature element provides the registered name of that service or feature.

Definition:

```
<!ELEMENT name (#PCDATA) >
```

5.6. href XML element

Name: href

Purpose: Contains location of a specific service.

Definition:

```
<!ELEMENT href (#PCDATA) >
```

5.7. features XML element

Name: features

Purpose: Contains information about all service features on a host.

Definition:

```
<!ELEMENT features ANY* >
```

6. WebDAV Features

Here we define the feature elements for features defined in the various DAV related specifications.

Specifications which extend this specification should define additions to this table. In addition, they may define the XML specification for that element.

Namespace	Name	Reference
DAV	class-1	[RFC4918]: section 18.1
DAV	class-2	[RFC4918]: section 18.2
DAV	class-3	[RFC4918]: section 18.3
DAV	access-control	[RFC3744]: section 7.2
DAV	version-control	[RFC3253]: section 3
DAV	extended-mkcol	[RFC5689]: section 3.1
DAV	quota	[RFC4331]
DAV	bind	[RFC5842]
DAV	search	[RFC5323]
DAV	sync-collection	[RFC6578]
DAV	add-member	[RFC5995]

6.1. DAV class-1 feature XML element

Namespace: DAV

Name: class-1

DAV Header Name: 1

Reference: [RFC4918]: section 18.1

Description: Class 1 compliant resource

Definition:

```
<!ELEMENT class-1 >
```

6.2. DAV class-2 feature XML element

Namespace: DAV

Name: class-2

DAV Header Name: 2

Reference: [RFC4918]: section 18.2

Description: Class 2 compliant resource

Definition:

```
<!ELEMENT class-2 >
```

6.3. DAV class-3 feature XML element

Namespace: DAV

Name: class-3

DAV Header Name: 3

Reference: [RFC4918]: section 18.3

Description: Class 3 compliant resource

Definition:

```
<!ELEMENT class-3 >
```

6.4. DAV access control feature XML element

Namespace: DAV

Name: access-control

DAV Header Name: access-control

Reference: [RFC3744]: section 7.2

Description: WebDAV ACL

Definition:

```
<!ELEMENT access-control >
```

6.5. DAV version control feature XML element

Namespace: DAV

Name: version-control

DAV Header Name: version-control

Reference: [RFC3253]: section 3

Description: WebDAV DeltaV

Definition:

```
<!ELEMENT version-control >
```

6.6. DAV Extended mkcol feature XML element

Namespace: DAV

Name: extended-mkcol

DAV Header Name: extended-mkcol

Reference: [RFC5689]: section 3.1

Description: Extended mkcol

Definition:

```
<!ELEMENT extended-mkcol >
```

6.7. DAV bind feature XML element

Namespace: DAV

Name: bind

DAV Header Name: bind

Reference: [RFC5842]

Description: Binding extensions

Definition:

```
<!ELEMENT bind >
```

6.8. DAV search feature XML element

Namespace: DAV

Name: search

Reference: [RFC5323]

Description: Search extensions

Definition:

<!ELEMENT search >

6.9. DAV quota feature XML element

Namespace: DAV

Name: quota

Reference: [RFC4331]

Description: DAV quotas. May not apply to all resources. Absence of this feature implies no support on any resource.

Definition:

<!ELEMENT quota >

6.10. DAV Sync Collection feature XML element

Namespace: DAV

Name: sync-collection

Reference: [RFC6578]

Description: Collection synchronization report. May not apply to all resources. Absence of this feature implies no support on any resource.

Definition:

<!ELEMENT sync-collection >

6.11. DAV Add Member feature XML element

Namespace: DAV

Name: add-member

Reference: [RFC6578]

Description: Using POST to add a member to a collection. May not apply to all resources. Absence of this feature implies no support on any resource.

Definition:

<!ELEMENT add-member >

7. Examples

7.1. WebDAV server information

TBD.

8. Notes

Tag enabling synchronization Document location (section 3) server-info token in DAV header returned as part of OPTIONS response Clients that see that and do not have a server-info document for that service should do a propfind to discover document href. Authenticated v unauth Clients may fetch the si doc in an unauth mode. When they auth they must recheck their token and refetch if appropriate. Caching by intermediaries might be an issue Server info may vary by user-agent.

9. Security Considerations

TBD.

10. IANA Considerations

TBD.

11. Acknowledgments

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