



## Retrieve users

### ONTAP 9.15.1 REST API reference

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# Retrieve users

## Storage volumes volume.uuid top-metrics users endpoint overview

### Overview

You can use this API to retrieve a list of users with the most I/O activity for a specified volume, within the past several seconds. Use the `top_metric` parameter to specify which type of I/O activity to filter for. This API is used to provide insight into I/O activity and supports ordering by I/O activity types, namely `iops` or `throughput` metrics. This API also supports only returning one I/O activity type per request.

### Approximate accounting and error bars

When too many users have recent activity, some users might be dropped from the list. In this situation, the spread of values in the `error` field increases, indicating that there are larger error bars on the value for `iops` or `throughput`. As the list becomes increasingly more approximate due to dropped entries, some of the users that would have otherwise been included might not be present in the final list returned by the API.

### Failure to return list of users with most I/O activity

The API can sometimes fail to return the list of users with the most I/O activity, due to the following reasons:

- &ndash; The volume does not have the activity tracking feature enabled.
- &ndash; The volume has not had any recent NFS/CIFS client traffic.
- &ndash; The NFS/CIFS client operations are being served by the client-side filesystem cache.
- &ndash; The NFS/CIFS client operations are being buffered by the client operating system.
- &ndash; On rare occasions, the incoming traffic pattern is not suitable to obtain the list of users with the most I/O activity.

### Failure to return the usernames

The API can sometimes fail to obtain the usernames for the list of `userid` entries, due to internal transient errors. In such cases, instead of the username, the API will return "`{<user-id>}`" for the user entry.

### Retrieve a list of the users with the most I/O activity

For a report on the users with the most I/O activity returned in descending order, specify the I/O activity type you want to filter for by passing the `iops` or `throughput` property into the `top_metric` parameter. If the I/O activity type is not specified, by default the API returns a list of the users with the greatest number of the average read operations per second. The current maximum number of users returned by the API for an I/O activity type is 25.

- &ndash; GET `/api/storage/volumes/{volume.uuid}/top-metrics/users`

## Examples

Retrieving a list of the users with the greatest average number of read bytes received per second:

```
# The API:
GET /api/storage/volumes/{volume.uuid}/top-metrics/users

# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/users?top_metric=throughput.read"

# The Response:
{
  "records": [
    {
      "volume": {
        "name": "vol1"
      },
      "throughput": {
        "read": 1495,
        "error": {
          "lower_bound": 1495,
          "upper_bound": 1502
        }
      },
      "user_id": "S-1-5-21-256008430-3394229847-3930036330-1001",
      "user_name": "John",
      "svm": {
        "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
        "name": "vs1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
          }
        }
      }
    },
    {
      "volume": {
        "name": "vol1"
      },
      "throughput": {
        "read": 1022,
        "error": {
          "lower_bound": 1022,
          "upper_bound": 1025
        }
      }
    }
  ]
}
```

```

    }
  },
  "user_id": "1988",
  "user_name": "Ryan",
  "svm": {
    "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
    "name": "vs1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
      }
    }
  }
},
{
  "volume": {
    "name": "vol1"
  },
  "throughput": {
    "read": 345,
    "error": {
      "lower_bound": 345,
      "upper_bound": 348
    }
  },
  "user_id": "S-1-5-21-256008430-3394229847-3930036330-1003",
  "user_name": "Julie",
  "svm": {
    "uuid": "572361f3-e769-439d-9c04-2ba48a08ff43",
    "name": "vs1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/572361f3-e769-439d-9c04-2ba48a08ff43"
      }
    }
  }
}
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/storage/volumes/73b293df-e9d7-46cc-a9ce-2df8e52ef864/top-metrics/users?top_metric=throughput.read"
  }
}
}
}

```

## Example showing the behavior of the API when there is no read/write traffic:

```
# The Call:
curl -X GET "https://<mgmt-ip>/api/storage/volumes/{volume.uuid}/top-
metrics/users?top_metric=throughput.write"

# The Response:
{
  "records": [
  ],
  "num_records": 0,
  "notice": {
    "message": "The activity tracking report for volume \"FV\" in SVM
\"vs0\" returned zero records. Check whether the volume have read/write
traffic. Refer to the REST API documentation for more information on why
there might be no records.",
    "code": "124518418"
  },
  "_links": {
    "self": {
      "href": "/api/storage/volumes/9af63729-8ac8-11ec-b1bc-
005056a79da4/top-metrics/users?top_metric=throughput.write"
    }
  }
}
```

## Retrieve users with the most I/O activity

GET /storage/volumes/{volume.uuid}/top-metrics/users

**Introduced In:** 9.10

Retrieves a list of users with the most IO activity.

### Parameters

Name	Type	In	Required	Description
volume.uuid	string	path	True	Volume UUID

Name	Type	In	Required	Description
top_metric	string	query	False	I/O activity type <ul style="list-style-type: none"> <li>• Default value: 1</li> <li>• enum: ["iops.read", "iops.write", "throughput.read", "throughput.write"]</li> </ul>
user_id	string	query	False	Filter by user_id
throughput.read	integer	query	False	Filter by throughput.read
throughput.write	integer	query	False	Filter by throughput.write
throughput.error.lower_bound	integer	query	False	Filter by throughput.error.lower_bound
throughput.error.upper_bound	integer	query	False	Filter by throughput.error.upper_bound
volume.name	string	query	False	Filter by volume.name
user_name	string	query	False	Filter by user_name
svm.uuid	string	query	False	Filter by svm.uuid
svm.name	string	query	False	Filter by svm.name
iops.error.lower_bound	integer	query	False	Filter by iops.error.lower_bound
iops.error.upper_bound	integer	query	False	Filter by iops.error.upper_bound
iops.read	integer	query	False	Filter by iops.read

Name	Type	In	Required	Description
iops.write	integer	query	False	Filter by iops.write
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> <li>• Default value: 1</li> </ul>
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> <li>• Default value: 1</li> <li>• Max value: 120</li> <li>• Min value: 0</li> </ul>
order_by	array[string]	query	False	Order results by specified fields and optional [asc

## Response

Status: 200, Ok

Name	Type	Description
_links	<a href="#">_links</a>	



<b>Name</b>	<b>Type</b>	<b>Description</b>
incomplete_response_reason	<a href="#">incomplete_response_reason</a>	Indicates that the metric report provides incomplete data.
notice	<a href="#">notice</a>	Optional field that indicates why no records are returned by the volume activity tracking REST API.
num_records	integer	Number of records.
records	array[ <a href="#">top_metrics_user</a> ]	

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "incomplete_response_reason": {
    "code": "111411207",
    "message": "Partial data has been returned for this metric report. Reason: The activity tracking report for this volume is not available because the system is busy collecting tracking data."
  },
  "notice": {
    "code": "111411207",
    "message": "No read/write traffic on volume."
  },
  "num_records": 1,
  "records": [
    {
      "iops": {
        "details": [
          {
            "client_ip": "192.168.185.170",
            "path": "/dir_abc/dir_123/file_1",
            "read": 5,
            "total": 4,
            "write": 4
          }
        ],
        "error": {
          "lower_bound": 34,
          "upper_bound": 54
        },
        "read": 4,
        "total": 4,
        "write": 8
      },
      "svm": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      }
    }
  ]
}
```

```

    }
  },
  "name": "svm1",
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
},
"throughput": {
  "details": [
    {
      "client_ip": "192.168.185.170",
      "path": "/dir_abc/dir_123/file_1",
      "read": 5,
      "total": 4,
      "write": 4
    }
  ],
  "error": {
    "lower_bound": 34,
    "upper_bound": 54
  },
  "read": 10,
  "total": 20,
  "write": 7
},
"user_id": "S-1-5-21-256008430-3394229847-3930036330-1001",
"user_name": "James",
"volume": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "volume1",
  "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
}
}
]
}

```

## Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
124518405	Volume activity tracking is not supported on volumes that contain LUNs.
124518407	Volume activity tracking is not supported on FlexCache volumes.
124518408	Volume activity tracking is not supported on audit staging volumes.
124518409	Volume activity tracking is not supported on object store server volumes.
124518410	Volume activity tracking is not supported on SnapMirror destination volumes.
124518411	Enabling or disabling volume activity tracking is not supported on individual FlexGroup constituents.
124518412	Volume activity tracking is not supported on SnapLock volumes.
124518414	Volume activity tracking is not supported on volumes that contain NVMe namespaces.
124518415	Failed to get the volume activity tracking report on volume volume.name in SVM svm.name.
124518416	Internal error. Volume activity tracking report timed out for volume volume.name in SVM svm.name.
124518417	Volume wildcard queries are not supported for activity tracking reports.
124518418	The activity tracking report for volume volume.name in SVM svm.name returned zero records. Check whether the volume has read/write traffic. Refer to the REST API documentation for more information.
124519411	Volume activity tracking is not enabled on the volume.

Also see the table of common errors in the [Response body](#) overview section of this documentation.

Name	Type	Description
error	<a href="#">returned_error</a>	

## Example error

```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

Name	Type	Description
next	<a href="#">href</a>	
self	<a href="#">href</a>	

incomplete\_response\_reason

Indicates that the metric report provides incomplete data.

Name	Type	Description
code	string	Warning code indicating why partial data was reported.
message	string	A message describing the reason for partial data.

notice

Optional field that indicates why no records are returned by the volume activity tracking REST API.

Name	Type	Description
code	string	Warning code indicating why no records are returned.
message	string	Details why no records are returned.

top\_metric\_user\_detail

Name	Type	Description
client_ip	string	IP address of the client. Both IPv4 and IPv6 IP addresses are supported.
path	string	Path of the file.

Name	Type	Description
read	integer	Average number of read operations or bytes, per second.
total	integer	Average number of read and write operations or read and write bytes, per second.
write	integer	Average number of write operations or bytes, per second.

#### top\_metric\_value\_error\_bounds

Name	Type	Description
lower_bound	integer	Lower bound of the nominal value of a metric.
upper_bound	integer	Upper bound of the nominal value of a metric.

#### iops

Name	Type	Description
details	array[ <a href="#">top_metric_user_detail</a> ]	
error	<a href="#">top_metric_value_error_bounds</a>	
read	integer	Average number of read operations per second.
total	integer	Average number of read and write operations, per second.
write	integer	Average number of write operations per second.

#### \_links

Name	Type	Description
self	<a href="#">href</a>	

#### svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

#### throughput

Name	Type	Description
details	array[ <a href="#">top_metric_user_detail</a> ]	
error	<a href="#">top_metric_value_error_bounds</a>	
read	integer	Average number of read bytes received per second.
total	integer	Average number of read and write bytes received, per second.
write	integer	Average number of write bytes received per second.

#### volume

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the volume. This field cannot be specified in a POST or PATCH method.
uuid	string	<p>Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move.</p> <ul style="list-style-type: none"> <li>• example: 028baa66-41bd-11e9-81d5-00a0986138f7</li> <li>• Introduced in: 9.6</li> <li>• x-nullable: true</li> </ul>

#### top\_metrics\_user



Information about a user's IO activity.

Name	Type	Description
detailed	boolean	Specifies whether "iops.details" or "throughput.details" is returned with the report. These extra details list the top 10 clients and paths contributing to each user in the report.
iops	<a href="#">iops</a>	
svm	<a href="#">svm</a>	SVM, applies only to SVM-scoped objects.
throughput	<a href="#">throughput</a>	
user_id	string	User ID of the user.
user_name	string	Name of the user.
volume	<a href="#">volume</a>	

error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned\_error

Name	Type	Description
arguments	array[ <a href="#">error_arguments</a> ]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

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