



HRworks documentation

# HRworks API Reference

This documentation contains the specifications for the HRworks public API.

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# Actions

## General Actions

### GetPresentPersonsOfOrganizationUnit

*Lists all persons that are currently 'in the office'. This action does account for vacations, trips, sicknesses and other absences by forenoon and afternoon. A half-day absence is considered to last from 12 pm to 11:59 am, which counts as 'forenoon', likewise, an 'afternoon' absence is considered to last from 12 am to 11:59 pm.*

#### Parameters

<b>organizationUnitNumber</b>	
Description	The organization unit identifier that can be specified in HRworks.
Type	String
Required	Yes

#### Result

A collection of person objects in JSON format.

#### Sample request

```
POST / HTTP/1.1
Host: api.hrworks.de
Date: 20171004T155214Z
Authorization: HRWORKS-HMAC-SHA256 Credential=<Credential>,
SignedHeaders=<SignedHeaders>, Signature=<Signature>
User-Agent: <UserAgentString>
Accept: application/json
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
x-hrworks-target: GetPresentPersonsOfOrganizationUnit
{
  "organizationUnitNumber": "1"
}
```

#### Sample response

```
HTTP/1.1 200 OK
x-hrworks-requestid: <RequestId>
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
{
```

```
"persons": [  
  {  
    "personnelNumber": "1",  
    "personId": "scully",  
    "firstName": "Dana",  
    "lastName": "Scully"  
  },  
  {  
    "personnelNumber": "2",  
    "personId": "mulder",  
    "firstName": "Fox",  
    "lastName": "Mulder"  
  }  
]
```

## Errors

This action does not return special errors. Refer to the “Common Errors” section.

## GetAllOrganizationUnits

*Lists all organization units of the company with ID/number and name. Only active organization units will be returned*

### Parameters

None.

### Result

A collection of organization unit objects in JSON format.

### Sample request

```
POST / HTTP/1.1
Host: api.hrworks.de
Date: 20171004T155214Z
Authorization: HRWORKS-HMAC-SHA256 Credential=<Credential>,
SignedHeaders=<SignedHeaders>, Signature=<Signature>
User-Agent: <UserAgentString>
Accept: application/json
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
x-hrworks-target: GetAllOrganizationUnits
```

### Sample response

```
HTTP/1.1 200 OK
x-hrworks-requestid: <RequestId>
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
{
  "organizationUnits": [
    {
      "organizationUnitNumber": "1",
      "organizationUnitName": "X-Files"
    },
    {
      "organizationUnitNumber": "2",
      "organizationUnitName": "Forensics"
    },
    {
      "organizationUnitNumber": "3",
      "organizationUnitName": "Crime Scene Investigation"
    }
  ]
}
```

## Errors

This action does not return special errors. Refer to the “Common Errors” section.

## GetAllActivePersons

*Lists all persons are currently active in the company (or in the specified organization units). Each person that was neither deleted nor has left the company counts as active.*

### Parameters

<b>organizationUnits</b>	
Description	A collection of organization unit identifiers. If this parameter is set, only persons that are assigned to one of the specified organization units will be included in the response.
Type	String collection
Required	No

### Result

A collection of person objects in JSON format, grouped by organization unit identifier.

### Sample request

```
POST / HTTP/1.1
Host: api.hrworks.de
Date: 20171004T155214Z
Authorization: HRWORKS-HMAC-SHA256 Credential=<Credential>,
SignedHeaders=<SignedHeaders>, Signature=<Signature>
User-Agent: <UserAgentString>
Accept: application/json
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
x-hrworks-target: GetAllActivePersons
{
  "organizationUnits": [
    "1",
    "2"
  ]
}
```

### Sample response

```
HTTP/1.1 200 OK
x-hrworks-requestid: <RequestId>
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
{
  "1": [
    {
      "personnelNumber": "1",
      "personId": "scully",

```

```
    "firstName": "Dana",
    "lastName": "Scully"
  },
  {
    "personnelNumber": "2",
    "personId": "mulder",
    "firstName": "Fox",
    "lastName": "Mulder"
  }
],
"2": [
  {
    "personnelNumber": "3",
    "personId": "kryczek",
    "firstName": "Alex",
    "lastName": "Kryczek"
  },
  {
    "personnelNumber": "4",
    "personId": "skinner",
    "firstName": "Walter",
    "lastName": "Skinner"
  }
]
}
```

## Errors

This action does not return special errors. Refer to the “Common Errors” section.

## GetAvailableWorkingHours

Returns the cumulated available working hours of the specified persons in the date interval specified by the *beginDate* and *endDate* parameters. The selected date interval can be further divided into days, weeks or months.

### Parameters

<b>persons</b>	
Description	The HRworks usernames of the persons to display data for. <i>Note:</i> Using the optional parameter <i>usePersonnelNumbers</i> , HRworks personnel numbers can be passed instead of HRworks usernames. The maximum number of persons per API call is 50.
Type	String collection
Required	Yes
<b>beginDate</b>	
Description	The starting date of the date interval. <i>Note:</i> The maximum date interval is one year.
Type	String, date formatted as "YYYY-MM-DD"
Required	Yes
<b>endDate</b>	
Description	The end date of the date interval. <i>Note:</i> The maximum date interval is one year.
Type	String, date formatted as "YYYY-MM-DD"
Required	Yes
<b>usePersonnelNumbers</b>	
Description	If set to <i>true</i> , the API will assume the strings in the <i>persons</i> parameter to represent personnel numbers instead of HRworks usernames.
Type	Boolean
Default Value	false
Required	No
<b>interval</b>	
Description	Indicates whether the date interval should be split into smaller intervals like weeks or months. If this parameter is not set, the interval will not be split.

	<i>Note:</i> The API does not perform any date interval adjustments. E.g., even if 'weeks' was specified for the <i>interval</i> parameter, if the date interval specified by <i>beginDate</i> and <i>endDate</i> spans only two days, the working hours will only be computed for this two-day span. However, if those two days happen to be Monday and Sunday of different weeks, the result will be split accordingly.
Type	Enum (days   weeks   months)
Required	No

## Result

A collection of (sub) date intervals for each person identifier that includes the cumulated working hours value for the respective date interval.

## Sample request

```
POST / HTTP/1.1
Host: api.hrworks.de
Date: 20171004T155214Z
Authorization: HRWORKS-HMAC-SHA256 Credential=<Credential>,
SignedHeaders=<SignedHeaders>, Signature=<Signature>
User-Agent: <UserAgentString>
Accept: application/json
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
x-hrworks-target: GetAvailableWorkingHours
{
  "beginDate":"2017-10-17",
  "endDate":"2017-10-18",
  "persons":[
    "scully",
    "mulder"
  ],
  "interval":"days",
  "usePersonnelNumbers":false
}
```

## Sample response

```
HTTP/1.1 200 OK
x-hrworks-requestid: <RequestId>
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
{
  "scully":[
    {
      "beginDate":"2017-10-17",
      "endDate":"2017-10-17",
      "workingHours":4.0
    }
  ]
}
```

```

    },
    {
      "beginDate": "2017-10-18",
      "endDate": "2017-10-18",
      "workingHours": 8.0
    }
  ],
  "mulder": [
    {
      "beginDate": "2017-10-17",
      "endDate": "2017-10-17",
      "workingHours": 8.0
    },
    {
      "beginDate": "2017-10-18",
      "endDate": "2017-10-18",
      "workingHours": 0.0
    }
  ]
}

```

## Errors

In addition to the errors described in the “Common Errors” section, this action might return the following errors:

Code	Error Type	Description/Troubleshooting Help
400	TooManyPersonsSelectedError	This API action can be performed for a maximum of 50 persons per call. Adjust the number of items in the persons parameter accordingly and retry the request.

## Employee Actions

### GetPersonMasterData

Returns the current master data of the specified persons.

#### Parameters

<b>persons</b>	
Description	The HRworks usernames of the persons to display data for. <i>Note:</i> Using the optional parameter <i>usePersonnelNumbers</i> , HRworks personnel numbers can be passed instead of HRworks usernames. The maximum number of persons per API call is 50.
Type	String collection
Required	Yes
<b>usePersonnelNumbers</b>	
Description	If set to <i>true</i> , the API will assume the strings in the <i>persons</i> parameter to represent personnel numbers instead of HRworks usernames.
Type	Boolean
Default Value	false
Required	No

#### Result

A collection of (expanded) person objects in JSON format.

#### Sample request

```
POST / HTTP/1.1
Host: api.hrworks.de
Date: 20171004T155214Z
Authorization: HRWORKS-HMAC-SHA256 Credential=<Credential>, Signature=<Signature>
User-Agent: <UserAgentString>
Accept: application/json
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
x-hrworks-target: GetPersonMasterData
{
  "persons": ["1"]
}
```

## Sample response

```

HTTP/1.1 200 OK
x-hrworks-requestid: <RequestId>
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
{
  "persons": [
    {
      "personnelNumber": "1",
      "personId": "scully",
      "personLicenseNumber": "1",
      "firstName": "Dana",
      "lastName": "Scully",
      "title": "Dr.",
      "email": "dana.scully@fbi.gov",
      "gender": "female",
      "position": "Special Agent",
      "address": {
        "street": "West 53 Rd.",
        "additionalData": "Apartment No. 35",
        "streetNumber": "3170 ",
        "countryCode": "USA",
        "zipCode": "12345",
        "city": "Maryland"
      },
      "probationEndDate": "2016-06-01",
      "highestLevelOfEducation": "High school diploma",
      "highestProfessionalQualification": "Doctorate",
      "superior": {
        "lastName": "Skinner",
        "personId": "skinner",
        "firstName": "Walter",
        "personnelNumber": "77"
      },
      "organizationUnit": {
        "organizationUnitNumber": "1",
        "organizationUnitName": "X-Files"
      },
      "birthday": "1990-09-01",
      "secondNationality": "Ireland",
      "joinDate": "2012-01-01",
      "companyMobilePhoneNumber": "123456789",
      "officePhoneNumber": "123456789",
      "socialSecurityNumber": "12345",
      "countryCode": "USA",
      "workSchedule": {
        "workingDays": [
          {
            "1": {
              "workingHours": 8.0,

```

```
        "day": "monday"
      }
    },
    {
      "2": {
        "workingHours": 8.0,
        "day": "tuesday"
      }
    },
    {
      "3": {
        "workingHours": 8.0,
        "day": "wednesday"
      }
    },
    {
      "4": {
        "workingHours": 8.0,
        "day": "thursday"
      }
    },
    {
      "5": {
        "workingHours": 8.0,
        "day": "friday"
      }
    },
    {
      "6": {
        "workingHours": 0.0,
        "day": "saturday"
      }
    },
    {
      "7": {
        "workingHours": 0.0,
        "day": "sunday"
      }
    }
  ],
  "name": "40 hours"
},
"costCentre": {
  "number": "101",
  "name": "FBI Quantico"
},
"taxpayerIdentificationNumber": "1234567",
"buildingOrRoom": "Basement Office 1",
"costObject": {
  "number": "103",
  "name": "X-Files"
}
```

```
    },  
    "permanentEstablishment": {  
      "name": "Quantico",  
      "id": "Q11"  
    }  
  }  
]  
}
```

## Errors

In addition to the errors described in the “Common Errors” section, this action might return the following errors:

Code	Error Type	Description/Troubleshooting Help
400	TooManyPersonsSelectedError	This API action can be performed for a maximum of 50 persons per call. Adjust the number of items in the persons parameter accordingly and retry the request.

## Absence Actions

### GetAllAbsenceTypes

*Lists all absence types defined for the caller's customer account in HRworks. The keys returned by this action can be used as filter values for other absence actions.*

#### Parameters

<b>onlyActive</b>	
Description	If set to <i>true</i> , only the currently active absence types will be returned.
Type	Boolean
Default Value	true
Required	No

#### Result

A collection of absence type objects in JSON format.

#### Response Elements

<b>name</b>	
Description	The name of the absence type, e.g. "Annual Vacation". Always given in English.
Type	String
<b>key</b>	
Description	The identifier of the absence type. This value can be used as part of a filter parameter for other absence API actions.
Type	String
<b>type</b>	
Description	A type identifier denoting if the absence type element is a type of sick leave or a general absence type.
Type	String
Values	absence, sickLeave
<b>isActive</b>	
Description	Indicates whether the absence type is currently set as active in HRworks.

Type	Boolean
<b>reducesHolidayEntitlement</b>	
Description	Indicates whether the absence type reduces the holiday entitlement of employees. This parameter is not returned for <code>sickLeave</code> absence types.
Type	Boolean

### Sample request

```
POST / HTTP/1.1
Host: api.hrworks.de
Date: 20171004T155214Z
Authorization: HRWORKS-HMAC-SHA256 Credential=<Credential>,
SignedHeaders=<SignedHeaders>, Signature=<Signature>
User-Agent: <UserAgentString>
Accept: application/json
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
x-hrworks-target: GetAllAbsenceTypes
{
  "onlyActive": false
}
```

### Sample response

```
HTTP/1.1 200 OK
x-hrworks-requestid: <RequestId>
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
{
  "absenceTypes": [
    {
      "name": "Annual Leave",
      "key": "AL",
      "type": "generalAbsences",
      "isActive": true,
      "reducesHolidayEntitlement": true
    },
    {
      "name": "Sickness with Sickness Certificate",
      "key": "MP",
      "type": "sickLeave",
      "isActive": true
    }
  ]
}
```

## Errors

In addition to the errors described in the “Common Errors” section, this action might return the following errors:

## GetLeaveAccountData

Returns the relevant leave account data for the specified persons.

### Parameters

<b>persons</b>	
Description	The HRworks usernames of the persons to display data for. <i>Note:</i> Using the optional parameter <i>usePersonnelNumbers</i> , HRworks personnel numbers can be passed instead of HRworks usernames. The maximum number of persons per API call is 50.
Type	String collection
Required	Yes
<b>referenceDate</b>	
Description	The reference date for which the leave account data will be generated. The date interval over which the data will be generated always starts from January 1st of the year specified in this parameter and ends at the reference date.
Type	String, date formatted as "YYYY-MM-DD"
Default Value	Current date
Required	No
<b>usePersonnelNumbers</b>	
Description	If set to <i>true</i> , the API will assume the strings in the <i>persons</i> parameter to represent personnel numbers instead of HRworks usernames.
Type	Boolean
Default Value	false
Required	No

### Result

A collection of person identifiers mapped to the leave account data for each person.

### Sample request

```
POST / HTTP/1.1
Host: api.hrworks.de
Date: 20171004T155214Z
Authorization: HRWORKS-HMAC-SHA256 Credential=<Credential>,
SignedHeaders=<SignedHeaders>, Signature=<Signature>
User-Agent: <UserAgentString>
Accept: application/json
```

```

Content-Type: application/json
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
x-hrworks-target: GetLeaveAccountData
{
  "referenceDate":"2018-05-31",
  "persons":[
    "scully",
    "mulder"
  ],
  "usePersonnelNumbers":false
}

```

## Sample response

```

HTTP/1.1 200 OK
x-hrworks-requestid: <RequestId>
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
{
  "scully":{
    "holidayEntitlement":30,
    "requested":3,
    "approved":10,
    "unplanned":3,
    "planned":5
  },
  "mulder":{
    "holidayEntitlement":30,
    "requested":3,
    "approved":10,
    "unplanned":3,
    "planned":0
  }
}

```

## Errors

In addition to the errors described in the “Common Errors” section, this action might return the following errors:

Code	Error Type	Description/Troubleshooting Help
400	TooManyPersonsSelectedError	This API action can be performed for a maximum of 50 persons per call. Adjust the number of items in the persons parameter accordingly and retry the request.

## GetAbsences

Returns a list of absences for the specified persons in the specified date interval.

### Parameters

<b>persons</b>	
Description	The HRworks usernames of the persons to display data for. <i>Note:</i> Using the optional parameter <i>usePersonnelNumbers</i> , HRworks personnel numbers can be passed instead of HRworks usernames. The maximum number of persons per API call is 50.
Type	String collection
Required	Yes
<b>beginDate</b>	
Description	The starting date of the date interval. <i>Note:</i> The maximum date interval is one year.
Type	String, date formatted as "YYYY-MM-DD"
Required	Yes
<b>endDate</b>	
Description	The end date of the date interval. <i>Note:</i> The maximum date interval is one year.
Type	String, date formatted as "YYYY-MM-DD"
Required	Yes
<b>types</b>	
Description	This parameter can be used to apply a filter to the result by specifying a list of absence type identifiers/keys. If set, only absences matching one of those keys will be returned. <i>Note:</i> The absence type keys can be retrieved via the <i>GetAllAbsenceTypes</i> action.
Type	String collection
Required	No
<b>count</b>	
Description	If set to 'true', this action will return the cumulated working days count for each absence type instead of the absence details. This impacts the structure of the API response. Refer to the examples below.
Type	Boolean

Default Value	false
Required	No
<b>usePersonnelNumbers</b>	
Description	If set to <i>true</i> , the API will assume the strings in the <i>persons</i> parameter to represent personnel numbers instead of HRworks usernames.
Type	Boolean
Default Value	false
Required	No
<b>interval</b>	
Description	Indicates whether the date interval should be split into smaller intervals like weeks or months. If this parameter is not set, the interval will not be split. Setting this parameter to 'days' will shorten the maximum allowed interval size to 31 days. <i>Note:</i> The API does not perform any date interval adjustments. E.g., even if 'weeks' was specified for the <i>interval</i> parameter, if the date interval specified by <i>beginDate</i> and <i>endDate</i> spans only two days, the working hours will only be computed for this two-day span. However, if those two days happen to be Monday and Sunday of different weeks, the result will be split accordingly.
Type	Enum (days   weeks   months)
Required	No

## Result

A collection of person identifiers mapped to the absences data for each person.

## Sample request (Absence Details)

```
POST / HTTP/1.1
Host: api.hrworks.de
Date: 20171004T155214Z
Authorization: HRWORKS-HMAC-SHA256 Credential=<Credential>,
SignedHeaders=<SignedHeaders>, Signature=<Signature>
User-Agent: <UserAgentString>
Accept: application/json
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
Connection: Keep-Alive
x-hrworks-target: GetAbsences
{
  "beginDate": "2017-10-17",
  "endDate": "2017-10-18",
  "persons": [
    "scully"
  ]
}
```

```
],  
  "usePersonnelNumbers":false  
}
```

## Sample response (Absence Details)

```
HTTP/1.1 200 OK  
x-hrworks-requestid: <RequestId>  
Content-Type: application/json  
Content-Length: <PayloadSizeBytes>  
{  
  "scully": [  
    {  
      "beginDate": "2017-10-14",  
      "endDate": "2017-10-18",  
      "absences": [  
        {  
          "name": "Annual Leave",  
          "absenceTypeKey": "AL",  
          "beginDate": "2017-10-14",  
          "endDate": "2017-10-17",  
          "status": "Checked, OK",  
          "workingDays": 2.5,  
          "isForenoonHalfDay": false,  
          "isAfternoonHalfDay": true  
        },  
        {  
          "name": "Annual Leave",  
          "absenceTypeKey": "AL",  
          "beginDate": "2017-10-18",  
          "endDate": "2017-10-18",  
          "status": "Checked, Rejected",  
          "workingDays": 0.5,  
          "isForenoonHalfDay": true,  
          "isAfternoonHalfDay": false  
        }  
      ]  
    }  
  ]  
}
```

## Sample request (Count)

```
POST / HTTP/1.1  
Host: api.hrworks.de  
Date: 20171004T155214Z  
Authorization: HRWORKS-HMAC-SHA256 Credential=<Credential>,  
SignedHeaders=<SignedHeaders>, Signature=<Signature>  
User-Agent: <UserAgentString>  
Accept: application/json  
Content-Type: application/json  
Content-Length: <PayloadSizeBytes>
```

```

Connection: Keep-Alive
x-hrworks-target: GetAbsences
{
  "beginDate":"2017-10-17",
  "endDate":"2017-10-18",
  "persons":[
    "scully"
  ],
  "usePersonnelNumbers":false,
  "count":true
}

```

### Sample response (Count)

```

HTTP/1.1 200 OK
x-hrworks-requestid: <RequestId>
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
{
  "scully":[
    {
      "beginDate":"2017-10-17",
      "endDate":"2017-10-18",
      "absences":{
        "AL":2.5,
        "ML":0.5,
        "SL":3
      }
    }
  ]
}

```

### Errors

In addition to the errors described in the “Common Errors” section, this action might return the following errors:

Code	Error Type	Description/Troubleshooting Help
400	InvalidDateIntervalError	The maximum date interval for this call is one year (or one month if the interval parameter was set to 'days'). Adjust the beginDate and endDate parameters accordingly and retry the request.
400	TooManyPersonsSelectedError	This API action can be performed for a maximum of 50 persons per call. Adjust the number of items in the persons parameter accordingly and retry the request.

# Common Errors

If an error occurred during the processing of an API request, it will be returned instead of the regular result.

## Sample error response

```
HTTP/1.1 403 Forbidden
x-hrworks-requestid: <RequestId>
Content-Type: application/json
Content-Length: <PayloadSizeBytes>
{
  "errorCode":403,
  "type":"InvalidSignatureError",
  "errorMessage":"The signature included in your request does not match the
signature we calculated."
}
```

## Error overview

Refer to the following table for a list of all errors that might be returned by the API server.

Code	Error Type	Description/Troubleshooting Help
400	InvalidCustomerNumberError	No customer could be found for the customer number associated with the credentials used for the request. This might indicate that either the credentials or the HRworks contract are expired.
400	InvalidActionError	The API action specified in the x-hrworks-target header is not supported (anymore). Refer to the current documentation for a list of valid actions.
400	MissingPayloadError	No payload was sent along with the request.
400	MissingParameterError	At least one of the required parameters was missing in the request. Refer to the documentation and the error message to determine the required parameters.
400	InvalidParameterError	At least one of the parameter values was invalid. That might indicate an out-of-bounds value or a person or organization unit identifier that does not exist in HRworks.
400	InvalidParameterTypeError	At least one of the submitted parameter values did not have the correct type. Refer to the error message for the parameter name and correct type.
400	RequestExpiredError	The request was considered expired by the HRworks server. API requests are valid for 15 minutes. Assure that the timestamp included in the

		request is in UTC format.
403	InvalidSignatureError	The HRworks server was unable to verify the signature in the request's authorization header. Check your signature generation procedure.
403	MissingAuthorizationHeaderError	The authorization header was missing in the request.
403	MalformedAuthorizationHeaderError	The request included an authorization header that did not meet the required formatting. Check your authorization header and signature generation procedure.
403	InvalidCredentialsError	The credentials provided in the request are invalid.
500	InternalServerError	The HRworks server encountered an internal error. Retry your request.

# Signature Creation

All HTTP requests to the HRworks API need to be signed. A pair of credentials (access key and secret access key) is needed to perform the signing process. Credentials can be created in HRworks by administrators with the API administrator role using the view Administrator/Basics/HRworks API.

To sign requests to the HRworks API, the client application has to create an Authorization header which is added to the HTTP request and verified by the HRworks application server before a response is returned. An example for said Authorization header can be seen below.

```
HRWORKS-HMAC-SHA256 Credential=SvzbmEEJ0GiD0GYwU1%2FR/production,  
SignedHeaders=content-type;date;host;x-hrworks-target,  
Signature=4afeebc7e346fcd71cfbc4a2a45fcc7324ecf749c3b8336180374dafa8136900
```

## Signing Process Walkthrough

The following section contains a step-by-step overview of the signature creation process.

### *Credentials used in this example*

**Access key id:** kdVDiLrylwri8+oLffNi  
**Secret access key:** T8IEul/BGWVXYEYrPJVzU9W9B1x2o2vov0SdihAv

### *Preparation: Adding the date header*

Add the Date header to your HTTP request. The date has to be formatted as YYYYMMDD'T'HHMMSS'Z' as per ISO8601.

### *Example request*

The sample request used in this example (with the date header already added) can be seen below. Note: The sample request does not include linebreaks in the payload to simplify the testcase. In general, you do not need to pay attention to the formatting of your payload or normalize it in any way.

```
POST / HTTP/1.1  
Host: api.hrworks.de  
Date: 20180619T130601Z  
Content-Type: application/json  
x-hrworks-target: GetPresentPersonsOfOrganizationUnit  
{ "organizationUnitNumber": "3" }
```

## Step 1: Creating the canonical request

The canonical request contains information about the API request in a standardized way and will later be recreated by the HRworks application server to verify the signature. Creating the canonical requests means concatenating various components of the request into a single string. Make sure

to follow the sub-steps below faithfully in order to arrive at a valid signature. Use \n for all linebreaks.

- a) Start with the **HTTP verb** of the request (usually POST), followed by a newline character.
- b) Add the **canonical URI**, followed by a newline character. As of now, the URI is always “/”.
- c) Add the canonical query string, followed by a newline character. The API does not support query parameters at this point, so just add the newline character.
- d) Add the **canonical headers**, followed by a newline character. To create the canonical headers, sort the lowercase header names alphabetically and add each lowercase header name, followed by a colon and the header value (trimming all leading and trailing whitespace from the header value). Add a newline character after each header value. Note: This means that 2 newline characters are added after the last header value!
- e) Compute a **hash of the request’s payload** using SHA-256 and transform this hash to a lowercase hexadecimal string.
- f) Combine all components from steps a) to e) into a single string.

The canonical request for the sample request above should thus look like this:

```
POST
/

content-type:application/json
date:20180619T130601Z
host:api.hrworks.de
x-hrworks-target:GetPresentPersonsOfOrganizationUnit

3546fe6fcea608e6c5313fe9842506e8720b6c203b8405cb420ac8df7bc0840
```

## Step 2: Creating the string to sign

The string to sign contains meta information about the request and the canonical request created in Step 1. To create the string to sign, concatenate the following components into a single string:

- a) **HRWORKS-HMAC-SHA256**, followed by a newline character (the signature identifier)
- b) The **request timestamp value** (as used in the date header), followed by a newline character
- c) The SHA-256 **hash of the canonical request**

Below is the complete string to sign for the sample request:

```
HRWORKS-HMAC-SHA256
20180619T130601Z
30cb277f4eca6cc4046e1de3798fdc7a010fbae0feb9d5361e60b60bf018d05
```

## Step 3: Creating the signature value

The signature is created using our secret access key and performing a short series of hashing/encryption operations over the string to sign. To create the signature, perform the following steps:

- a) Sign the **request date value** (e.g. 20180619 - copy your date header up to the ‘T’) with HMAC-SHA-256.

- Secret: HRWORKS+<secret access key>, e.g.  
HRWORKST8IEul/BGWVXYEYrPJvzU9W9B1x2o2vov0SdihAv
- Sign the **realm identifier** (“production” or “demo”) with HMAC-SHA-256.  
Secret: The result of step a)
  - Sign the **closing string** (“hrworks\_api\_request”) with HMAC-SHA-256.  
Secret: The result of step b).
  - Sign the **string to sign** created in Step 2) with HMAC-SHA-256.  
Secret: The result of step c)
  - Transform the result into a hexadecimal string

The resulting signature value for the example should be

```
e4bc358bc71ed4e6b6a47eefedc277b505481796e3e74e36f9610a0bc110fb35
```

## Step 4: Creating the authorization header

The header consists of four parts:

- The **signature algorithm identifier** string. As of now, this is a constant with the value HRWORKS-HMAC-SHA256.
- The **credential**. This is simply your API accessKeyId in url-encoded format, followed by a slash and the target HRworks realm (“demo” if you are using a test account, “production” for your live data).
- The **signed headers**. This part tells HRworks which headers were used in the canonical request part of the signing process. Add the signed headers to the header as lowercase, sorted by alphabet and separated by semicolons.
- The **signature**, which was created in Step 3.

Concatenate those components:

- Add the signature algorithm identifier string, followed by a single space character.
- Add the credential, followed by a comma and a single space character.
- Add the signed headers, followed by a comma and a single space character.
- Add the signature.

The final authorization header that you have to add to your API request should look like this for the sample request above:

```
HRWORKS-HMAC-SHA256 Credential=kdVDiLrylwri8%2BoLffNi/production,  
SignedHeaders=content-type;date;host;x-hrworks-target,  
Signature=e4bc358bc71ed4e6b6a47eefedc277b505481796e3e74e36f9610a0bc110fb35
```

The signed API request should look like this:

```
POST / HTTP/1.1  
Host: api.hrworks.de  
Date: 20180619T130601Z  
Authorization: HRWORKS-HMAC-SHA256 Credential=kdVDiLrylwri8%2BoLffNi/production,  
SignedHeaders=content-type;date;host;x-hrworks-target,  
Signature=e4bc358bc71ed4e6b6a47eefedc277b505481796e3e74e36f9610a0bc110fb35  
Content-Type: application/json  
x-hrworks-target: GetPresentPersonsOfOrganizationUnit  
{"organizationUnitNumber":"3"}
```

# Tools

This section contains other tools and references that will be helpful in implementing a client for the HRworks public API.

## Reference client implementations

HRworks API client by [AOE](#) (written in Kotlin)

<https://github.com/AOEpeople/hrworks-api-client>